Handbook of Economic Expectations: Expectations of Financial Market Participants^{*}

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> First Draft: July 2021 This Draft: May 2022

Abstract

Surveys of financial market participants are of particular interest to investors and policymakers—especially those at central banks—because they provide valuable information about market expectations for future economic outcomes, financial conditions, and policy actions. Surveys usually complement other sources of information—such as market pricing data or anecdotal information from market participants—but the rigor and structure of periodic surveys, as well as the absence of risk premiums, make them a valuable input into research, analysis, and decisionmaking. This chapter provides a broad overview of various surveys of financial market participants and highlights some of their advantages and potential drawbacks, both in theory and in practice.

JEL: C80, C83, C53, G17 Keywords: Expectations, Surveys, Forecasts, Survey of Primary Dealers, Term Premiums.

^{*}We thank Rudi Bachmann, Ryan Bush, Christopher Carroll, Olivier Coibion, Marco Del Negro, Andrew Meldrum, Matthew Raskin, Giorgio Topa, and Wilbert van der Klaauw for helpful comments and suggestions. All errors remain our sole responsibility. The views expressed herein are those of the authors and not necessarily those of the Board of Governors of the Federal Reserve System or the Federal Reserve Bank of New York.

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1 Introduction

When economic agents face uncertainty, they must adopt a view regarding unknown future or latent conditions in the economy and financial markets. Some agents may form an outlook on the basis of model outputs while others may use their own judgmental forecasts; however, many find value in canvassing the views of a range of market participants.¹ For instance, surveys are of particular interest to investors and policymakers—especially those at central banks—because they provide valuable information about market expectations for future economic outcomes, financial conditions, and policy actions. This information is useful for many reasons, including as a measure of the degree to which market participants expect (or do not expect) various potential policy interventions—an important input into the deliberations of forward-looking policymakers.

Surveys usually complement other sources of information—such as market pricing data or anecdotal information from market participants—but the rigor and structure of periodic surveys, as well as the absence of risk premiums, make them a valuable input into research, analysis, and decision-making. They are methodical, periodic snapshots of expectations elicited from a range of respondents over a set period of time. They can also minimize subjective differences by using explicitly defined terms (compared to, say, anecdotal information or published commentary). The most appropriate survey population depends largely on the intended application of the data, and the views of households, academic forecasters, and non-financial corporate actors are highly relevant for various purposes.² In this chapter, we focus on surveys of financial market participants in particular, as the views of entities that themselves transact in financial markets constitute an important input for many researchers and policymakers with an interest in the evolution of those markets.

Despite these advantages, surveys are also subject to potential drawbacks—as we will see, some of these drawbacks include sample bias and biases arising from the behavior of respondents themselves such as forecast smoothing. As with any tool, researchers and practitioners must understand the limitations of surveys and exercise caution in their use; as a result, surveys are likely to be most effective when combined with other tools as appropriate.

¹There is a large literature documenting the benefits in terms of forecast accuracy in constructing a consensus or average of respondents' views, e.g., see Bauer, Eisenbeis, Waggoner, and Zha (2003).

²For the views of households, see Chapter 1, Household Surveys and Probabilistic Questions. For academic and non-financial forecasters, see Chapter 3, Surveys of Professionals.

The structure of this chapter is as follows. Section 2 details the formal dimensions along which surveys of financial market participants can differ. Section 3 introduces and describes a range of surveys that target market participants both in the United States and other jurisdictions. Section 4 focuses on the advantages of using surveys while Section 5 discusses the potential drawbacks. Section 6 concludes.

2 Distinctions Across Surveys

While surveys have many commonalities, they differ in important ways that allow them to elicit information according to their purpose or idiosyncrasies of a given economic environment. This section describes some of the formal dimensions along which surveys of financial market participants can differ.

Target jurisdiction. Surveys are usually focused on a specific jurisdiction—generally the one in which the survey administrator is located. (See Section 3 for examples across various jurisdictions.) However, in some cases (e.g., Blue Chip), surveys are designed to cover a range of major jurisdictions.

Target respondents. Surveys of market participants may focus on a specific population, such as banks, broker-dealers, or fund managers. Within each of these institutions, surveys may be completed by individuals in various roles, such as economists, strategists, traders, or asset managers. In addition, some surveys also poll academic researchers, economic consultancies, industry groups, and/or corporate officers. The number of respondents varies widely across surveys as well, though the respondent pool for a given survey often remains roughly stable over time given the lack of rapid changes in the major institutions active in a given jurisdiction. Surveys of market participants also generally tend to poll a smaller number of respondents than most surveys of households or firms—often fewer than 100, and sometimes only a few dozen.

The views of households can sometimes diverge from those of economic forecasters or market participants, which also represents useful information to survey users. For example, following the onset of the COVID-19 pandemic, median expectations for inflation over the next several years among consumers polled by the University of Michigan increased somewhat earlier than expectations among primary dealers surveyed in the New York Fed's Survey of Primary Dealers (Figure 1).



Figure 1: Expectations for Longer-Term Changes in Prices

Source: FRBNY Survey of Primary Dealers median response to the question: "Please provide your point estimate for the most likely outcome [for annual average CPI inflation over the next five years]), University of Michigan Surveys of Consumers median response to the question: "By about what percent per year do you expect prices to go up or down, on the average, during the next 5 to 10 years?".

Frequency. Surveys can be conducted at a range of periodicities, such as monthly or quarterly frequencies or a frequency tied to the deliberations of a policy body such as the monetary policy committee of a central bank. On occasion, surveys may be conducted on an ad-hoc basis, in response to a particular political or economic development.

Subject matter. Surveys can cover a wide swath of potential topics, though certain areas are particularly common. One such area is economic indicators, particularly economic growth, inflation, and measures of unemployment. Another area is expectations for market prices, including policy interest rates; short-, medium-, and long-term sovereign bond yields; risky borrowing rates such as mortgage rates or corporate bond yields; and foreign exchange rates. Other areas include fiscal or monetary policy, such as expected government securities issuance or central bank asset purchases. Some surveys may also occasionally ask normative questions regarding economic policy, rather than descriptive—that is, what respondents believe is the best course of action, rather than what they expect is the most likely outcome.

Forecast horizon. Survey questions that ask about future outcomes can vary widely in their forecast horizon, with horizons as short as several days or as long as a decade or more. For example, a question may relate to expectations for the outcome of a central bank policy meeting in the coming days; another may ask for expectations for economic growth in the next several quarters; and others might ask for expectations for government borrowing costs or the unemployment rate on the scale of several years. Some surveys also ask questions that relate to expectations up to about a decade, or "longer-run" expectations under conditions that are expected to prevail in equilibrium. The number of horizons over which a survey elicits expectations is necessarily limited, making market data (which can be more flexible and reflect expectations over a wider range of horizons) a useful complement. (Note that some surveys also ask about current conditions or past events, e.g., eliciting views on the unobserved drivers of observed changes in market prices.)

Anonymity. Some surveys (such as those conducted by Bloomberg or Blue Chip) make individual survey responses available, while others (such as the European Central Bank's [ECB] Survey of Monetary Analysts and the New York Fed's Survey of Primary Dealers [SPD] and Survey of Market Participants [SMP]) publish the names of their respondents but maintain the anonymity of individual respondents' answers. In addition, certain surveys (such as the Philadelphia Fed's Survey of Professional Forecasters) include some anonymous respondents, and as such do not disclose their full list of participants.

Survey format. Finally, surveys can elicit expectations over uncertain outcomes in a variety of ways. The most common data elicited are modal expectations (i.e., the most likely outcome) and probability distributions (i.e., assigning probabilities to each of a range of potential outcomes). Often, surveys do not indicate whether they elicit modal or probability-weighted expectations; this can complicate the interpretation of the results, as described below in Section 5. Other types of survey questions include Likert rating scale and qualitative, open-ended questions.

i. Modal expectations

When specified, the most common type of survey question asks for the most likely value of a particular quantity—also known as the modal expectation. This has the advantage of being a salient property of most respondents' views and is the most common way in which market participants communicate their views anecdotally or in written commentary.

ii. Probabilistic questions

Probabilistic questions are those that elicit the range of respondents' subjective distribution of potential outcomes, as opposed to point estimates such as modal estimates.³ In other words, for these questions, respondents are asked to describe their views on the likelihood of a range of (usually exhaustive) outcomes for a given policy, macroeconomic, or financial indicator—not just the most likely outcome. (For continuous variables, respondents are generally asked to assign probabilities to the variable falling into various bins.) For example, a question may ask for the probability that the inflation rate will fall into each of several bins. These probabilistic questions have been employed by a range of surveys, such as the ECB's SMA and New York Fed's SPD and SMP. They elicit expectations for various rates of inflation, growth, Treasury yields, policy rates and other indicators (for example, see Figures 2 and 3).



Figure 2: Average Probability Distribution for U.S. Real GDP Growth in 2022 (Q4/Q4)

Source: December 2021 FRBNY Survey of Primary Dealers. Question: "Please provide the percent chance you attach to the following outcomes for U.S. real GDP growth in 2021 and 2022 (Q4/Q4)."

³For an in-depth discussion on probabilistic survey questions, see Potter, Del Negro, Topa, and Van der Klaauw (2017).



Figure 3: Year-End 2022 Federal Funds Target

Source: December 2021 FRBNY Survey of Market Participants. Question: "Please indicate the percent chance that you attach to the target federal funds rate or range falling in each of the following ranges at the end of 2021, 2022, 2023, and 2024. If you expect a target range, please use the midpoint of that range in providing your response."

There are several benefits to using probabilistic questions, such as the ability to elicit the likelihood attached to non-modal outcomes in addition to the modal outcome, and to obtain various quantitative measures of interest, such as uncertainty or skewness.⁴ In addition, eliciting a probability distribution enables the estimation of an implied probability-weighted mean estimate, which in some cases can be useful in a comparison to market prices which in theory reflect a probabilityweighted average of expectations among market participants.

Finally, we note that probabilistic questions can reveal patterns or shifts in respondents' subjective distributions that may not be apparent when only asking for point estimates. For example, according to the New York Fed's SPD, median modal outcomes for the target range for the federal funds rate at the end of 2022 remained at the effective lower bound from April 2020 through September 2021, but the distribution of potential outcomes shifted downward, then upward, over the same timeframe.

⁴Indeed, this measure of uncertainty can only be elicited from a probabilistic question. The disagreement among respondents' point estimates is sometimes substituted but this is a distinct and in general unrelated concept. For example, see https://libertystreeteconomics.newyorkfed.org/2015/01/ what-does-disagreement-tell-us-about-uncertainty.html.

iii. Conditional questions

Some surveys, including the New York Fed's SPD and SMP, sometimes ask conditional questions. These questions ask respondents to provide their views conditional on a given state of the world or policy outcome. For example, the SPD and SMP have included questions that ask for respondents' subjective distribution for the target range for the federal funds rate conditional on the next change being an increase or a decrease in the range (Figure 4) as well as views on the most likely target range conditional on various hypothetical combinations of inflation and unemployment rate outcomes (Figure 5). These types of questions can generate data of greater granularity and answer questions that similar unconditional questions cannot.⁵ It is also possible to elicit conditioning variable), as well as marginal probabilities for outcomes of the conditioning variable. This allows researchers to construct a joint probability distribution (e.g., question 8 in the June 2013 SPD). At the same time, however, conditional questions may require more time and effort to answer, particularly as respondents may not independently maintain these expectations (as opposed to more commonly expressed modal expectations).

⁵Note that even though they sometimes include questions that are conditional on a particular outcome or action, the SPD and SMP never presume any particular policy action. Accordingly, the conditioning scenarios are generally symmetrical, e.g., a symmetrical upward or downward perturbation to inflation or unemployment, or the next change in the target range being an increase or a decrease.



Figure 4: Conditional Year-End 2019 Federal Funds Target Expectations

Source: April/May 2019 FRBNY Survey of Market Participants. Question: "Please indicate the percent chance that you attach to the target federal funds rate or range falling in each of the following ranges at the end of 2019, conditional on the following possible scenarios for the direction of the Committee's next policy action between now and the end of 2019. Only fill out the conditional probability distributions for which you assigned a non-zero probability to the conditioning event occurring. If you expect a target range, please use the midpoint of that range in providing your response."

The following matrix lays out hypothetical scenarios in which the realized levels of the 2020 unemployment rate (Q4 average level) and 2020 core PCE inflation (Q4/Q4 growth) are either 50 basis points above, below, or equal to the medians of FOMC participants' projections for these indicators in the December Summary of Economic Projections (SEP). For example, the upper left box represents a scenario in which the unemployment rate and core PCE inflation are both 50 basis points below the current SEP medians. The upper right box represents a scenario in which the unemployment rate is 50 basis points above the current SEP median, while core PCE inflation is 50 basis points below the current median.						
For each of the following scenarios, please indicate the level of the target federal funds rate or range that you expect would prevail at the end of Q1 2021. If you expect a target range, please indicate the midpoint						
of that range in providing your response.						
2020 Unemployment rate Median (Q4 average level)						
Responses Current SEP						
			- 50 bps	median 3.5%	+ 50 bps	
			1.61%	1.25%	0.75%	
	2020 Core	Current SED				·

1.63%

2.13%

1.63%

1.63%

1.13%

1.63%

Figure 5: Q1 2021 Federal Funds Target Rate Under Hypothetical Scenarios Source: January 2020 FRBNY Survey of Primary Dealers.

iv. Non-quantitative and rating questions

PCE inflation

(Q4/Q4)

Some questions may ask respondents to select one or more unordered responses that do not lie on a continuum, whereby non-numerical views can be aggregated and analyzed quantitatively (Figures

6 and 7).

12) How do you characterize the policy adjustments made by the BOJ after its March review? (Multiple answers OK)					
Response Count:	52 responses from 44 e	conomists			
A dialing back of stimulus	1				
A strengthening of stimulus framework	23				
A step toward policy normalization	18				
A step toward further easing	1				
Hard to tell	9				

Figure 6: Question on Interpretation of Bank of Japan Policy Adjustments in April 2021 Survey

Source: Bloomberg.

5	a. Does the balance of risks to your inflation forecasts lie to the upside?					
	<u>Yes</u> <u>No</u>					
	97% 3%					
	b. If yes, what is the main source of those upside risks?					
	A stronger than expected recovery	42%				
	Commodity price pressures	18%				
	Looser monetary policy	12%				
	Looser fiscal policy	18%				
	A weaker US dollar	0%				
	Other factors	9%				

Figure 7: Questions on Upside Risks to Inflation Forecasts and Source of Risks Source: May 2021 Blue Chip Financial Forecasts.

In addition, surveys may also employ rating questions, particularly those that use a Likert scale (e.g., a rating from one to five). These questions are useful in assigning a numerical value to an attribute or normative view that does not correspond to an observable quantity, such as the unobserved drivers of observed changes in market prices (Figure 8). This enables quantitative comparisons between respondents and over successive surveys.

Factors Explaining the Change in the 10-Year Treasury Yield						
	Changes To Expectations for Fiscal Policy	Changes to Expectations for the Course of the Pandemic	Changes to Perceptions of the FOMC's Reaction Function	Changes in Uncertainty Around Interest Rates	Changes in Actual or Expected Treasury Supply and Treasury Liquidity	Other (Please Explain)
1-Not Important	0	0	3	0	1	0
2	0	2	6	10	5	0
3	1	5	9	10	8	4
4	13	8	3	4	7	1
5-Very Important	10	9	3	0	3	1
# of Responses	24	24	24	24	24	6

Figure 8: Importance of Various Factors in Explaining Change in 10-Year Nominal Treasury Yield Since the January 2021 FOMC Meeting

Source: March 2021 FRBNY Survey of Primary Dealers. Question: "[P]lease rate the importance of the following factors in explaining changes in the 10-year Treasury yield since the January FOMC meeting. (5=very important, 1=not important)"

v. Qualitative questions

Many surveys of market participants employ qualitative (or open-ended) questions that elicit written responses. While these responses are necessarily less structured than those of numerical questions, they nonetheless provide useful information—particularly in cases where more conceptual views are desired and where a more structured question is difficult to formulate because possible answers cannot readily be categorized or there is not a strong prior view on the range of potential answers (see Figure 9).



Figure 9: Expectations for Changes to Language Referencing Current Economic Conditions in March 2021 FOMC Statement

Source: March 2021 FRBNY Survey of Market Participants.

3 Examples of Surveys of Financial Market Participants

In this section, we briefly introduce a range of expectational surveys that target market participants both in the United States and in other jurisdictions.

3.1 Survey of Primary Dealers and Survey of Market Participants

Among official sector surveys that elicit market expectations for monetary policy and the economic outlook, two important surveys in the United States are the New York Fed's Survey of Primary Dealers (SPD),⁶ which has been published since 2011, and its companion the Survey of Market Participants (SMP),⁷ published since 2014. These surveys are conducted in advance of each Federal Open Market Committee (FOMC) meeting by the New York Fed's Open Market Trading Desk, polling primary dealers and active investment decision-makers (such as asset managers and funds) on economic and financial market topics that have been widely discussed in public venues. FOMC participants are not consulted in the formulation of survey questions. The combination of the depth and the breadth of these surveys makes them a valuable tool to understand expectations for how policy will evolve in the context of changing economic conditions. Findings from the surveys are often cited in the FOMC meeting minutes, indicating that they are considered a pertinent source of information for understanding market participants' expectations for the evolution of the economy and for domestic monetary policy decisions.

The objective of these surveys is to gain insight into the expectations of respondents on a range of topics. For instance, in the past, respondents have been asked about their expectations on the future level of the federal funds rate and the future size of the Federal Reserve's balance sheet, as well as their forecasts of economic indicators. Part of the versatility of the SPD and SMP lies in their ability to ask special questions regarding current events or market phenomena that have been widely discussed publicly—for example, the impact of the coronavirus pandemic on economic growth, or the drivers of a pronounced decline in long-dated Treasury yields over a given period—which can provide more detailed and relevant data on topics of interest. The results of the SPD and SMP, in conjunction with analysis of market prices and other data, are used by Federal Reserve staff in their evaluations of market expectations for the economic outlook, monetary policy,

⁶See https://www.newyorkfed.org/markets/primarydealer_survey_questions.html.

⁷See https://www.newyorkfed.org/markets/survey_market_participants.

and financial markets. Survey questions are published on the New York Fed's website at the same time they are distributed to respondents—ahead of each FOMC meeting—and summaries of the results are published about three weeks after each FOMC meeting, following the release of the corresponding FOMC meeting minutes.

The New York Fed's SPD and SMP generally ask substantially the same questions across both the Federal Reserve's primary dealers and the institutional investors that comprise the SMP panel. The SMP was launched in 2014 as a way to expand the survey sample and probe whether the investor community might hold different views from the dealer community.⁸ Though responses from primary dealers and institutional investors have not revealed systematic, long-term differences, these groups of respondents have, at times, held differing views on specific questions. For instance, in October 2019, median responses to the Survey of Primary Dealers were consistent with a decrease in the target range for the federal funds rate in 2020, while median responses to the Survey of Market Participants were consistent with no change to the target range (Figure 10). Over a longer timeframe, Figure 11 provides a comparison of the SPD and SMP median of modal one-year ahead projections for the target federal funds rate, as documented in Diercks, Tanaka, and Cordova (2021).



Figure 10: Modal Expectations for the Federal Funds Target Rate or Range

Source: October 2019 FRBNY Surveys of Primary Dealers and Market Participants. Question: "Provide your estimate of the most likely outcome (i.e., the mode) for the target federal funds rate or range, as applicable, immediately following the FOMC meetings and at the end of each of the following quarters and half-years below. For the time periods at which you expect a target range, please indicate the midpoint of that range in providing your response."

⁸Speaking in 2016, then-Executive Vice President Simon Potter describes some of the rationale behind expanding the New York Fed's policy survey beyond primary dealers following the so-called "taper tantrum" of 2013. "Importantly, it is possible that the size of future asset purchases was seen as smaller by primary dealer respondents than by the marginal investor. Following this experience, we introduced the Survey of Market Participants to better capture the diversity of views in the market." https://www.newyorkfed.org/newsevents/speeches/2016/pot160519



Figure 11: Comparison of the SPD and SMP Median Expectation for Modal Target Federal Funds Rate

Source: Federal Reserve Bank of New York and Diercks, Tanaka, and Cordova (2021). Note: Panel A shows the median of each respondent's modal forecast of the approximately 1-year ahead federal funds rate from the SPD and the SMP. Panel B shows the difference between the two series.

The SPD and SMP are a rich source of detailed information on market expectations for a range of U.S. economic and financial market indicators, but they offer particularly granular and varied questions regarding expectations for U.S. monetary policy, many of which are not asked in other surveys. This affords the users of these surveys the ability to draw various useful conclusions regarding the evolution of policy expectations. For example, one common pattern observed is that with the passage of time and in response to communications from monetary authorities, expectations for the magnitude or timing of various policy actions show a decline in uncertainty and disagreement as consensus builds (Figure 12).



Figure 12: **Probability of First Reduction in Asset Purchases Occurring in Each Period** Source: July and November 2021 FRBNY Survey of Primary Dealers. Question: "Please indicate the percent chance that you attach to the first reduction in the pace of asset purchases occurring in each of the following periods."

While the SPD and SMP cover many of the same topics as private sector and other official surveys, they are distinct in important ways, both in form and substance.⁹ With respect to the organization of the surveys, while some other surveys have retained many of the same questions and formats over time, the SPD and SMP have evolved with time in response to financial and economic conditions as well as the monetary policy context. For example, during periods in which the policy rate was at the effective lower bound, the surveys asked questions regarding the timing of the first increase in the target range for the federal funds rate ("liftoff") and economic conditions at liftoff. At other times, the surveys introduced other types of questions (for example, the probability of increases or decreases in the target range).

Similarly, during periods in which the FOMC has been engaged in the purchase of securities—such as the Large Scale Asset Purchase programs in response to the Global Financial Crisis or purchases following the onset of the global pandemic in 2020—the surveys have included questions related to the timing and amount of these purchases. The surveys also sometimes introduce topical questions related to recent events in financial markets, such as bouts of market volatility, developments in specific asset markets such as foreign exchange or oil, or market functioning.

⁹A third way in which the SPD is notable is that primary dealers' relationship with the Federal Reserve helps to ensure high response rates and continuity in the sample over time (Correia-Golay, Friedman, and McMorrow (2013)).

3.2 Blue Chip Survey

Two important surveys that are produced by the firm Wolters Kluwer are the Blue Chip Economic Indicators and the Blue Chip Financial Forecasts. Each of these surveys are conducted monthly and cover a broad range of economic and financial variables. There are about 40 to 50 respondents that come from a wide range of backgrounds such as professional economists (many of whom are associated with firms that are active in financial markets) and academics.

3.2.1 Blue Chip Economic Indicators

The Blue Chip Economic Indicators monthly survey has been conducted since 1977. The survey results are released to the public on the 10th day of each month and the forecasts are typically submitted three business days before publication. The forecasts cover a wide range of economic indicators including the components of GDP, unemployment, housing, auto sales, inflation, as well as financial variables such as the 3-month Treasury bill. Forecasts are provided at the quarterly and annual forecast horizon for most variables. The survey also asks about five key economic variables for 15 of the U.S.'s largest trading partners.

Similar to the SPD and SMP, special questions are asked that help provide insight into more qualitative forecasts or topical developments. For instance, in the April 2021 survey, respondents were asked if they perceive inflation risks to be temporary or likely to linger. In the May 2021 survey, respondents were asked whether they see the size of the U.S. federal fiscal deficit supporting growth. In addition to these special questions, long-range forecasts are provided twice a year for horizons of 1 to 5 years, plus an average of the five years after that. In all months, the survey features near-and medium-term forecasts at the annual and quarterly frequency.

3.2.2 Blue Chip Financial Forecasts

The Blue Chip Financial Forecasts monthly survey has been conducted since 1982. In this survey, forecasts are more focused on U.S. interest rates. The forecasts extend across the entire yield curve and also to other interest rates such as those on corporate and municipal bonds. The horizons of interest include the next five quarters. Several respondents also forecast international interest rates and foreign exchange rates. Similar to the Blue Chip Economic Indicators survey, long-range

forecasts are provided twice a year in June and December.

3.3 Consensus Economics

Consensus Economics publishes Consensus Forecasts and covers a broad range of economic and financial indicators. The survey has been conducted on a monthly basis since 1989 and typically polls over 20 financial market participants and other forecasters. Forecasts are provided for the next two years at both quarterly and annual horizons. Each month, a special set of questions is introduced that garners responses on a topical issue. This survey has a greater international focus, with forecasts provided for over 15 other countries in addition to the United States.

3.4 Surveys Administered in Other Jurisdictions

Among other jurisdictions, public-sector surveys of financial market participants are often conducted by the fiscal or monetary authorities, and private-sector surveys are often conducted by international or local information services companies or the financial press. For example, the European Central Bank and the Bank of England conduct surveys of market participants, and central banks in many other developed and emerging economies conduct surveys of this kind.

The target respondents for each of these surveys are usually tailored to the jurisdiction in question; for example, the respondents to the ECB's Survey of Monetary Analysts include "financial institutions participating in the ECB Market Contact Groups (i.e. the Money Market, Bond Market, and Foreign Exchange Contact Groups)", while the respondents to the Bank of Japan's Bond Market Survey are "eligible institutions for the Bank of Japan's outright purchases and sales of JGBs and major insurance companies, asset management companies, etc.". Eliciting expectations from institutions that are active in each jurisdiction can help ensure that survey responses are informed and representative of participants in the markets in question.

In many jurisdictions, internationally active data companies or financial journalists also conduct surveys, either at a fixed frequency or matching the meeting schedule of the policy body of the monetary authority. For example, in recent years Bloomberg LP has conducted monthly surveys of economists to gather expectations for a range of macroeconomic indicators in major economies. In addition, the firm conducts surveys on expectations for major central banks; for example, in recent years it has polled economists ahead of monetary policy meetings of the Federal Reserve's FOMC, the Policy Board of the Bank of Japan, and the ECB's Governing Council to elicit expectations for any changes to communications or policy actions. Similarly, Bloomberg and Thomson Reuters have conducted regular surveys in which they elicit expectations for the People's Bank of China's (PBOC) Loan Prime Rate, its benchmark lending rate.

The subject matter of surveys also differs according to the structure and unique characteristics of financial markets and institutions in the relevant jurisdiction. For example, the monthly Survey of Expectations conducted by the Central Bank of the Republic of Turkey (CBRT) has recently asked about the CBRT one-week repo auction rate, while Banco Central do Brasil's (BCB) Focus Survey has asked about the Selic, an overnight interbank borrowing rate that serves as the BCB's policy rate. Meanwhile, in jurisdictions with an ongoing asset purchase program, surveys will often ask respondents questions relating to potential changes to these purchases.

Survey	Publisher	Target Respondents	Main Topics Covered	Website	
Survey of Primary Dealers (SPD)	FRBNY	FRBNY's primary dealers	"Economic and financial market topics that have been widely discussed in public venues"	https://www.newyorkfed.org/markets/ primarydealer_survey_questions	
Survey of Market Participants (SMP)	FRBNY	Active investment decision-makers, with initial eligibility limited to a subset of firms associated with certain New York Fed advisory and sponsored groups	"Economic and financial market topics that have been widely discussed in public venues"	https://www.newyorkfed.org/markets/ survey_market_participants	
Blue Chip Economic Indicators and Blue Chip Financial Forecasts	Wolters Kluwer	"Economists employed by some of America's largest and most respected manufacturers, banks, insurance companies, and brokerage firms"	Forecasts for various real economy-focused and financial market indicators and special questions	https://www.wolterskluwer.com/en/solutions/vitallaw-law- firms/blue-chip	
The Wall Street Journal Economic Forecasting Survey	The Wall Street Journal	"academic, business, and financial economists"	"Range of economic indicators" and "questions related to current events"	https://www.wsj.com/articles/economic-forecasting-survey- archive-11617814998	
Shadow Survey of Market Participants	MacroPolicy Perspectives	Portfolio/risk managers, market makers, traders, economists, strategists, etc.	Expectations for economic and financial conditions, Fed policy, and related questions	https://www.macropolicyperspectives.com/shadow-survey	
Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS)	Federal Reserve Board of Governors	Domestically chartered commercial banks and U.S. branches and agencies of foreign banks	"questions designed to measure changes in credit standards and terms on bank loans and perceived changes in the demand for bank credit" and "special questions about developments in banking practices"	https://www.federalreserve.gov/data/sloos.htm	
Senior Financial Officer Survey (SFOS)	Federal Reserve Board of Governors; FRBNY	Domestic banks and foreign banking organizations	"a limited number of questions directed at topics of timely interest"; [in March 2021] "expectations for reserve and balance sheet management in the months ahead"	https://www.federalreserve.gov/data/sfos/sfos.htm	
The CFO Survey	Duke University's Fuqua School of Business, Federal Reserve Bank of Richmond, Federal Reserve Bank of Atlanta	"includes firms that range from small operations to Fortune 500 companies across all major industries"	"financial outlook for their firms, the challenges they face, and their expectations for the U.S. economy"	https://www.richmondfed.org/cfosurvey	
Bloomberg economic and monetary policy surveys	Bloomberg LP	Economists at financial and academic institutions and consultancies	Expectations for economic and financial indicators, monetary policy, and related questions in the United States and other jurisdictions	E.g., https://www.bloomberg.com/news/articles/2021-09-17/fed- seen-announcing-bond-taper-in-november-rate-liftoff-in-2023	
Consensus Forecasts	Consensus Economics	Economists at financial and academic institutions and consultancies	"Country economic forecasts and topical analyses covering the G-7 industrialized nations, Asia Pacific, Eastern Europe and Latin America"	https://www.consensuseconomics.com/	
Action Economics (formerly known as Money Market Services Survey)	Action Economics	Dealers of securities	Forecasts for various real economy-focused and financial market indicators	http://actioneconomics.com	

 Table 1: Selected Surveys of Financial Market Participants

4 Some Advantages and Uses of Surveys

This section covers some of the advantages of using surveys to back out expectations versus asset prices. It also touches upon the questions that can be uniquely addressed by surveys and how surveys are often incorporated into economic modeling.

4.1 Risk Premiums

There is a large literature documenting the presence of risk premiums¹⁰ in financial markets, as highlighted by Fama and Bliss (1987) and Campbell and Shiller (1991). Thus, a major benefit of using surveys over relying on financial market asset prices is the absence of risk premiums, which provides a measure of expectations undistorted by risk preferences (for further discussion of market-based measures, see Chapter 6, Measuring Market Expectations). To get a better sense of the important differences when using surveys versus financial markets to back out expectations, one can compare market-implied and survey-based probability distributions for the federal funds rate at the end of 2021 (Figure 13). On the left is the federal funds futures options-implied probability distribution that is calculated based on Chicago Mercantile Exchange (CME) options quotes. On the right is the average probability distribution as asked in the March 2021 Survey of Primary Dealers.

One notable difference between the two data sources is the weight being placed on negative rate scenarios. The options-implied probability density function (PDF) places a weight close to 0.3 on negative rates, while the survey-based measure places a weight of just 0.01. This is a dramatic difference, as the options-implied distribution is putting an economically significant weight on the chance of negative rates. In contrast, the surveys indicate virtually no expectations for negative rates by the end of 2021.¹¹

The difference could potentially be explained by the possibility of a large premium being placed on states of the world in which the Federal Reserve decides to cut rates into negative territory. These are likely to be very bad states of the world—e.g., a severe recession—in which a range of

¹⁰In the context of bonds, risk premiums capture the difference between the yield investors require for holding longer-term securities—whose realized returns are more sensitive to risks from future inflation or volatility in interest rates than shorter-term securities— and the expected yield from rolling over shorter-dated ones.

¹¹Note that the federal funds rate options are for effective federal funds rate outcomes while the SPD elicits expectations for the midpoint of the target range.

investible assets drop sharply in value. Consequently, investors may require a high risk premium to engage in a trade involving that potential outcome, which pushes up its risk-neutral probability. In addition, the federal funds futures options may suffer from low liquidity, which is another issue that surveys can avoid. In contrast, the average distribution arising from the SPD places nearly all of its weight on no rate changes through the end of the year, which is more consistent with expectations expressed in published commentary by market participants.



Figure 13: Market- and Survey-Based Probability Distributions for Federal Funds Rate

Source: Author's calculations based on CME Group Inc., DataMine, FRBNY. The left panel shows the option-implied probability distribution of the December 2021 Federal Funds Futures contract according to CME. The right panel shows the aggregate probability distribution of the expected target range for the federal funds rate at the end of 2021 in the March 2021 Survey of Primary Dealers.

One can also see how the gap between survey-based expectations and expectations derived from asset prices have evolved over time. Below is a plot showing a six-month ahead forward rate derived from overnight index swap (OIS) rates minus the six-month-ahead survey-implied expectation of the federal funds rate from the Blue Chip (Figure 14).



Figure 14: Six-Month-Ahead Survey-Based Risk Premium

Source: Bloomberg Finance LP; Wolters Kluwer Legal and Regulatory Solutions, U.S. Blue Chip Financial Forecasts. This plot shows the overnight index swap (OIS) rate minus the Blue Chip Financial Forecast consensus expectation of the federal funds rate 6 months ahead. The units are in basis points per month. The gray bars denote recessions as defined by NBER.

One can see that during the most recent rate hiking cycle, OIS rates were below the surveyimplied rates for quite some time, which is indicative of a negative risk premium. It turned out that over this specific window (2015-2018), the survey forecasts came closer to the realized federal funds rate than the expectations based on OIS rates.¹²

4.2 Types of questions that are best answered by surveys

In some cases, market expectations easily lend themselves to observation through market prices, such as for outcomes for which a useful (though imperfect) proxy might exist. For example, expectations for inflation are an important component of the pricing of inflation swaps or inflation-protected securities, and expectations for a given jurisdiction's policy rate are largely reflected in its overnight indexed swaps (OIS) as well as various short-term interest rate derivatives markets, if available.

However, in many instances, expectations cannot be straightforwardly recovered from market prices, most notably in cases where observable market prices do not bear a direct, one-to-one relationship with the outcome in question. For example, expectations for the issuance of government

¹²However, there is some evidence to suggest that OIS rates can at times forecast relatively well compared to surveys in other circumstances (see Diercks and Munir (2020)). This will be further discussed in the limitations of surveys section.

or corporate debt, or asset purchases by the monetary authority, are only part of the range of information embedded in market prices for these securities. Accordingly, it can be valuable to ask directly about outcomes such as policies related to asset purchases (Figure 15).



Figure 15: Expectations for the Timing of the End of Positive Net Purchases of Treasury Securities and Agency Mortgage-Backed Securities

Source: December 2021 FRBNY Survey of Primary Dealers. Question: "Please indicate the percent chance that you attach to each of the following monthly purchase periods beginning mid-month being the last period in which there are positive net purchases of Treasury securities and agency mortgage-backed securities."

In addition, surveys are a useful way to elicit respondents' judgments of "unobservable" quantities, such as a measure of the equilibrium policy rate (so-called r^*) (see Laubach and Williams (2003)) or the equilibrium unemployment rate (u^{*}) (see Laubach (2001)).¹³ These values can differ from model outputs, providing valuable information regarding where market views might differ from theoretical values.

Surveys are also particularly well suited to views regarding conceptual or causal relationships, as well as qualitative expectations for future events (which do not correspond to numerical outcomes). For example, surveys can ask respondents for their views on the drivers of changes in asset prices over a particular horizon, such as the relative importance of a range of different potential drivers of an increase or decrease in interest rates since a specific date. Similarly, surveys can elicit expectations for the content of certain events, such as communications around monetary policy meetings (Figure 16).

¹³Joergensen and Meldrum (2019) compare survey-based measures of r^{*} to market-based measures.

3. Minutes from the Fed's Nov. 4-5 meeting indicated most FOMC members favored updating their guidance on asset purchases "fairly soon," and implementing "qualitative outcome-based guidance" that links the time horizon for purchases to economic conditions. When is the FOMC most likely to take such a step?						
Response Count: 47	No. Responses	Percentage				
Dec 16	26	55%				
Jan. 27		19%				
March 17		13%				
April 28 or later		13%				
4. New qualitative outcome-based guidance is most likely to link the time horizon for asset purchases to:						
Response Count: 45		No. Responses	Percentage			
Progress toward maximum employment				11	24%	
Progress toward ach	हे over time		7%			
Progress toward both employment and inflation goals 31 69					69%	

Figure 16: Questions on Federal Reserve Asset Purchases in December 2020 Survey Source: Bloomberg.

Finally, surveys can be a useful way to gather normative (rather than descriptive) information from respondents; that is, to elicit views on whether a given past or hypothetical action is good or bad, or provide views on the best course of action in their view. For example, the SPD and SMP regularly ask respondents to rate the effectiveness of the Federal Reserve's communications with the markets and with the public (Figure 17).

How would you grade th since the last policy surv 5 indicating effectivenes	e Federal Reserve ey? Please provide s.	System's communication with a rating between 1 and 5, with	n the markets and with the public h 1 indicating ineffectiveness and
		Number of Respondents	
	1 - Ineffective	0	
	2	0	
	3	6	
	4	15	
	5 - Effective	3	
	# of Responses	24	



Source: April 2021 FRBNY Survey of Primary Dealers.

4.3 Surveys as model inputs

An important area where surveys have frequently been used as inputs is term structure models, which are often used by practitioners and policymakers to extract market expectations from asset prices.¹⁴ Term structure models tend to rely on the historical time-series dynamics of interest rates to back out physical expectations (i.e., expectations that are not distorted by risk premiums). As pointed out in Wright (2017), this can lead to several econometric issues such as downward bias in persistence estimates due to the parameter uncertainty (i.e., flat likelihood) and small-sample bias (see Bauer, Rudebusch, and Wu (2012) and Wright (2014)). To address these issues, Kim and Orphanides (2012) incorporate Blue Chip surveys¹⁵ along with measurement error and find greater success in generating sensible physical expectations. Chun (2011) similarly finds success incorporating Blue Chip forecasts as observable factors. Priebsch (2017) also includes Blue Chip forecasts while taking into account the effective lower bound.

In contrast to the studies above which combine information from surveys with historical dynamics of interest rates to construct expectations, some studies have computed risk premiums based solely on the gaps between expectations in surveys and forward rates.¹⁶ Durham (2003), Peacock (2004), Gameiro (2006), Durham (2015) and Crump, Eusepi, and Moench (2018) have each taken this approach along with Piazzesi, Schneider, et al. (2009) and Buraschi, Piatti, and Whelan (2018), who refer to them as subjective bond risk premia (for additional discussion on survey-based risk premiums, see Chapter 17, The Term Structure of Expectations). The common finding from these studies is that risk premiums based on this approach tend to be smaller, less volatile, and more acyclical than risk premiums computed from predictive regression-based measures using realized excess returns. Diercks, Tanaka, and Cordova (2021) also compute survey-based risk premiums, but in contrast to the previous studies, they use probability-weighted means from the Survey of Primary Dealers and find this leads to better forecast performance relative to modal-based forecasts, consistent with economic theory.

An alternative approach to directly using the survey-forward rate gap is to extract relevant movements in the gap that are related to economic fundamentals. This approach is adopted by Diercks, Munir, and Carl (2021) by model averaging over regressions of the survey-OIS gaps at various horizons onto covariances between real and nominal activity. This helps address some of

¹⁴For additional discussion on extracting market expectations from asset prices, see Chapter 6, Measuring Market Expectations.

¹⁵The model uses monthly data on the six-month and twelve-month-ahead forecasts of the three-month Treasury bill yield and semiannual data on the average expected three-month Treasury bill yield from six to eleven years hence from Blue Chip Financial Forecasts.

¹⁶This approach requires no econometrics or historical dynamics of interest rates to form expectations.

the challenges associated with surveys that are highlighted in the following section and also leads to superior out-of-sample forecasting compared to surveys and OIS rates by themselves.

Other studies such as d'Amico, Kim, and Wei (2018) have used 10-year inflation forecasts from the Survey of Professional Forecasters to help decompose differences in nominal and TIPS yields into inflation expectations and liquidity premiums.¹⁷ Ang, Bekaert, and Wei (2007) also examine inflation forecasts and determine that survey-based measures provide better performance than models estimated with yields only. Likewise, Chernov and Mueller (2012) use survey-based forecasts of inflation to uncover a hidden factor in the nominal yield curve that helps improve forecasting of inflation and yields. In addition, Grishchenko, Mouabbi, and Renne (2019) build a term structure model of surveys that takes raw survey forecasts as given and provides an estimated synthetic measure of inflation forecasts consistent with various surveys and horizons.

5 Drawbacks of Surveys

Surveys are not without their limitations and sometimes there can be challenges associated with their interpretation. A large academic literature has been devoted to better understanding these issues and is the focus of the remainder of this chapter.¹⁸

5.1 Distributional Inconsistencies

While market-based measures of expectations typically provide signal on mean-based expectations, the signal from surveys can be less clear, depending on the choice of question language. For instance, it is not clear whether respondents to certain surveys provide means or modes for their forecasts. In contrast, other surveys such as the SPD and SMP formally distinguish between questions associated with modal expectations and those that elicit subjective probabilities across a range of outcomes from which a probability-weighted mean can be derived. On that note, Potter, Del Negro, Topa, and Van der Klaauw (2017) document that consensus modal forecasts have, at times, deviated from the associated probability-weighted means. This disparity becomes an issue any time there are notable upside or downside risks to the outlook. While the probability-weighted mean expectation should

¹⁷Alternatively, Abrahams, Adrian, Crump, Moench, and Yu (2016) adjusts TIPS yields using an observable measure of liquidity and does not use surveys.

¹⁸We focus on drawbacks most relevant to the ways that policymakers are most likely to use survey data, though other challenges also exist.

in theory be impacted by changes in risks to the outlook, expectations based on the modal outcome may be less likely to react. Alternatively, changes in modal outcomes may be less informative if the underlying distribution is flat or there is multimodality. For additional discussion on the merits of soliciting probability-weighted responses, see Chapter 1, Household Surveys and Probabilistic Questions.

Diercks, Tanaka, and Cordova (2021) attempt to clarify whether respondents provide means or modes for their forecasts of the target range for the federal funds rate. They extract modal paths and probability-weighted means derived from the SPD and compare them to consensus forecasts from Blue Chip Financial Forecasts. In addition to finding economically significant quantities of skewness in these forecasts, they also find evidence suggesting that the Blue Chip survey responses line up with modal outcomes and not the probability-weighted means.

5.2 Sample

Another potential issue is that surveys may not come from a representative sample of market participants. Consensus beliefs (whether measured as the mean, median, etc.) coming from surveys are representative of "true" market expectations only if they reflect the broader market population. Moreover, the consensus belief may also not coincide with the views of the marginal investor, which is key for the determination of asset prices. On that note, several studies argue that the marginal investor is unlikely to hold consensus beliefs. For instance, Hong, Sraer, and Yu (2017) argue that optimistic investors (those expecting low inflation) will be the marginal investor in long-term bonds when there is large inflation disagreement and there are constraints on short-selling (which prevents pessimists who expect inflation to rise from participating). Likewise, Xiong and Yan (2010) argue that bond pricing is determined by investors' wealth-weighted average beliefs about future interest rates (not the consensus based on equal weights). This suggests the identity of the marginal investor will change as wealth shifts. It should also be acknowledged that in general, the specific individuals filling out the surveys are not necessarily the same individuals who are actively trading in financial markets.

5.3 Rationality and Rigidities

Rationality of survey-based measures of expectations for interest rates has also been widely studied. Expectations coming from surveys are considered rational if their forecast errors are unbiased (mean of zero) and efficient (unpredictable) in the context of a symmetric quadratic loss function. Researchers care about this because assuming that agents exhibit rational expectations is the most common approach for macroeconomic simulations coming from dynamic stochastic general equilibrium models. Froot (1989), Ferrero and Nobili (2009), Bacchetta, Mertens, and Van Wincoop (2009) and Cieslak (2018) each demonstrate inefficient forecast errors, showing that expectational errors for Treasury yields coming from surveys can be predicted with proxies of real activity. Other studies that have rejected notions of rationality for surveys include Friedman (1980), Jongen and Verschoor (2008), Chun (2012), and Miah, Rahman, and Albinali (2016).

Rigidities in surveys are also frequently noted by researchers. Placing an excessive weight on an easily observable prior value is known as an anchoring bias. This gives rise to predictable errors because of the underweighting of new information. Campbell and Sharpe (2009) emphasize anchoring bias in survey expectations of monthly macroeconomic data releases and find that bond yields are less susceptible to this bias. Nakazono (2012) finds evidence of anchoring in forecasting Japanese company stock prices while Tzu-Pu Chang and Chou (2018) finds evidence in U.S. macroeconomic forecasts. Ichiue and Yuyama (2009) find that Blue Chip consensus forecasts of the U.S. federal funds rate are significantly anchored by one- and two-quarterly behind consensus forecasts. Likewise, Gallo, Granger, and Jeon (2002) find that forecasters place a significant weight on the previous period's consensus forecast when updating their individual forecast.

5.4 Forecast/revision smoothing

The literature has also found evidence of a departure from rational expectations through forecast/revision smoothing in surveys. Nordhaus (1987) posits that forecasters smooth their estimates because a more accurate but erratic forecast would irritate investors who would have to reverse decisions about investment plans too often. He finds evidence of serial correlation of forecast revisions, meaning that current forecast revisions are anchored by previous forecast revisions. Isiklar, Lahiri, and Loungani (2006) find additional evidence of inefficiency (i.e., predictability) in forecast revisions of real GDP growth across 18 countries.

Scotese (1994) argues a similar point, in that if a forecast is subject to large and frequent revisions, it becomes difficult to rely on a current forecast for future actions. For example, the end-user may fear today's forecast for positive growth could be revised next period to predict a modest downturn, which inhibits planning. She finds evidence of smoothing or under-utilization of current info in Federal Reserve staff forecasts of economic growth and inflation. Tillmann (2011) also documents evidence of forecast revision smoothing for individual FOMC members.

From a more theoretical perspective, Ehrbeck and Waldmann (1996) develop a model to show that less-able professional forecasters would rationally choose to change their forecasts by smaller amounts than the changes in their beliefs, since able forecasters do not have to change their forecasts by large amounts as their forecasts are relatively accurate. Peterson (2001) finds evidence of this "rational stubbornness" in Blue Chip surveys for shorter maturities that have relatively higher yield volatility. Deschamps and Ioannidis (2013) confirm similar results across a panel of G7 countries as professional forecasters, on average, underreact to new information. Kirchgässner and Müller (2006) examine surveys of forecasts for Germany's economy and suggest revisions of past forecasts are costly as people may be reluctant to admit mistakes.

Batchelor and Dua (1992), based on Blue Chip surveys, also posit that demand for economic forecasts may be related to factors other than accuracy. Users may mistrust forecasts that are very different from the consensus or forecasts that frequently change. Profit-maximizing forecasters therefore will have to trade off expected accuracy against stability and credibility. The study finds evidence of "conservatism," in which Blue Chip panel members could improve their forecasts if they put less weight on their past forecasts in making revisions regarding short-term interest rates. Jain (2014, 2018) also finds evidence of "conservativism" for U.S. inflation forecasts and in the Survey of Professional Forecasters.¹⁹ Other studies such as Lamont (2002) find that the behavior of forecasts that turn out to be less accurate. Likewise Laster, Bennett, and Geoum (1999) develop a model in which forecasters' wages are based on their accuracy and ability to generate publicity for

¹⁹Underreaction to new information is also documented in Coibion and Gorodnichenko (2015) and Bordalo, Gennaioli, and Shleifer (2018), both in the consensus forecast and individual forecasts for various interest rates using Blue Chip surveys. Dovern, Fritsche, Loungani, and Tamirisa (2015) expand this analysis to 36 countries and finds the degree of information rigidity in average forecasts is substantially higher than in individual forecasts.

their firms, which could lead to extreme forecasts.

Lastly, timing differences and other disparities can make comparisons across surveys difficult. Surveys are only updated relatively infrequently and can become stale almost immediately after publication, making the predictions less able to take into account the most up-to-date information.²⁰ A clear example for this involved the situation surrounding the 2020 global pandemic, in which forecasts taken at a specific point in time quickly became outdated amid fast-moving developments.

6 Conclusion

This chapter has provided an overview of expectational surveys of financial market participants conducted by the official sector and private organizations relating to economic and financial indicators. Surveys can provide a standardized, periodic signal from a predetermined set of informed respondents on a range of forecast variables and other views of interest, and they are often a key input into a range of economic choices such as investment decisions as well as policy actions by fiscal and monetary authorities. Surveys are a useful complement to other sources of information, such as anecdotal views from market participants as well as market-based measures; they can confirm anecdotal views in a more systematic way, and can provide helpful clues about market risk premiums. Practitioners and researchers may benefit from exploring the universe of available surveys and identifying those with useful properties for their aims. Surveys of market participants will continue to evolve over time in response to economic and financial conditions as well as the needs of their audience. For example, the content of surveys is likely to reflect the rise of new asset classes over time, and the link between various economic or policy outcomes and market reactions could be explored further.

However, surveys are not without drawbacks; users of surveys should bear in mind that survey data are potentially subject to various sample and behavioral biases that (to varying degrees) may limit their ability to elicit the true expectations of the market or even of the survey respondents. Nevertheless, surveys are a useful and widely-used tool to gain insight into otherwise-opaque expectations and beliefs about the future.

 $^{^{20}}$ Of course, there are many economic variables which are less volatile and updated infrequently (e.g., GDP, inflation) so staleness is less of a concern.

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