ECONOMIC POLICY UNCERTAINTY AND SMALL BUSINESS DECISIONS

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The U.S. economy has experienced a slow recovery from the 2007–09 recession. Economic growth remains below its historical average. One possible contributor to the poor economic performance is economic policy uncertainty. For example, the future course of monetary policy has been unclear over the recovery time period. Given the important role of small businesses in job creation, this article examines the impact of economic policy uncertainty on small-business decisions.[1]

A number of **e**conomists have examined the impact of general economic uncertainty on business decisions. Bernanke (1983), Dixit and Pindyck (1994), Bloom, Bond, and Reenen (2007), and Bloom (2009, 2014) have shown the adverse impact of general economic uncertainty on business investment decisions. Bloom, Bond, and

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[1] For a discussion of the important role of small businesses in economic growth, see Decker et al. (2014).

Reenen (2007) speculate that general economic uncertainty will also adversely impact hiring decisions. Ghosal and Ye (2015) find this to be the case. Lower investment and employment occur because uncertainty makes firms less sure about the returns associated with capital expenditures or hiring. Since there are nonrecoverable costs associated with a decision to invest in capital or hire and train workers, uncertainty makes it prudent to delay capital expenditures or hiring. Uncertainty also worsens information asymmetries between lenders and borrowers. With greater uncertainty, the chances of bankruptcy increase. As a result, banks tend to delay lending to firms, slowing business expansion (Greenwald and Stiglitz 1990).

Baker, Bloom, and Davis (2016) extend the notion of uncertainty to include economic policy uncertainty (EPU). They construct an index to measure EPU using a computer-based search that quantifies the frequency of articles dealing with uncertain policy issues in leading U.S. newspapers. Their study provides evidence at the firm and aggregate levels that EPU has a significant impact on economic activity. In sectors of the economy that do a substantial portion of business with the government, Baker, Bloom, and Davis find higher EPU increases stock price volatility, and lowers investment and employment at the firm level. An example of this would be firms in the defense industry. At the macroeconomic level, they estimate a vector auto-regression and find a 90 basis point increase in the EPU index decreases aggregate industrial production by 1.2 percent and employment by 0.35 percent.

In this article, I examine the impact of EPU on small business decisions using the National Federation of Independent Business survey on economic trends. This survey asks questions that quantifies small business expansion plans and their economic

outlook. Schweitzer and Shane (2011) also use this data to examine the impact of EPU on small business decisions, but my analysis differs from Schweitzer and Shane in a number of ways. In assessing small business response to EPU, Schweitzer and Shane focus only on what firms said about their plans for employment and capital investments. I examine a broader set of survey responses, adding plans to increase worker compensation, plans for general expansion, and the degree of business optimism among small business respondents.

Schweitzer and Shane control for general economic and credit market conditions, but not supply shocks and general economic uncertainty. Supply shocks can influence small business expansion plans by changing production costs. I take supply shocks into account. In order to identify the impact of EPU on small business decisions, general economic uncertainty must be controlled. I use the Chicago Board of Options 30-day volatility index for S&P 500 options to measure general economic uncertainty.

Another issue is whether business responses to changes in economic policy persist over time. Schweitzer and Shane do not address that question. I add a lagged dependent variable to the regressions to see if business responses to changes in economic policy persist over time. Finally, the sample period I use is longer than that used by Schweitzer and Shane: it covers an additional four-and-a-half years of data following the 2007–09 recession.

Regression Model and Data

The regression model used to examine the impact of EPU on small business decisions is shown in Equation 1:

(1) $SBD_{i,t} = \alpha + \beta\ EPU_t + \gamma\ VIX_t + \varphi_j\ CONTROL_{j,t} + \mu_t.$

The dependent variable, small business decision, $SBD_{i,t}$, captures small business owners' responses to questions in the National Federation of Independent Business monthly survey on economic trends. Survey questions examine small businesses plans to increase (1) employment, (2) capital expenditures, or (3) compensation and ask about (4) general business expansion plans and (5) business optimism (see National Federation of Independent Business 2016). This provides five alternative measures of the dependent variable in Equation 1. The monthly survey began in 1986 and contains the responses of more than 1,000 businesses each month.

EPU_t is measured using the index constructed by Baker, Bloom, and Davis (2016). This index is constructed using a computer-based search that quantifies the frequency of articles dealing with economic policy uncertainty in 10 leading U.S. newspapers.[2] Articles counted contain triple combinations of words such as "uncertainty or uncertain," "economic or economy," and a policy term like "Congress, deficit, Federal Reserve, legislation, regulation, or White House." The relevant article count is divided by the total number of articles in the newspaper for each month. This calculation is then divided by the standard deviation of the series. An average is calculated for the 10 newspapers and is normalized so the average for the sample period equal to 100. Higher EPU is expected to have a *negative* impact on small business expansion and worker compensation.

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[2] The 10 newspapers are *USA Today, Miami Herald, Chicago Tribune, Washington Post, Los Angeles Times, Boston Globe, San Francisco Chronicle, Dallas Morning News, New York Times,* and *Wall Street Journal.*

To proxy general economic uncertainty, I follow Baker, Bloom, and Davis (2016), Krol (2014), and Bloom (2009) by using the Chicago Board of Options 30-day volatility index (VIX) for S&P 500 options. The VIX index provides a measure of investor sentiment and implied market volatility. The VIX index uses the Black-Scholes option-pricing model to calculate the expected volatility based on market prices. The index weighs put and call option prices that turn out to be unprofitable on a particular date. Because option prices are positively related to market volatility, a higher VIX index implies greater expected economic uncertainty (see Chicago Board Options Exchange 2004). Higher general economic uncertainty is expected to have a negative impact on small business expansion and worker compensation.

When examining (isolating) the impact of EPU on the economy, it is important to control for general economic uncertainty—hence, the control variable ($CONTROL_{j,t}$) in Equation 1. At issue is whether the two uncertainty measures provide unique information about the economy. While the two kinds of uncertainty are related, Baker, Bloom, and Davis (2016) provide evidence that the economic policy index shows "distinct variation" that corresponds with time periods of high levels of economic policy uncertainty.

Schweitzer and Shane (2011) do not use this index nor do they control for general economic uncertainty. Instead, they use the Michigan Consumer Sentiment Index in some specifications over concerns that the EPU index may be capturing

general swings in consumer sentiment.[3] However, they don't address the general level of uncertainty directly.

To isolate the impact of uncertainty, it is also necessary to control for the business cycle, supply shocks, and credit market conditions. The unemployment rate and industrial production index are used to measure current economic conditions. The unemployment rate is expected to have a negative impact on small business expansion and worker compensation, while industrial production is expected to have a positive impact. The price of West Texas Intermediate crude oil, deflated by the consumer price index, serves as a proxy for major supply or cost shocks. Higher real crude oil prices should have a negative impact on small business expansion and worker compensation. Following Schweitzer and Shane, the prime rate and Libor interest rates are used to measure current credit market conditions (i.e., the cost of credit). The prime rate and Libor interest rates are expected to have a negative impact on small business expansion and worker compensation. As the cost of credit rises, some firms will find expansion to be uneconomic. The regression also includes a linear time trend to capture long-term economic growth factors that are not related to the cyclical component of small business performance.

To examine the persistence of the influence of economic policy uncertainty over time, each survey response regression is estimated with and without a lagged dependent variable. A significant lagged dependent variable suggests that the survey response persists for more than one month. In other words, last month's survey

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[3] They do not explicitly report their regression results that use the Michigan Consumer Sentiment Index. They only report that the economic policy uncertainty variable remains statistically significant when it is included in the regression.

response is related to the current month's response, suggesting that businesses modify their perceptions of economic uncertainty over time in a way that may be consistent with a dynamic adjustment process.

Results

The regression results are reported in Table 1. The regression is estimated for each of the five different survey responses (plans to increase employment, capital expenditures, compensation, expansion plans, and business optimism) for the period beginning in January 1990 and ending January 2016.[4]

[insert Table 1, set landscape/broadside]

Economic policy uncertainty (EPU) has a large negative impact on small business expansion decisions. Consistent with the hypothesis that increases in EPU discourage small business expansion, the EPU variable is negative and significant at the 10 percent level or less in 9 of the 10 regressions, and it is significant in all of the regressions with a lagged dependent variable that controls for persistence in the survey responses. The evidence supports the premise that there is persistence in survey responses over time, as the lagged dependent variable, small business decisions, $SBD_{i,t-1}$ is always significant.

The measure of general economic uncertainty, captured by the VIX index, is also negative and significant at the 10 percent level or less in 7 of the 10 regressions. In 5 of the 7 regressions where both uncertainty variables were significant, the VIX index had a larger impact. The EPU variable had a larger negative impact in the decision to

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[4] The sample starting date is determined by the availability of VIX data.

expand a business. These results support the idea that uncertainty, whether general or policy generated, negatively impacts small business decisions to expand.

Schweitzer and Shane (2011) do not report their estimated individual coefficients or *p*-values so a direct comparison of results is not possible. They only report the EPU variable "has a statistically significant negative effect" on business hiring and capital spending plans (Schweitzer and Shane 2011: 4). The R-bar-squared measures I report in this article for the hiring and capital expenditure regressions are similar to the results found in Schweitzer and Shane. They report that inclusion of the Michigan Consumer Sentiment index does not affect their results.

Looking at the control variables, a better economy—measured by higher industrial production or a lower unemployment rate—has a large positive impact on small businesses, except when it comes to compensation decisions. Real oil price shocks have a large negative impact on small business expansion, except for compensation decisions. General credit conditions do not appear to be a consistently important factor in small business decisions. One possible reason for this result is that personal financing plays an important role small business startups and expansions (see Miller, Hoffer, and Wille 2016). Finally, the relatively high R-bar-squared indicates that each regression has considerable explanatory power.

Conclusion

The U.S. economy has experienced a slow recovery from the 2007–09 recession. One possible contributor to the poor economic performance is economic policy uncertainty (EPU)—that is, uncertainty about what the government may do to try

to stabilize the economy and uncertainty about the consequences of those actions. Given the important role of small businesses in job creation, it makes sense to examine the impact of economic policy and general economic uncertainty on small business decisions.

Economic theory suggests greater uncertainty in the economy increases the value of waiting to invest and to hire additional workers. The evidence presented in this article suggests, like much of the previous work on small businesses, that general economic uncertainty adversely affects small businesses. This article tests the importance of an additional measure of uncertainty: economic policy uncertainty. Looking at small business survey responses, I find that increases in EPU lead respondents to say they are reducing employment, investment, and expansion. Increases in EPU also lead to a decline in general optimism among the survey respondents. Clearly, EPU has a negative impact on small business activity. Furthermore, the adverse impact of EPU tends to persist over time. Controls for the current state of the economy and supply shocks are significant but, more important, they do not eliminate the finding of a negative impact of EPU on small business activity.

There appears to be considerable disagreement among economists and policymakers on what policies are needed to restore economic growth. Policymakers must get policy right, but lack of clarity in the policymaking process is not a good thing, as it reduces small business activity, slowing economic growth and job creation.

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TABLE 1

REGRESSION RESULTS, 1990:1 to 2016:1

	emp	emp	Expand	expand	Invest	invest	opt	opt	comp	comp
constant	-73.35	-35.50	-172.17	-47.93	-42.39	-20.05	3.76	0.95	59.61	30.29
	(.008)	(.015)	(.000)	(.002)	(.090)	(.135)	(.000)	(.000)	9.017)	(.069)
lagged		0.51		0.66		0.49		0.75		0.44
dep.		(.000)		(.000)		(.000)		(.000)		(.000)
epu	-3.22	-2.26	-5.57	-2.93	-2.16	-1.65	-0.03	-0.02	-1.41	-1.23
	(.028)	(.022)	(.000)	(.000)	(.090)	(.023)	(.004)	(.000)	(.126)	(.057)
vix	-4.45	-2.41	-3.18	-0.90	-3.30	-1.77	-0.04	-0.01	-0.60	-0.56
	(.002)	(.002)	(.017)	(.145)	(.001)	(.004)	(.004)	(.020)	(.568)	(.359)
un	-1.07	-0.35	0.26	0.28	-0.58	-0.20	-0.01	0.001	-2.29	-1.17
	(.003)	(.175)	(.085)	(.056)	(.063)	(.331)	(.200)	(.689)	(.000)	(.000)
lpi	25.59	12.93	51.32	15.97	22.34	11.62	0.31	0.09	-6.64	-2.53
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.223)	(.473)
realoil	-3.97	-2.24	-5.01	-1.85	-3.27	-1.75	-0.02	-0.01	-0.38	-0.33
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.112)	(.010)	(.664)	(.529)
prime	0.26	0.16	-2.03	-0.78	0.08	-0.02	-0.01	-0.004	0.65	0.34
	(.650)	(.614)	(.021)	(.023)	(.890)	(.957)	(.127)	(.106)	(.148)	(.194)
libor	0.07	-0.002	2.18	0.721	0.10	0.07	0.001	0.001	-0.17	-0.08
	(.892)	(.994)	(.000)	(.003)	(,830)	(.806)	(.869)	(.607)	(.712)	(.782)
trend	-0.03	-0.01	-0.08	-0.03	-0.06	-0.03	-0.001	-0.0002	0.01	0.01
	(.050	(.059)	(.000)	(.005)	(.000)	(.000)	(.000)	(.001)	(.329)	(.499)
rbarsq	0.79	0.85	0.78	0.88	0.82	0.86	0.76	0.90	0.83	0.86
see	2.73	2.34	2.86	2.13	2.45	2.15	0.03	0.02	2.00	1.80

NOTES: Table 1 reports ordinary least squares estimates of coefficients and *p*-values in parentheses for each regression. The standard errors used in calculating the *p*-values are heteroscedasticity-autocorrelated consistent (Newey and West 1987). The first row reports the dependent variable for the regression results reported in the column: emp = net percentage of firms planning to increase employment; expand = percentage of firms saying it is a good time to expand; invest = net percentage of firms planning to increase capital expenditures; opt = an index of business optimism; and comp = net percentage of firms planning to increase compensation. The first column reports explanatory variables and regression statistics: constant = regression intercept; lagged dep = the lagged dependent variable; epu = economic policy uncertainty index; vix = the volatility index used to measure general economic uncertainty; un = the unemployment rate; ipi = the industrial production index; realoil = the price of oil

deflated by the consumer price index; prime = the prime interest rate; libor = the libor interest rate; and trend = a time trend. R-bar-squared (rbarsq) and regression standard error (see) are reported in the bottom two rows, respectively.