

Appendix: “How Persistent Are the Effects of Sentiment Shocks?”

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This appendix provides details about the data series and results discussed in *FRBSF Economic Letter* 2018-22 by Jess Benhabib, Mark M. Spiegel, and Ben Shapiro. <https://www.frbsf.org/economic-research/publications/economic-letter/2018/october/how-persistent-are-effects-of-sentiment-shocks/>

A1. Variable definitions and sources

The following are the eight series used in the regressions with their definitions and sources.

GDP Growth (GGDP) – Quarterly state GDP growth (year over year). Sourced from Haver Analytics. In the regressions we are taking the average yearly growth rate over the stated horizon.

Income (INCOME) – Average of reported levels of respondent incomes within a state for that particular time period. Sourced from University of Michigan Surveys of Consumers.

Education (EDUC) – Average of reported highest level of education attained within a state for that particular time period. Source from Michigan survey.

Investment (INVEST) – The share of state respondents who said that they held investments for that particular time period. Sourced from Michigan survey.

Output Gap (YGAP) – U.S. output gap as percent of potential GDP. Sourced from Haver Analytics.

Instrument (Congpres) – Percent of Congress representatives in each state that shares the same party as the sitting president. Source from Charles Stewart’s Congressional data page.

Personal Consumption Expenditures (GPCE) – Personal consumption expenditures yearly growth rate (year over year) by state. Sourced from Haver Analytics. In the regressions we are taking the average yearly growth rate over the stated horizon.

Primary Sentiment Measure (GOOD) – The share of a state i at time $t-4$ whose respondents’ answers were scored 1 or 2 to “bus5” survey question (think the country will be doing (1) “Good times” or (2) “Good with qualifications” in the next 5 years). Sourced from Michigan survey.

A2. Results

Table A1 reports our results on sentiment effects over long horizons for state output and consumption. Our dependent variables are average annual GDP and PCE growth over the stated horizon (for example, a 2-year horizon in 2007:Q4 would be average annual GDP growth from 2005:Q4 to 2007:Q4). Our independent variables are income, education, investment, and output gap. Output gap is dropped in second column of each section. Independent variables are lagged by the stated horizon (for example, 2-year horizon in 2007:Q4 would be income in 2005:Q4). GGDP (growth in GDP) 1-year horizon spans 2006:Q1 to 2016:Q4, and GGDP 5-year horizon spans 2010:Q1 to 2018:Q1. GPCE (growth in PCE) 1-year horizon spans 2005 to 2016, and GPCE 5-year horizon spans 2009 to 2016. T-statistics are in parentheses. The results differ slightly from Benhabib and Spiegel (2018) due to differing horizons and updated data.

Table A1
Sentiment Effects over Long Horizons

	Dependent Variable: GGDP		Dependent Variable: GPCE	
1-year horizon	0.18*** (3.16)	0.13*** (3.03)	0.11*** (3.23)	0.07*** (3.68)
2-year horizon	0.10*** (2.82)	0.08*** (2.88)	0.09*** (3.09)	0.06*** (3.30)
3-year horizon	0.04** (1.99)	0.05** (2.35)	0.07*** (2.87)	0.05*** (2.95)
4-year horizon	0.01 (0.06)	0.01 (0.87)	0.05** (2.47)	0.04** (2.45)
5-year horizon	0.01 (0.08)	0.01 (0.22)	0.03*** (2.73)	0.03** (2.18)
# Obs. 1-year	2,142	2,142	588	588
# Obs. 5-year	1,609	1,609	392	392
State FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
Standard Error	Robust	Robust	Robust	Robust