

THE ECONOMIC IMPACT OF RECESSION ANNOUNCEMENTS

Andrew C. Eggers*

Martin Ellison†

Sang Seok Lee§

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Abstract

The convention in the news media is to announce a recession if a country experiences two consecutive quarters of negative growth. We exploit the arbitrary threshold implied by this practice to identify the economic impact of recession announcements through a Regression Discontinuity Design (RDD). Estimation results show that news of a recession leads to a discontinuous fall in consumer confidence, consumption growth and final estimates of GDP growth in a panel of countries. The effect is large, robust and statistically significant.

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*University of Chicago, aeggers@uchicago.edu

†University of Oxford and CEPR, martin.ellison@economics.ox.ac.uk

§Bilkent University, sang.lee@bilkent.edu.tr

1. Introduction

Is the macroeconomy suggestible? That is, can a positive or negative message about the economy affect economic outcomes, independent of actual fundamentals? Keynes (1936)’s invocation of “animal spirits” would suggest so, as would more recent macroeconomic models with multiple equilibria (Howitt and McAfee, 1992; Farmer and Guo, 1994; Benhabib and Farmer, 1999; Farmer, 1999). More straightforwardly, positive or negative information about the economy could have effects if agents observe economic fundamentals imperfectly and change their decisions based on the information they receive. A number of empirical studies have attempted to measure the effect of news media on economic outcomes, but the challenges of credibly measuring these effects are substantial.¹ We cannot run an experiment in which we randomly vary the media messages to which whole economies are exposed, and in empirical data it is difficult to identify comparable contexts in which media messages vary.

We focus on a natural experiment that gives us leverage to assess the effect of economic reporting on economic outcomes. We start from the observation that news media pay considerable attention to a binary distinction between being in recession and not being in recession: by a convention observed in almost every country, a recession is announced when an economy contracts for two consecutive quarters.² In cases where growth is almost indistinguishable from zero, the distinction between being mildly in recession and mildly out of recession becomes highly arbitrary. Nevertheless (as we confirm below), the media treat fundamentally comparable situations quite differently, producing headlines announcing a recession if growth is barely negative for two consecutive quarters but not if growth is even slightly positive. This discontinuous relationship between recession announcements and underlying economic

¹See references in the next section.

²Sims (2003) (at 686-7) provides a rationale for such coarse codings of macroeconomic information and notes that the media is likely to propagate “coding errors” in its attempt to efficiently summarize macroeconomic data.

41 fundamentals offers an unusual opportunity to study the effect of the news media using a re-
42 gression discontinuity design ([Thistlethwaite and Campbell, 1960](#); [Hahn, Todd and Van der](#)
43 [Klaauw, 2001](#); [Imbens and Lemieux, 2008](#)). We find that the announcement of a recession
44 reduces consumer confidence and growth in both private consumption and final GDP, with
45 consumption growth falling by as much as 1 percentage point within the quarter that the
46 recession is announced.³

47 These findings speak most clearly to the question of how the news media affects the
48 economy, but they also relate to the role of information frictions in understanding macroeco-
49 nomic outcomes and the transmission of economic shocks. In recent years, macroeconomists
50 have shown how models incorporating noisy, costly, or delayed information can provide
51 novel accounts of core phenomena such as unemployment, the Phillips curve, and aggregate
52 volatility over the business cycle (e.g. [Akerlof, 2002](#); [Mankiw and Reis, 2002](#); [Sims, 2003](#);
53 [Veldkamp, 2011](#); [De Grauwe, 2011](#); [Maćkowiak and Wiederholt, 2015](#); [Angeletos, Collard](#)
54 [and Dellas, 2018](#); [Kozłowski, Veldkamp and Venkateswaran, 2020](#)). As these approaches
55 gain recognition and traction, it is increasingly important to know which information fric-
56 tions macroeconomists should incorporate in their models ([Coibion and Gorodnichenko,](#)
57 [2012](#)). We contribute to this literature by providing evidence that consumers do not pay full
58 attention to easily available information about economic fundamentals.

59 Although a pure “sunspots” interpretation of our findings may be possible (in which the
60 announcement of a recession reduces confidence and spending simply because agents believe
61 that others will reduce their confidence and spending), it seems likely that the announcement
62 of a recession affects outcomes through an information channel: for agents who are unaware of

³That is, we find lower consumer confidence and lower growth in private consumption and final GDP in quarter t when growth is negative in $t - 2$ and mildly negative in $t - 1$ (leading to a recession being announced in t) than when growth is negative in quarter $t - 2$ and mildly positive in $t - 1$ (when no recession is announced in t).

63 the quarterly growth rates that determine whether the economy is in recession or not, being
 64 mildly in recession and mildly out of recession may appear to be very different states of the
 65 world. We highlight episodes where we *know* that differences in fundamentals cannot explain
 66 deviations in outcomes following different announcements, but these information frictions are
 67 also likely to have implications in a much broader set of circumstances, including those in
 68 which media announcements actually do contain news about economic fundamentals, such
 69 as in [Beaudry and Portier \(2014\)](#). Previous work has suggested that the inattention of
 70 economic agents may help explain the smoothness of consumption in the face of economic
 71 shocks (e.g. [Reis, 2006](#)). Our findings point toward an elaboration of this view in which
 72 the media occasionally offers highly salient public messages that cause coordinated updating
 73 of information; information frictions may have the effect of concentrating volatility around
 74 these public messages.⁴

75 Our work is related to several strands of research investigating the role of information in
 76 the macroeconomy. [Oh and Waldman \(1990\)](#), [Oh and Waldman \(2005\)](#), and [Rodríguez Mora
 77 and Schulstad \(2007\)](#) exploit revisions to macroeconomic statistics to show that forecasting
 78 errors have effects on the real economy, with more positive forecasts spurring greater eco-
 79 nomic activity. Those empirical findings fit with the view that business cycles can be driven
 80 by news about future productivity ([Beaudry and Portier, 2014](#)): positive news causes a boom,
 81 but a bust takes place if that optimism turns out to be unfounded. Like both these strands of
 82 the literature, our results point towards the role of expectations in affecting macroeconomic
 83 outcomes. However, our results depart from both in relying on incomplete information pro-
 84 cessing by economic agents (“sunspot” interpretations aside). Conditional on the economy
 85 experiencing what is essentially zero growth, the announcement of a recession will only affect

⁴[Hansen, McMahon and Tong \(2019\)](#) show that communication by central banks can similarly shape
 perceptions of long-run uncertainty.

86 the expectations of agents if they are unaware of recent growth rates. In that sense, our work
87 is complementary to research showing that investors react to “stale news” (Tetlock, 2011;
88 Gilbert et al., 2012), and that consumers respond to coarsened ratings even conditional on
89 the underlying measures used to generate those ratings (Figlio and Lucas, 2004; Pope et al.,
90 2009). Our analysis suggests that similar behavioral effects are detectable and important at
91 the aggregate macroeconomic level.

92 2. Media effects in the economy

93 We are interested in understanding how economic outcomes depend on what messages news
94 media choose to provide about a given set of economic facts. Why should we expect media
95 messages to affect the real economy? A straightforward answer is that economic agents
96 receive a large proportion of their information about the economy from the media (Blinder
97 and Krueger, 2004), so what the media says naturally shapes perceptions and, in turn,
98 behavior. Because economic agents get their information from the news media and not from
99 official statistical reports, we would expect economic perceptions to depend on whether the
100 news media say the economy is in a recession or not, even if the official statistical reports
101 were essentially the same in the two situations. To the extent that news affects people’s
102 perceptions of their own economic prospects, we may in turn expect it to affect their economic
103 behavior through changes in perceived permanent income or liquidity constraints (Attanasio
104 and Weber, 2010; Carroll, 1992, 1997; Carroll and Samwick, 1998).

105 Another way in which media messages might affect the real economy is through co-
106 ordinating expectations: at least part of the effect of a media report of a recession may
107 operate through agents’ understanding that others are receiving the same information and
108 also changing their behavior. Thus wide-reaching reports may act as a self-fulfilling prophesy

109 by coordinating expectations (e.g. [Azariadis, 1981](#); [Howitt and McAfee, 1992](#); [Farmer and](#)
110 [Guo, 1994](#); [Benhabib and Farmer, 1999](#); [Farmer, 1999](#)).⁵ At an extreme, media announce-
111 ments may affect economic behavior as “sunspots”, even if they are commonly understood
112 to convey no information about actual economic fundamentals ([Duffy and Fisher, 2005](#)).

113 Numerous studies have attempted to measure the economic effects of media reports.
114 [Doms and Morin \(2004\)](#) measure the number of times “recession” is mentioned in news
115 archives and show that their recession index predicts consumer sentiment, controlling for
116 contemporary economic conditions. Several studies in political science similarly measure the
117 mood of news coverage over a given period and look at the extent to which the nature of
118 news coverage predicts voters’ assessments of the economy and ultimately their support for
119 incumbent politicians (e.g. [MacKuen, Erikson and Stimson, 1992](#); [Blood and Phillips, 1995](#);
120 [Nadeau et al., 1999](#); [De Boef and Kellstedt, 2004](#); [Soroka, 2006](#)). [Starr \(2012\)](#) finds that the
121 degree to which consumers report having heard unfavorable news (controlling for actual eco-
122 nomic conditions) predicts aggregate measures of sentiment, spending, and unemployment.
123 While all of these studies offer suggestive evidence of a role for media in shaping perceptions
124 and behavior, it is difficult to rule out the possibility that the models they employ suffer from
125 omitted variable bias: perhaps these models find an independent effect of media because the
126 media is reporting important features of economic reality that have been improperly omitted
127 from the set of control variables.

⁵These models typically feature strong strategic complementarities (e.g. consumers rationally spend less when other consumers are spending less) such that agents’ behavior depends strongly on the signals they receive ([Morris and Shin, 2003](#)).

128 3. A Regression Discontinuity Design

129 Our investigation exploits the role of the media in providing coarsened summaries of economic
130 statistics (Sims, 2003; Nimark, 2014). In choosing how to report newly-released information
131 on topics such as unemployment, growth or inflation, editorial staff must decide whether to
132 convert continuous economic information into discrete outputs. Should we report the official
133 statistic? Should we call it “reassuring” or “worrying”? In most cases these choices are
134 made in idiosyncratic and uncoordinated ways (though sometimes they reflect political bias,
135 as shown by Larcinese, Puglisi and Snyder (2011)), but we focus on a particular context in
136 which almost all media outlets follow the same rule to convert information into a discrete and
137 salient output: the mapping from continuous data on economic growth to the announcement
138 of a recession. According to a widely-followed convention, a recession is defined as occurring
139 when GDP contracts for two consecutive quarters. In situations where growth is almost
140 indistinguishable from zero, we may therefore have occasions when the media announce a
141 recession and occasions when they do not, despite underlying economic conditions essentially
142 being the same. This is the exogenous variation in media messages on which we focus, using
143 a regression discontinuity design.

144 The convention of equating a recession with two quarters of negative growth can be
145 traced back to Arthur Okun, who reportedly introduced this definition when he was economic
146 adviser to President Lyndon Johnson.⁶ Okun’s heuristic was quickly adopted by the global
147 financial press. In 1970 the *Financial Times* referred to it as “the official definition” of

⁶Okun reportedly realized that the Council of Economic Advisers could deny that a recession was taking place if it adopted the now-conventional definition of recession, thus protecting President Johnson from criticism for economic mismanagement (Jon Swaine, “Definition of a recession ‘drawn up on back of an envelope’”, *The Telegraph*, Dec. 23, 2008). See also Edward Cowan, “Recession By Any Other Name Is Still Bad Times”, *The New York Times*, Dec. 24, 1978, pg. 4E, which also credits Okun but quotes him as saying that he developed the two-quarter definition as an “empirical characterization rather than a definition.”

recession;⁷ by 1980 it was “the classical definition.”⁸ In the U.S. the National Bureau of Economic Research (NBER) is now accepted as the arbiter of business cycle dating, but even there the media tend to announce a recession when there are two quarters of negative growth. When the NBER eventually makes a judgment about recessions, it typically aligns closely with the conventional definition. In the rest of the world, two quarters of negative growth has become the standard definition employed by journalists and even government officials, as indicated by our systematic review of business cycle reporting in 17 countries.⁹

A recession is announced under the conventional definition if an economy contracts for two consecutive quarters. Growth figures are only compiled after the quarter has ended, so the recession signal R_t in quarter t depends on GDP growth rates Δy_{t-1} and Δy_{t-2} in periods $t - 1$ and $t - 2$:

$$R_t = \begin{cases} 1 & \text{if } \Delta y_{t-1} < 0 \text{ and } \Delta y_{t-2} < 0, \\ 0 & \text{otherwise.} \end{cases} \quad (1)$$

The announcement of a recession thus depends on two discontinuities, any combination of which could in principle serve as the basis for a Regression Discontinuity Design. We concentrate the method’s statistical power on recession announcements and non-announcements in the neighborhood of the first discontinuity, i.e., quarters in which growth two quarters ago was negative and growth one quarter ago was close to zero. The running variable is hence Δy_{t-1} and the treatment is R_t , with the sample restricted to quarters in which $\Delta y_{t-2} < 0$.

⁷“A U.S. mini-recession”, *Financial Times*, Jan. 21, 1970.

⁸“U.S. economy grows by 1.1%”, *Financial Times*, April 19, 1980, page 2.

⁹For recent examples of government agencies recognizing the two-quarters rule, see (for the U.K.) “[Glossary of Treasury Terms](#)”, HM Treasury 2010 and “[Why does economic growth matter?](#)”, Bank of England KnowledgeBank 2020; (for Finland) [Economic Survey](#), Ministry of Finance 2019; (for Sweden) [Economic Indicators](#), Statistics Sweden 2020; (for Europe) “[European Economic Forecast Summer 2020 \(Interim\)](#)”, European Commission.

165 This provides a clean identification of the treatment effect. Since agents are apt to associate
 166 a recession announcement with current economic conditions, the more recent the ambiguity
 167 the more suggestible they are likely to be.¹⁰

168 The effect of announcing a recession is estimated by the average effect of the treatment
 169 conditional on $\Delta y_{t-1} = 0$. For a given outcome Y_t it is:

$$\tau = \lim_{\Delta y_{t-1} \uparrow 0} \mathbb{E}[Y_t | \Delta y_{t-1} = 0] - \lim_{\Delta y_{t-1} \downarrow 0} \mathbb{E}[Y_t | \Delta y_{t-1} = 0],$$

170 which is the average treatment effect at $\Delta y_{t-1} = 0$.

171 4. Data

172 The first announcement of a recession is typically based on preliminary or flash estimates of
 173 GDP growth. In measuring the running variable for the Regression Discontinuity Design, it is
 174 therefore important to work with the initial, unrevised data. We obtained these by collating
 175 real time estimates of GDP growth from multiple sources, and used them to construct the
 176 running variables throughout our analysis. Flash estimates contain noise that may lead to
 177 erroneous announcement or non-announcement of a recession, which works in our favor by
 178 injecting an additional source of randomness into the allocation of quarters to the treatment.
 179 This is especially pertinent when the true growth rate in the previous quarter is close to zero,
 180 since then even small amounts of noise may force the preliminary growth rate above or below
 181 zero, in which case whether a recession is announced or not becomes largely random.¹¹ It is

¹⁰Our results are qualitatively robust to alternative identifications based on the second discontinuity, or some combination of the two.

¹¹In the U.K., a recession was announced in April 2012 based on preliminary GDP estimates that showed slightly negative growth in 2011q4 and 2012q1. Over a year later, the announcement was overturned when revised figures became available. See Julia Kollewe, “UK Sinks Into Double-Dip Recession”, *The Guardian*,

an advantage of our regression discontinuity design that a noisy running variable sharpens identification just where it is needed, in the neighborhood of the discontinuity.

The *OECD Revisions Analysis Dataset* provides us with real time monthly estimates of quarterly GDP growth for member and non-member countries from 1999q1 onwards. We use their constant price measure, adjusted for seasonality and the number of working days in the quarter. In general, we take the earliest estimate of $t - 1$ growth in each country and the best estimate of $t - 2$ growth that was available at the time. This means we typically use the first preliminary estimate of growth last quarter and the first revised estimate of growth two quarters ago. The last data in our sample is for 2019q2, except for the series for India and Russia which end in 2014q4 and 2016q1 respectively. Preliminary estimates of GDP growth from before 1999 are derived from a variety of references. The most systematic is the *Real-Time Historical Dataset for the OECD*, maintained by the Federal Reserve Bank of Dallas. Where appropriate, we further supplement our data with preliminary GDP estimates published by each country’s relevant authority and (as a last resort) growth rates appearing in *The Economist* magazine’s tables of “Output, Demand, and Jobs”. In each case we prioritize the earliest available data releases and revisions.¹²

Table 1 lists the first quarter of real time data available for each country and the total number of quarters each country is in recession. We also detail the number of quarters that were mildly in recession or mildly out of recession, the former defined by $-0.5 \leq \Delta y_{t-1} < 0$ and $\Delta y_{t-2} < 0$ and the latter by $0 \leq \Delta y_{t-1} < 0.5$ and $\Delta y_{t-2} < 0$. Quarters that were mildly in recession or mildly out of recession are what gives our regression discontinuity design statistical power, by identifying the effect of the treatment in the neighborhood of the discontinuity. The economy is only narrowly judged as being in recession when mildly

25 April 2012, and Phillip Inman, “UK avoided double-dip recession in 2011, revised official data shows”, *The Guardian*, 27 June 2013.

¹²The construction of our real time dataset is described in Appendix A.

205 in recession, whereas it only narrowly avoids recession when mildly out of recession.

206 Our Regression Discontinuity Design identifies the effect of recession announcements
 207 when there was a contraction in GDP two quarters ago and GDP growth in the previous
 208 quarter was close to zero. This may sound an unusual circumstance, but Table 1 shows that
 209 it is quite common, occurring on nearly half the occasions when recessions were announced.¹³
 210 Panel A of Figure 1 illustrates the shape of the recessions identified in our sample, by plotting
 211 GDP growth \pm 8 quarters from the announcement of the recession. For comparison, Panel
 212 B presents the corresponding plot for other recessions that were not in our sample, i.e.,
 213 those that were not mild because GDP fell by more than 0.5% in the previous quarter. The
 214 dynamics when mildly in recession are not surprisingly less pronounced than those in the
 215 other recessions we omitted, but the departures are not striking and it is not obvious that
 216 our observations are systematically different. The dynamics when mildly in recession are
 217 also similar to those when mildly out of recession, as seen in Panel C.

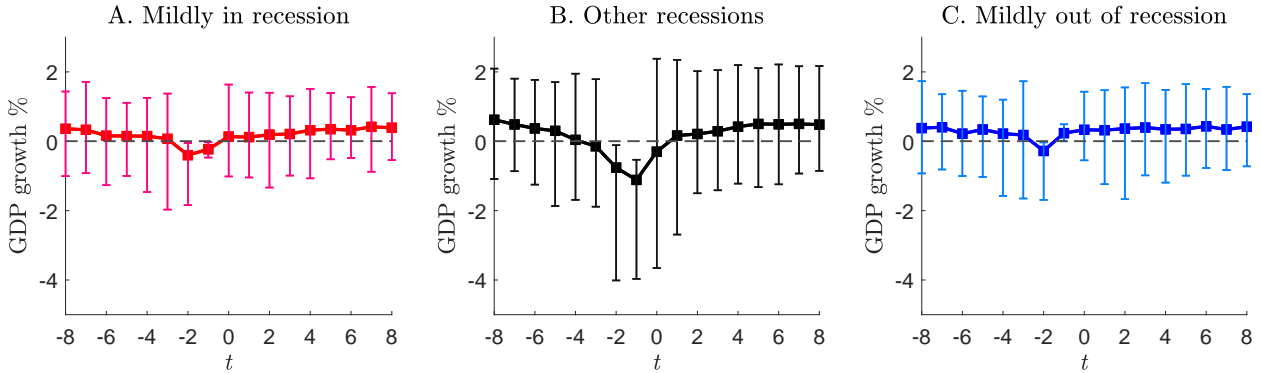


Figure 1: GDP growth dynamics around recession announcements

NOTE: The quarter of interest is $t = 0$, when a recession announcement is made on the basis of preliminary GDP growth estimates for $t = -1$ and $t = -2$. Confidence bands are 90%. Panel A is for GDP growth dynamics around announcements occurring when mildly in recession. Panel B is the same when the recession was not mild because GDP growth in the previous quarter was below 0.5%. Panel C is for GDP growth dynamics when no announcement was made because the economy was mildly out of recession.

¹³It is very common in high income countries but hardly ever happens in developing countries.

Country	First quarter of data	Number of quarters	Quarters in recession	Quarters mildly in recession	Quarters mildly out of recession
Australia	1984q3	120	3	2	4
Austria	2004q1	61	2	1	1
Belgium	1999q4	78	3	2	5
Brazil	1999q1	73	10	2	4
Canada	1983q2	139	6	2	5
Chile	2010q2	28	0	0	3
Czech Republic	2003q4	60	7	4	1
Denmark	1998q1	77	6	3	7
Estonia	2008q1	38	4	0	0
Finland	1999q4	67	8	3	3
France	1983q4	130	4	2	12
Germany	1991q2	111	14	8	8
Greece	2009q1	30	9	2	5
Hungary	2005q3	53	7	3	0
Iceland	2007q2	43	6	1	0
India	1999q1	50	0	0	0
Indonesia	1999q1	80	1	0	0
Ireland	2005q1	58	6	3	5
Israel	2010q3	36	0	0	0
Italy	1996q4	82	19	11	7
Japan	1983q2	134	17	7	6
Korea	1999q1	75	1	0	2
Luxembourg	2007q2	48	4	1	0
Mexico	2006q4	49	2	0	1
Netherlands	1991q4	108	14	9	6
New Zealand	1999q4	77	4	0	2
Norway	1999q3	72	4	1	6
Poland	2007q1	48	0	0	0
Portugal	2001q1	71	11	4	7
Russia	2011q1	21	4	1	1
Slovakia	2005q4	53	0	0	0
Slovenia	2005q2	53	1	0	4
South Africa	1999q1	76	3	2	5
Spain	1994q1	96	11	6	3
Sweden	2007q1	50	5	2	2
Switzerland	1989q4	104	15	12	8
Turkey	2007q2	48	5	0	1
UK	1990q2	115	10	3	4
USA	1970q3	195	11	4	4
Total		2,907	237	101	132

Table 1: Descriptive statistics by country

NOTE: ‘Quarters in recession’ is the number of quarters for which GDP growth in the previous two quarters is negative; ‘Quarters mildly in recession’ is the number of quarters for which GDP growth two quarters ago was negative and GDP growth in the previous quarter was negative but no less than -0.5%; ‘Quarters mildly out of recession’ is the number of quarters for which GDP growth two quarters ago was negative and GDP growth in the previous quarter was non-negative but no more than 0.5%.

218 The real time estimates of GDP growth determine whether or not an economy is in
219 recession, but if we are interested in the effect of a recession announcement on the economy
220 then we need to also collect final estimates of GDP growth and other indicators. These
221 are available for each country from the OECD. We match our real time GDP dataset to
222 final data on GDP growth, consumer confidence, business confidence, private consumption,
223 business investment, government spending, and imports.

224 There is no readily-procurable database that can be used to analyze the response of news
225 media to an economy experiencing two quarters of negative growth. We therefore constructed
226 our own by surveying the media in 14 countries (Australia, Austria, Belgium, Canada,
227 Denmark, France, Germany, Italy, Japan, Mexico, Spain, Switzerland, U.K., U.S.). We
228 instructed research assistants to determine whether a reader of a country’s major newspapers
229 would conclude that the country was definitely or possibly in recession each quarter.¹⁴ The
230 research assistants were instructed to focus on announcements of recession that appeared in
231 headlines and front-page articles. Our survey of news coverage runs from 1990q1 to 2013q2,
232 covering the majority of quarters that were mildly in recession and mildly out of recession
233 in Table 1.

234 5. Assessing validity

235 The validity of our identification strategy rests on the announcement of a recession being
236 random when growth is close to zero in the previous quarter and negative two quarters ago.
237 This could be undermined if preliminary data releases are systematically manipulated to
238 avoid the government or statistical authority having to announce a recession. If data is being

¹⁴The research assistants were native speakers (or nearly so) of the major language of each country they were assigned to.

manipulated in this way then that should be reflected in the distribution of preliminary GDP growth rates; we would expect to see biases that lead to the announcement of a recession not being random when growth is close to zero in the previous period and negative two quarters ago. This is something we can test statistically, using multiple approaches. In what follows, we find no statistical evidence that preliminary data releases are systematically manipulated to avoid the economic and political costs of announcing a recession. We conclude that our regression discontinuity design is a valid strategy for identification.

The first approach to detecting manipulation of real time data is based on the local polynomial density estimator of [Cattaneo, Jansson and Ma \(2020\)](#).¹⁵ If data is being manipulated to avoid the announcement of a recession then the distribution of the running variable (growth in the previous quarter when growth two quarters ago was negative) will be discontinuous at zero. There will be significantly greater probability mass on the positive than the negative side of the discontinuity, as the government or statistical authority manipulates slightly negative preliminary estimates of GDP growth to make them positive and avoid the announcement of a recession. This is investigated in the left panel of Figure 3, which shows the density of the running variable estimated from real time data. There is significant overlap between the 95% confidence intervals on the positive and negative side of zero, and the null hypothesis of no discontinuity cannot be rejected at the p-value of 0.56. The estimates also pass a more powerful test where the null hypothesis of no discontinuity applies not only to the density but also its higher order derivatives (the p-value is 0.86). There is hence no evidence of manipulation in the density estimates.

A second check for randomness in the allocation of treatment around the discontinuity is the finite sample exact binomial test of [Cattaneo, Titiunik and Vazquez-Bare \(2017\)](#). In our

¹⁵[Cattaneo, Titiunik and Vazquez-Bare \(2020\)](#) is a useful survey of the Regression Discontinuity Design literature.

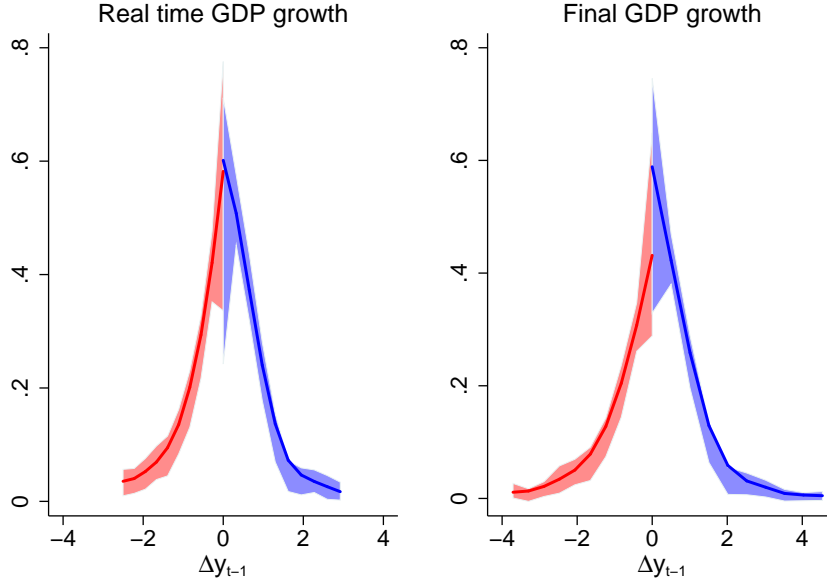


Figure 2: Distribution of running variable defined by real time and final data

NOTE: The running variable R_t is Δy_{t-1} for all quarters in which $\Delta y_{t-2} < 0$. The left panel shows the density of the running variable when it is defined according to real time GDP growth data. The right panel shows the density when it is defined using final GDP growth estimates. Confidence bands are 95%.

environment, the idea is that manipulation of real time data would lead to the number of
quarters when the economy was mildly in recession (in recession but growth in the previous
period was only mildly negative) being significantly higher than the number of quarters
when the economy was mildly out of recession (not in recession but growth in the previous
period was only mildly positive). The null hypothesis is that quarters in the neighborhood
of the discontinuity are allocated to treatment as draws from random Bernoulli trials with
probability 0.5, in which case the number of quarters mildly in recession and mildly out
of recession should be similar. The left columns of Table 2 show the number of quarters
in each category for different windows $-h < \Delta y_{t-1} < h$ around the discontinuity. There
is consistency between the number of quarters mildly in and mildly out of recession in all
cases. The null hypothesis of equal Bernoulli probability cannot be rejected with p-values in
the range 0.32-1.00, suggesting that manipulation is not a problem for identification in our

274 data.

h	Real time GDP growth			Final GDP growth		
	Number of quarters mildly in recession	Number of quarters mildly out of recession	p-value	Number of quarters mildly in recession	Number of quarters mildly out of recession	p-value
0.05	10	10	1.00	8	12	0.50
0.10	26	23	0.78	20	20	1.00
0.15	36	35	1.00	27	31	0.69
0.20	46	43	0.83	37	38	1.00
0.25	66	54	0.32	49	43	0.60
0.30	77	72	0.74	60	49	0.34
0.35	89	80	0.54	69	61	0.54
0.40	100	85	0.30	78	66	0.36

Table 2: Binomial tests of no manipulation in allocation to treatment around discontinuity

275 Our third and final check for manipulation involves comparing the number of recessions
276 announced on the basis of preliminary estimates of GDP growth to those subsequently con-
277 firmed by the final estimates. Since the degree of uncertainty around preliminary releases
278 is larger, they may be easier to manipulate and we might expect a lower number of reces-
279 sion quarters to be announced from preliminary than final estimates. It may also be less
280 economically and politically costly to announce a recession based on final estimates, since
281 those decisions relate more clearly to the past and any news in the announcement has less
282 immediacy. The right panel of Figure 3 shows the local polynomial density estimate when
283 the running variable is calculated according to final rather than preliminary GDP growth.
284 There is less probability mass on the left side of zero in the density estimated from the final
285 estimates. We therefore conclude that preliminary data leads to the identification of more
286 quarters in which a recession is announced, although with a p-value of 0.97 the difference is
287 not statistically significant. If anything, there are too many recessions relative to the final

288 data and there is no basis to claim that the real time data has been manipulated. We note
 289 also that the density estimated from the final data passes the test for no discontinuity at
 290 zero (with p-value 0.65 for the basic test and 0.39 for the more powerful test), and passes
 291 the test for randomness in allocation of treatment around the discontinuity (with p-values
 292 in the range 0.34-1.00, see the right columns of Table 2). We deduce that the data appears
 293 robustly regular, with no detectable sign of manipulation.

294 6. Results

295 We estimate the impact of recession announcements using the sharp Regression Discontinu-
 296 ity Design (RDD) methods of Calonico et al. (2019) and Calonico, Cattaneo and Titiunik
 297 (2014), which come with optimal bandwidth selectors and robust bias-corrected inference.
 298 Of interest is the reaction of news media, consumer and business confidence, and macroe-
 299 conomic outcomes (growth in GDP, consumption, investment, government purchases and
 300 imports) to the release of data indicating two consecutive quarters of negative GDP growth.

301 6.1. Media effects

302 The RDD estimates for media effects are shown in Figure 4. The left panel plots the proba-
 303 bility that our research assistants determined a country was definitely in recession in quarter
 304 t , as a function of the running variable Δy_{t-1} in the sample with $\Delta y_{t-2} < 0$. The dots
 305 indicate the proportion of observations across countries and time that were definitely judged
 306 to be in recession for intervals of the running variable. The lines show linear regressions
 307 on each side of the vertical line at zero. The right panel presents the RDD estimate of the
 308 effect on the media of two consecutive quarters of negative growth, measured by the gap in

the left panel between local linear regression lines at the zero vertical line. This is τ from Section 3, the average effect of the treatment conditional on $\Delta y_{t-1} = 0$. The right panel also includes 95% bias-corrected confidence intervals, with the estimate under the optimal bandwidth marked by a black dot and dotted line.

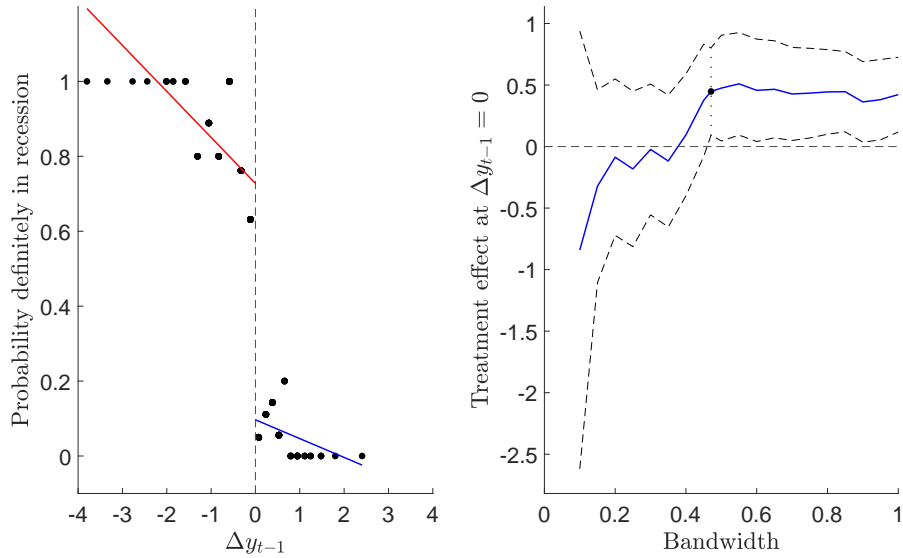


Figure 3: Media effects

NOTE: The left panel is the probability of definitely being in recession reported by our research assistants, plotted as a function of GDP growth Δy_{t-1} in the previous quarter. The right panel is the treatment effect at $\Delta y_{t-1} = 0$ as a function of the bandwidth of the local linear regressions. The black dot is the estimate at the optimal bandwidth and confidence bands are 95%. The sample is quarters with $\Delta y_{t-2} < 0$.

The left panel of Figure 4 indicates that our research assistants almost always gave the answer we would expect when the economy was either deeply in recession or comfortably out of recession. In closer calls there is more ambiguity, but clear evidence remains that news media react strongly to real time data releases that indicate recession according to the conventional definition. There is a 62.5% probability that our research assistants reported a country was definitely in recession when the running variable is immediately to the left of $\Delta y_{t-1} = 0$, whereas immediately to the right the probability they make this judgment is only

5.0%. The estimated probability our research assistants would conclude that the country is in recession jumps by more than 0.5 when the real time estimate of GDP growth in the previous period crosses the arbitrary threshold of zero needed for the announcement of a recession. In the right panel of Figure 4 the discontinuity is significant at the 95% level, confirming that news media do react to preliminary data releases that are almost indistinguishable from zero.

Outcome	Estimates		Bandwidth	N
Definitely in recession	0.504 *** (0.156)	0.645 *** (0.139)	0.471	194
Possibly in recession	0.601 *** (0.119)	0.714 *** (0.132)	0.558	194
Country fixed effects	✓			

Table 3: RDD results for media effects

NOTE: Robust standard errors in parentheses: * $0.05 < p \leq 0.1$, ** $0.01 < p \leq 0.05$, and *** $p \leq 0.01$.

Table 3 reports RDD estimates of τ for the media effect at $\Delta y_{t-1} = 0$. The first row shows that the statistically significant treatment effect in Figure 4 is robust to controlling for country fixed effects. Estimates of τ barely move and remain highly significant, even when controls are introduced. The second row replicates the analysis using the judgment of our research assistants as to whether the country was possibly in recession, rather than definitely in recession. A similar pattern emerges, with estimates that are large and statistically significant.¹⁶ Across various specifications, we find that news media are very likely to announce a recession after two consecutive quarters of negative growth, even if the negative growth in the previous quarter is almost indistinguishable from zero. A reader of a country's newspapers would conclude that the country is in recession, irrespective of how marginal was the announcement call.

¹⁶As a further robustness check, Appendix B reports additional results in which the local linear regression on each side of the discontinuity is augmented by a quadratic term. In all cases the estimates of τ continue to be highly significant.

337 6.2. Confidence effects

338 Figure 5 shows RDD estimates for the confidence effects of fulfilling the conditions for the
 339 announcement of a recession under the conventional definition. Panel A is for an indicator
 340 of consumer confidence, which measures the expectations of households with regard to their
 341 own situation and general economic conditions over the coming year. Panel B is for a
 342 corresponding indicator of business confidence, which summarizes the views of manufacturers
 343 about stocks of finished goods, order levels, and production over the next three months.¹⁷

344 The RDD plot for consumer confidence indicates a discontinuity at $\Delta y_{t-1} = 0$. Cross-
 345 ing the threshold that triggers the news media to announce a recession reduces consumer
 346 confidence by an average of almost one percentage point, a reaction that is statistically sig-
 347 nificant and substantively large. In Table 4 the effect is robust to controlling for country
 348 fixed effects. The evidence for a discontinuity in the RDD plot for business confidence is less
 349 clear. Whilst the dots and the linear regression lines suggest that crossing the threshold also
 350 reduces business confidence, the estimates in Table 4 are less than half those of consumer
 351 confidence and the reaction is only significant when controlling for country fixed effects.

Outcome	Estimates		Bandwidth	N
Consumer confidence	-0.993 *** (0.306)	-0.977 *** (0.286)	0.543	424
Business confidence	-0.358 (0.255)	-0.906 *** (0.243)	0.674	464
Country fixed effects	✓			

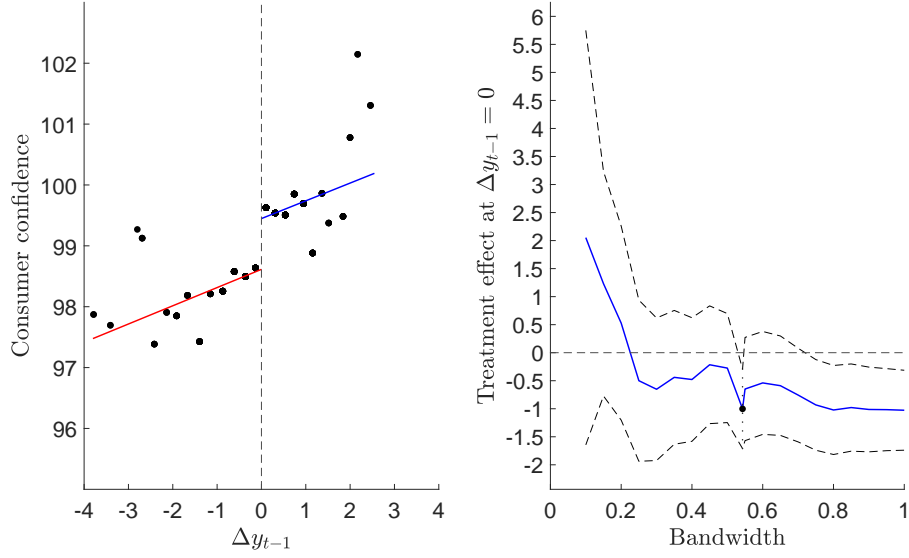
Table 4: RDD results for confidence

NOTE: Robust standard errors in parentheses: * $0.05 < p \leq 0.1$, ** $0.01 < p \leq 0.05$, and *** $p \leq 0.01$.

352 The weaker response of business confidence is somewhat surprising given that, while
 353 businesses may not react themselves to news of a recession, they should be aware that

¹⁷The measures of consumer and business confidence are harmonized by the OECD from initial data compiled by national statistical agencies and private organizations.

A. Consumer confidence



B. Business confidence

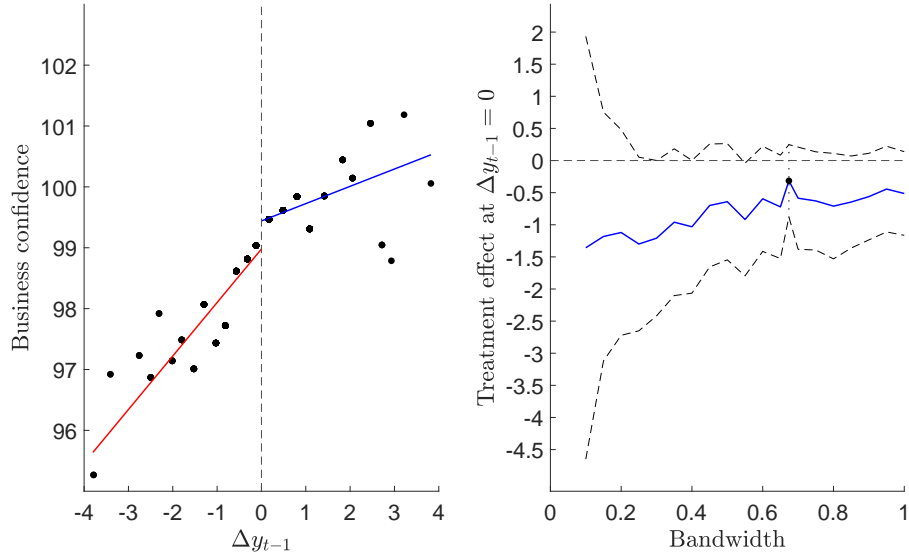


Figure 4: Confidence effects

NOTE: The left panels are consumer and business confidence, plotted as a function of GDP growth Δy_{t-1} in the previous quarter. The right panels are the treatment effect at $\Delta y_{t-1} = 0$ as a function of the bandwidth of the local linear regressions. The black dot is the estimate at the optimal bandwidth and confidence bands are 95%. The sample is quarters with $\Delta y_{t-2} < 0$.

354 consumers do. One possible explanation relating to the older data is provided by [Santero](#)
355 [and Westerlund \(1996\)](#), who conclude that “consumer confidence indicators are much less
356 useful than business confidence indicators for economic analysis due to their much looser
357 relationship with output movements.” If that continues to hold then it is less remarkable
358 that business confidence does not react even though consumer confidence does.

359 **6.3. Economic effects**

360 We now turn to assessing whether fulfilling the conditions for the announcement of a re-
361 cession has a disproportionate effect on the growth rate of final GDP. This economic effect
362 is presented in Figure 6, which mirrors the format of previous figures in plotting the final
363 estimate for the growth rate of GDP as a function of the real time estimate of GDP growth
364 in the previous quarter.¹⁸

365 The RDD estimates for final GDP growth are in the first row of Table 5. They exhibit
366 a marked discontinuity at $\Delta y_{t-1} = 0$, and are significant at the 1% level in both the linear
367 and locally-quadratic specifications.¹⁹ The results point to the announcement of a recession
368 leading to a discrete fall in the growth rate of final GDP. The estimated drop at the threshold
369 is 62 basis points, a magnitude of substantive importance.

370 The RDD estimates for the different components of GDP are in Figure 7. The visual
371 evidence in Panel A points to a discontinuity in consumption growth at $\Delta y_{t-1} = 0$. Im-
372 mediately to the right of the vertical line at zero it is 0.48%, whereas immediately to the
373 left it is 0.16%. The second row in Table 5 confirms that the discontinuity is statistically
374 significant at the 10% level, although it is not robust to controlling for country fixed ef-

¹⁸The sample is again restricted to quarters for which $\Delta y_{t-2} < 0$, so as before $\Delta y_{t-1} < 0$ is the condition for the announcement of a recession under the conventional definition.

¹⁹See Appendix B for estimates in the locally-quadratic specification.

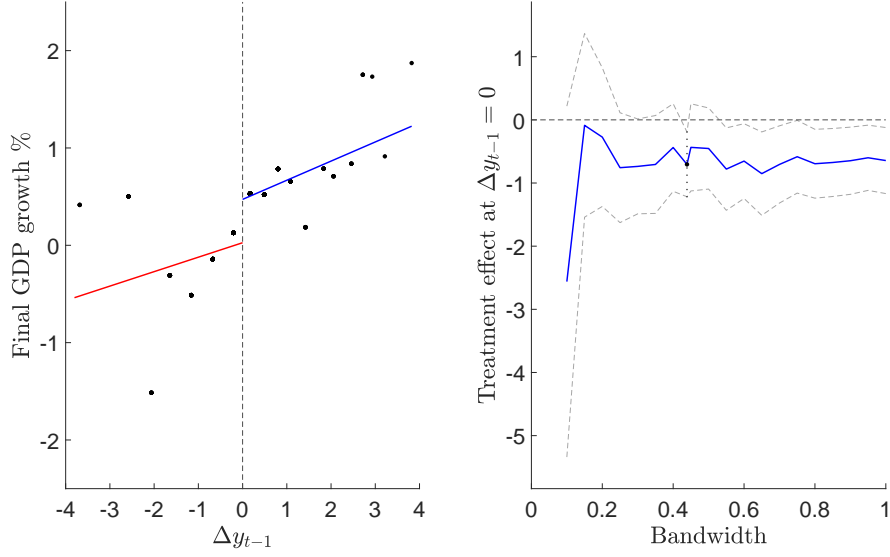


Figure 5: Economic effect on final GDP growth

NOTE: The left panel is final GDP growth Δy_t in the current quarter, plotted as a function of the real time estimate of GDP growth Δy_{t-1} in the previous quarter. The right panel is the treatment effect at $\Delta y_{t-1} = 0$ as a function of the bandwidth of the local linear regressions. The black dot is the estimate at the optimal bandwidth and confidence bands are 95%. The sample is quarters with $\Delta y_{t-2} < 0$.

fects.²⁰ We therefore argue that fulfilling the conditions for the announcement of a recession has a disproportionate effect on private consumption growth. There is a downward jump in consumption growth as the economy crosses the threshold from left to right, from mildly in recession to mildly out of not a recession.

By contrast, we find no evidence of discontinuities in the remaining panels of Figure 7, where visual inspection suggests that growth in investment, government spending and imports are all continuous at $\Delta y_{t-1} = 0$. The hypothesis of no discontinuity cannot be rejected for the remaining components of GDP growth in Table 5.²¹ The null result for investment is consistent with businesses facing substantial investment adjustment costs, which make

²⁰The statistical significance is at the 1% level in the local-quadratic estimation results, see Appendix B.

²¹We also find no evidence of discontinuity in the local-quadratic estimates in Appendix B.

Outcome	Estimates		Bandwidth	N
Final GDP growth	-0.620 *** (0.237)	-0.647 *** (0.219)	0.439	471
Consumption growth	-0.325 * (0.214)	-0.210 (0.185)	0.426	471
Investment growth	0.260 (0.686)	0.107 (0.616)	0.645	471
Government spending growth	0.052 (0.263)	-0.199 (0.285)	0.480	471
Import growth	-0.619 (0.787)	-0.659 (0.721)	0.456	471
Country fixed effects	✓			

Table 5: RDD results for economic effects

NOTE: Robust standard errors in parentheses: * $0.05 < p \leq 0.1$, ** $0.01 < p \leq 0.05$, and *** $p \leq 0.01$.

them unwilling to scale down their investment plans immediately in the quarter a recession is announced.²² The absence of discontinuities in the within-quarter reaction of government spending and import growth is similarly unsurprising, since both are likely to be subject to lagged adjustment.

6.4. Placebo treatment effects

The credibility of our results is enhanced by falsification tests. We investigate the behavior of consumer confidence, consumption growth and final GDP growth at thresholds other than zero, in the expectation that we will only find evidence of a statistically significant discontinuity when the running variable crosses zero. Figure 8 provides corroborating evidence for these placebo treatment effects. In all three cases, it is only at zero that the discontinuity is statistically significant and of the correct sign, i.e., a reduction in the real time estimate of GDP growth in the previous quarter is associated with a downwards jump in consumer

²²There is tentative RDD evidence that recession announcements affect investment growth with a lag of three quarters, consistent with the presence of adjustment costs.

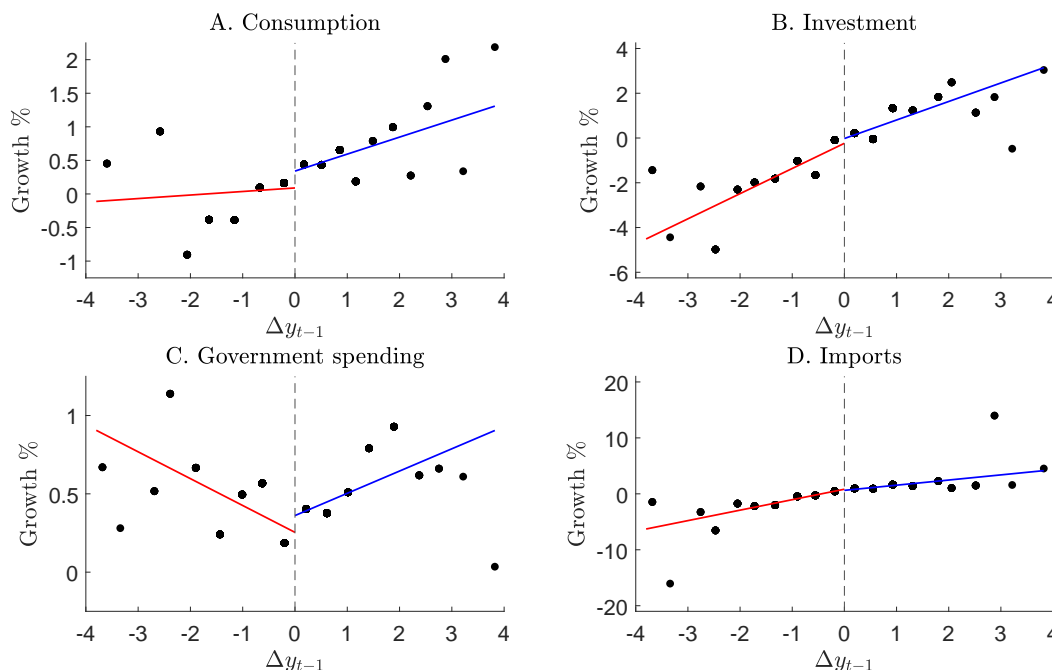


Figure 6: Economic effects on the growth rate of GDP components

NOTE: Each panel shows percentage growth in a component of GDP in the current quarter, plotted as a function of the real time estimate of GDP growth Δy_{t-1} in the previous quarter. The sample is quarters with $\Delta y_{t-2} < 0$.

confidence, consumption growth or final GDP growth. The point estimate is the most negative at zero for consumer confidence and final GDP growth. For consumption growth it is the 4th most negative at zero.

7. Conclusion

This paper has exploited the arbitrariness of the conventional definition of a recession to show that the mere announcement of a recession has a significant and meaningful impact on consumer confidence, consumption growth and final estimates of GDP growth in a large set of countries. We found that newspapers report a recession after two consecutive periods

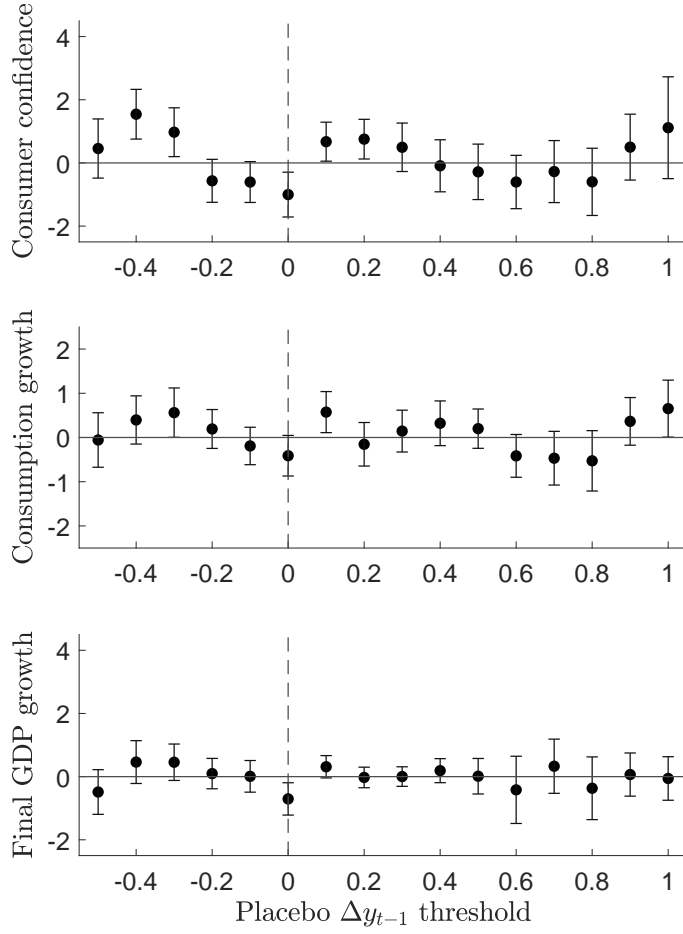


Figure 7: Placebo treatment effects

NOTE: The zero cut off for the announcement of a recession is indicated by a vertical dashed line. Confidence bands are 95%.

404 of negative growth, and used this feature of business cycle reporting to argue that recession
405 announcements reduce final estimates of GDP growth discontinuously, through a downwards
406 jump in consumer confidence and consumption growth.

407 Our findings suggest that consumers have sizable information imperfections. This may
408 also have implications for macroeconomic volatility, for example in [Mankiw and Reis \(2010\)](#)
409 where departures from full information lead to muted reactions of consumption that can
410 explain the “excess smoothness puzzle” ([Deaton, 1987](#); [Campbell and Deaton, 1989](#)). In
411 our case, imperfect information intensifies macroeconomic volatility when growth is close to
412 zero: if information is imperfect then news of a recession may trigger a coordinated revision
413 of expectations and a resulting swing in output. This may also be true for other large,
414 attention-grabbing events that could affect economic fundamentals, such as a stock market
415 crash, a political crisis, or a terrorist attack.

416 Although we are the first to quantify the effects of recession announcements, others have
417 apparently suspected that the R-word has the power to affect the economy. Most famously,
418 U.S. President Jimmy Carter’s advisers once criticized Alfred Kahn, one of his economic
419 advisers, for publicly using the word “recession” in discussing the economic outlook; Kahn
420 responded by promising to replace the word “recession” with “banana” in subsequent press
421 conferences.²³ Our results indicate that the Carter administration’s sensitivity was well-
422 founded, not just because of possible political consequences but also because of real impacts
423 on the economy.

²³William Safire, “The Meaning of Depression,” *The New York Times*, April 11, 1982, page 9 of magazine section.

References

- Akerlof, George A. 2002. "Behavioral macroeconomics and macroeconomic behavior." *American Economic Review* 92(3):411–433.
- Angeletos, George-Marios, Fabrice Collard and Harris Dellas. 2018. "Quantifying Confidence." *Econometrica* 86(5):1689–1726.
- Attanasio, Orazio P. and Guglielmo Weber. 2010. "Consumption and Saving: Models of Intertemporal Allocation and Their Implications for Public Policy." *Journal of Economic Literature* pp. 693–751.
- Azariadis, Costas. 1981. "Self-fulfilling prophecies." *Journal of Economic Theory* 25(3):380–396.
- Beaudry, Paul and Franck Portier. 2014. "News-Driven Business Cycles: Insights and Challenges." *Journal of Economic Literature* 52(4):993–1074.
- Benhabib, Jess and Roger E. A. Farmer. 1999. "Indeterminacy and sunspots in macroeconomics." *Handbook of Macroeconomics* 1:387–448.
- Blinder, Alan S. and Alan B. Krueger. 2004. "What Does the Public Know about Economic Policy, and How Does It Know It?" *Brookings Papers on Economic Activity* pp. 327–387.
- Blood, Deborah J. and Peter C. B. Phillips. 1995. "Recession headline news, consumer sentiment, the state of the economy and presidential popularity: A time series analysis 1989–1993." *International Journal of Public Opinion Research* 7(1):2–22.
- Calonico, Sebastian, Matias D. Cattaneo, Max H. Farrell and Rocío Titiunik. 2019. "Regression Discontinuity Designs Using Covariates." *Review of Economics and Statistics* 101(3):442–451.
- Calonico, Sebastian, Matias D. Cattaneo and Rocío Titiunik. 2014. "Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs." *Econometrica* 82(6):2295–2326.
- Campbell, John and Angus Deaton. 1989. "Why is consumption so smooth?" *The Review of Economic Studies* 56(3):357–373.
- Carroll, Christopher D. 1992. "The buffer-stock theory of saving: Some macroeconomic evidence." *Brookings Papers on Economic Activity* 1992(2):61–156.
- Carroll, Christopher D. 1997. "Buffer-stock saving and the life cycle/permanent income hypothesis." *The Quarterly Journal of Economics* 112(1):1–55.

- 455 Carroll, Christopher D. and Andrew A. Samwick. 1998. “How important is precautionary
456 saving?” *Review of Economics and Statistics* 80(3):410–419.
- 457 Cattaneo, Matias D., Michael Jansson and Xinwei Ma. 2020. “Simple Local Polynomial
458 Density Estimators.” *Journal of American Statistical Association* 115(531):1449–1455.
- 459 Cattaneo, Matias D., Rocío Titiunik and Gonzalo Vazquez-Bare. 2017. “Comparing Inference
460 Approaches RD Designs: A Reexamination of the Effect of Head Start on Child Mortality.”
461 *Journal of Policy Analysis and Management* 36(3):643–681.
- 462 Cattaneo, Matias D., Rocío Titiunik and Gonzalo Vazquez-Bare. 2020. The Regression
463 Discontinuity Design. In *The SAGE Handbook of Research Methods in Political Science
464 and International Relations*, ed. Luigi Currini and Robert Franzese. chapter 44, pp. 835
465 – 857.
- 466 Coibion, Olivier and Yuriy Gorodnichenko. 2012. “What Can Survey Forecasts Tell Us about
467 Information Rigidities?” *Journal of Political Economy* 120(1):116–159.
- 468 De Boef, Suzanna and Paul M. Kellstedt. 2004. “The political (and economic) origins of
469 consumer confidence.” *American Journal of Political Science* 48(4):633–649.
- 470 De Grauwe, Paul. 2011. “Animal spirits and monetary policy.” *Economic Theory* 47(2):423–
471 457.
- 472 Deaton, Angus. 1987. Life-Cycle Models of Consumption: Is the Evidence Consistent with
473 the Theory? In *Advances in Econometrics*, ed. T. Bewley. Cambridge University Press.
- 474 Doms, Mark and Norman Morin. 2004. “Consumer sentiment, the economy, and the news
475 media.” *FRB of San Francisco Working Paper* (2004-09).
- 476 Duffy, John and Eric Fisher. 2005. “Sunspots in the Laboratory.” *American Economic
477 Review* 95(3):510–529.
- 478 Farmer, Roger E. A. 1999. *The Macroeconomics of Self-Fulfilling Prophecies*. The MIT
479 Press.
- 480 Farmer, Roger E. A. and Jang-Ting Guo. 1994. “Real business cycles and the animal spirits
481 hypothesis.” *Journal of Economic Theory* 63(1):42–72.
- 482 Figlio, David N. and Maurice E. Lucas. 2004. “Whats in a Grade? School Report Cards and
483 the Housing Market.” *American Economic Review* 94(3):591–604.
- 484 Gilbert, Thomas, Shimon Kogan, Lars Lochstoer and Ataman Ozyildirim. 2012. “Investor
485 inattention and the market impact of summary statistics.” *Management Science* 58(2):336–
486 350.

- 487 Hahn, Jinyong, Petra Todd and Wilbert Van der Klaauw. 2001. "Identification and Estima-
488 tion of Treatment Effects with a Regression-Discontinuity Design." *Econometrica* pp. 201–
489 209.
- 490 Hansen, Stephen, Michael McMahon and Matthew Tong. 2019. "The long-run information
491 effect of central bank communication." *Journal of Monetary Economics* 108:185–202.
- 492 Howitt, Peter and R. Preston McAfee. 1992. "Animal spirits." *American Economic Review*
493 pp. 493–507.
- 494 Imbens, Guido W. and Thomas Lemieux. 2008. "Regression discontinuity designs: A guide
495 to practice." *Journal of Econometrics* 142(2):615–635.
- 496 Keynes, J. M. 1936. "The general theory of employment interest and money."
- 497 Kozlowski, Julian, Laura L. Veldkamp and Venky Venkateswaran. 2020. "The Tail That
498 Wags the Economy: Beliefs and Persistent Stagnation." *Journal of Political Economy*
499 128(8):2839–2879.
- 500 Larcinese, Valentino, Riccardo Puglisi and James M. Snyder. 2011. "Partisan bias in eco-
501 nomic news: Evidence on the agenda-setting behavior of US newspapers." *Journal of*
502 *Public Economics* 95(9):1178–1189.
- 503 Maćkowiak, Bartosz and Mirko Wiederholt. 2015. "Business Cycle Dynamics under Rational
504 Inattention." *Review of Economic Studies* 82(4):1502–1532.
- 505 MacKuen, Michael B., Robert S. Erikson and James A. Stimson. 1992. "Peasants or
506 bankers? The American electorate and the US economy." *American Political Science*
507 *Review* pp. 597–611.
- 508 Mankiw, Greg and Ricardo Reis. 2010. Imperfect Information and Aggregate Supply. In
509 *Handbook of Monetary Economics*, ed. Benjamin M. Friedman and Michael Woodford.
510 Vol. 3A Elsevier-North Holland chapter 5, pp. 183–230.
- 511 Mankiw, N. Gregory and Ricardo Reis. 2002. "Sticky information versus sticky prices: a
512 proposal to replace the New Keynesian Phillips curve." *Quarterly Journal of Economics*
513 117(4):1295–1328.
- 514 Morris, Stephen and Hyun Song Shin. 2003. Global Games: Theory and Applications.
515 In *Advances in Economics and Econometrics: Theory and Applications, Eighth World*
516 *Congress*. Vol. 1 Cambridge University Press p. 56.
- 517 Nadeau, Richard, Richard G. Niemi, David P. Fan and Timothy Amato. 1999. "Elite eco-
518 nomic forecasts, economic news, mass economic judgments, and presidential approval."
519 *Journal of Politics* 61:109–135.

520 Nimark, Kristoffer. 2014. “Man-bites-dog business cycles.” *American Economic Review*
521 104(8):2320–2367.

522 Oh, Seonghwan and Michael Waldman. 1990. “The macroeconomic effects of false announce-
523 ments.” *Quarterly Journal of Economics* 105(4):1017–1034.

524 Oh, Seonghwan and Michael Waldman. 2005. “The index of leading economic indicators as
525 a source of expectational shocks.” *Eastern Economic Journal* pp. 75–95.

526 Pope, Devin G. et al. 2009. “Reacting to rankings: evidence from America’s best hospitals.”
527 *Journal of Health Economics* 28(6):1154–1165.

528 Reis, Ricardo. 2006. “Inattentive consumers.” *Journal of Monetary Economics* 53(8):1761–
529 1800.

530 Rodríguez Mora, José V. and Paul Schulstad. 2007. “The effect of GNP announcements on
531 fluctuations of GNP growth.” *European Economic Review* 51(8):1922–1940.

532 Santero, Teresa and Niels Westerlund. 1996. “Confidence Indicators and their Relationship
533 to Changes in Economic Activity.” *OECD Economics Department Working Paper* (170).

534 Sims, Christopher A. 2003. “Implications of rational inattention.” *Journal of Monetary*
535 *Economics* 50(3):665–690.

536 Soroka, Stuart N. 2006. “Good news and bad news: Asymmetric responses to economic
537 information.” *Journal of Politics* 68(2):372–385.

538 Starr, Martha A. 2012. “Consumption, sentiment, and economic news.” *Economic Inquiry*
539 50(4):1097–1111.

540 Tetlock, Paul C. 2011. “All the news that’s fit to reprint: Do investors react to stale
541 information?” *Review of Financial Studies* 24(5):1481–1512.

542 Thistlethwaite, Donald L. and Donald T. Campbell. 1960. “Regression-discontinuity analy-
543 sis: An alternative to the ex post facto experiment.” *Journal of Educational Psychology*
544 51(6):309.

545 Veldkamp, Laura L. 2011. *Information Choice in Macroeconomics and Finance*. Princeton
546 University Press.

547 A. Real time GDP growth data

548 The *OECD Revisions Analysis Dataset* contains systematic monthly updates that are as
549 close as possible to real time estimates of GDP growth. The series start in February 1999 for
550 most of our sample countries. To ensure comparability between this data and that which we
551 collected ourselves, we only include observations from earlier periods for which a preliminary
552 estimate of GDP growth in the previous quarter was certainly available within the quarter.
553 Otherwise, we cannot convincingly argue that the media had access to the information in a
554 timely enough manner to report it. Relaxing the restriction to include observations where
555 at least a preliminary estimate of GDP growth two quarters ago was certainly available does
556 not materially affect our results.

557 The descriptive statistics in Table 1 are constrained by the availability of timely estimates
558 of GDP growth. They also reflect omissions in the recording of seasonally-adjusted data,
559 which means we lose some of the observations for Austria, Czech Republic, Greece, Hungary,
560 Ireland, Iceland, Luxembourg, Mexico, Poland, Russia, Slovakia, Sweden, and Turkey. We
561 cannot use unadjusted data because seasonality injects strong intertemporal dependencies
562 between quarters that dominate any attempt to define whether an economy is in recession or
563 not. For similar reasons, our analysis abstracts from countries with extremely volatile growth
564 rates (Iceland) or many missing or zero growth rates (Estonia, Greece, Luxembourg, Slovakia
565 and Slovenia). The results are robust to their inclusion, at the cost of noisier estimates.

B. RDD results with local-quadratic estimator

Outcome	Estimates		Bandwidth	N
Definitely in recession	0.442 ** (0.176)	0.485 *** (0.164)	0.790	194
Possibly in recession	0.612 *** (0.166)	0.585 *** (0.159)	0.725	194
Consumer confidence	-0.970 ** (0.394)	-1.102 *** (0.343)	0.853	424
Business confidence	-0.406 (0.332)	-1.332 *** (0.423)	1.104	464
Consumption growth	-0.676 *** (0.254)	-0.375 * (0.224)	0.782	471
Investment growth	-0.198 (0.798)	-0.758 (0.841)	1.019	471
Government spending growth	0.094 (0.337)	0.006 (0.344)	0.679	471
Imports	-0.853 (0.930)	-0.926 (0.873)	0.723	471
Final GDP growth	-0.852 *** (0.334)	-0.639 ** (0.293)	0.653	471
Country fixed effects	✓			

Table 6: RDD results with local-quadratic estimator

NOTE: Robust standard errors in parentheses: * $0.05 < p \leq 0.1$, ** $0.01 < p \leq 0.05$, and *** $p \leq 0.01$.