RIETI Discussion Paper Series 13-E-076

What Type of Policy Uncertainty Matters for Business?

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The Research Institute of Economy, Trade and Industry
http://www.rieti.go.jp/en/

RIETI Discussion Paper Series 13-E-076
September 2013

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Abstract

This paper uses data from an original survey of Japanese listed companies to present empirical findings concerning subjective uncertainties over economic policies and their effects on business operations. Companies perceive uncertainty over the future course of certain economic policies, such as an international trade policy and the social security system. Uncertainty regarding the tax system, trade policy, and environmental policy can have substantial effects on the managerial decisions, especially on equipment investment and overseas activities. Among non-manufacturing companies, uncertainty regarding the social security system and labor market regulations affects employee hiring and organizational restructuring. To achieve economic growth by promoting future-oriented investment, it is essential to improve the predictability of fundamental economic policies and institutions.

Keywords: Policy uncertainty; Economic policy; Business operation; Predictability
JEL classifications : D84, E29, E66, M21

* The author would like to thank Masahisa Fujita, Arata Ito, Minoru Kaneko, Satoshi Miura, Atsushi Nakajima, Keiichiro Oda, Munehisa Yamashiro, Isamu Yamauchi and the seminar participants at RIETI for their helpful comments and suggestions. This research is supported by the JSPS Grants-in-Aid for Scientific Research (B, 23330101).

What Type of Policy Uncertainty Matters for Business?

1. Introduction

Conflicts between the ruling party and the opposition party or a frequent change of government often bring about delays in policy decisions or policy fluctuations. The recent "fiscal cliff" in the U.S. is an example. In Europe, the government changes in Greece and Italy increased uncertainty over fiscal policy, resulting in the Euro zone crisis. In Japan, the political power was transferred from the Liberal Democratic Party (LDP) to the Democratic Party four years ago, but the LDP regained the power through the general election of December 2012. However, the diet had been twisted until recently. During these government changes certain economic policies, such as tax, social security, and labor market policies, have fluctuated. When the two chambers of parliament are controlled by different parties or when the opposition controls the legislature under the presidential system, decision making about controversial policies is bound to be stalled or postponed, regardless of the countries.

The use of unconventional monetary policy to influence expectations of economic agents has been adopted in many advanced countries in the aftermath of the financial crisis. The expectations about future economic policies affect current business activities that are not limited to monetary policy. Equipment investment, R&D investment, foreign direct investment (FDI), and hiring of employees are all long-term investments, and the expectations about the direction of economic policies influences managerial investment decisions today.

The negative effects of uncertainty on the real economy have been studied theoretically and empirically. Uncertainty over the future economy comes from various factors, but policy uncertainty accompanied with political events, such as government change, is one of the major causes of economic uncertainty. Recent studies indicate that policy uncertainty has a substantial negative impact on the real economy (e.g., Bloom, 2009; Carrière-Swallow and Céspedes, 2013; Baker et al., 2013). These studies generally use an aggregated measure of policy uncertainty. However, there are a variety of economic policies other than macroeconomic policy that affect the behavior of economic agents: for example, corporate tax, international trade, social security, and labor market policies. Past studies have not dealt with the uncertainty of individual policies.

We conducted an original survey of Japanese listed firms to investigate the subjective uncertainties over various economic policies and the effects of these uncertainties on business operations. The detail of the survey design is explained in a later section. This paper presents

observations from the descriptive statistics of the survey results to demonstrate the effects of specific policy uncertainties on business and the economy. The context of Japanese politics provides a good opportunity to analyze policy uncertainty because the two chambers of parliament are often controlled by different parties (the "twisted diet"), and the political power has transferred twice between the LDP and the Democratic Party in recent years. While the analysis of this paper is simple, it is the first study to present subjective uncertainty over individual economic policies.

According to the analyses, Japanese companies perceive uncertainty over the direction of several economic environments and economic policies. Among economic environments, the future of world economic growth, exchange rate movements, government budget deficits, energy price movements, and relationships with foreign countries are perceived to be highly uncertain. Uncertainties over the movement of energy prices and exchange rates heavily affect managerial decision making, especially among manufacturing companies. With respect to specific economic policies, companies perceive the future of international trade policy and the social security system to be highly uncertain. Uncertainty over the tax system, trade policy, and environmental policy has serious effects on the managerial decisions of companies, especially on equipment investment and overseas operations. Among non-manufacturing companies, uncertainty over the social security system and labor market regulations affects the decision to hire employees. A simple regression analysis reveals that policy uncertainty has a statistically and economically significant negative relationship with the expected mid-term sales growth of companies.

The remainder of this paper is organized as follows. Section 2 reviews the literature. Section 3 explains the survey used in this paper. Section 4 presents and interprets the results, and Section 5concludes with policy implications.

2. Literature review

The negative effects of uncertainty on the real economy have been vigorously studied. [1] Theoretically, because of irreversibility or adjustment costs of investment, economic uncertainty has a negative effect on investment because a firm will avoid taking action and will prefer to "wait and see" in uncertain circumstances (e.g., Bernanke, 1983; McDonald and Siegel, 1986; Pindyck, 1991). This is often referred to as the option value of waiting. Empirical studies in the U.S. and European countries support the theoretical prediction that

[1] Carruth, et al. (2000) surveys theoretical and empirical literature concerning the relationship between uncertainty and investment.

uncertainty has negative effects on equipment investment (Leahy and Whited, 1996; Guiso and Parigi, 1999; Ghosal and Loungani, 2000; Bloom et al., 2007; Bontempi et al., 2010, IMF, 2012, among others). Bloom (2007) and Caggese (2012) indicate that uncertainty negatively affects firms' R&D investments. Bloom (2009), Bachmann et al. (2013), and Leduc and Sill (2013) use macroeconomic time-series data to analyze the effects of uncertainty on GDP, industrial production, and employment, and find large negative effects on these macroeconomic variables.[2] Gourio, et al. (2013), by constructing a measure of global volatility, find that when global volatility increases, industrial production falls, and unemployment rises in the G7 countries and that Japan is significantly more affected by a volatility shock than other countries.[3]

Additionally, some studies investigate the effects of uncertainty on the hiring of employees. Ono and Sullivan (2013) study the effect of output fluctuation on the use of temporary workers in manufacturing plants and find that higher uncertainty over future output increases the use of temporary workers. Morikawa (2010), using Japanese firm-level panel data, demonstrates a positive association between the volatility of output and the use of non-standard employees. Matsuura (2013), also using Japanese firm-level panel data, presents empirical findings that the volatility of output increases the use of temporary agency workers for firms with high fixed labor costs. Due to the high dismissal costs, new hiring of regular (standard) employees is a risky long-term investment that involves large adjustment costs. As a result, firms are cautious in the hiring of regular employees when future output is uncertain.

In the empirical studies, various measures of uncertainty have been developed and employed. The volatilities of past GDP growth rates, inflation rates, and stock prices are the representative measures used in the macroeconomic time-series analyses. Additionally, cross-sectional dispersion (variance or standard deviation) of the forecasts of professional economists and the ex post forecast errors are also frequently used in the analyses. However, the studies that use firm-level data tend to employ cross-sectional dispersion of the outlook on profit or demand (Leahy and Whited, 1996; Bachmann et al., 2013) and firm-level volatility of stock price (Bloom et al., 2007) as measures of uncertainty. Guiso and Parigi (1999) and Bontempi et al. (2010) are exceptions and utilize survey-based subjective probability distribution of future demand for firm products and analyze the effects of demand

[2] Choi (2013) replicates the empirical results of Bloom (2009) by splitting the sample period and indicates that the effect of economic policy uncertainty on macroeconomic variables is not confirmed after 1983.

[3] Carrière-Swallow and Céspedes (2013) expand the sample countries and analyze the effects of global uncertainty. They find that the effects of uncertainty shock are heterogeneous across countries and that the effects of global uncertainty shock on investment and consumption are severe for emerging countries with less-developed financial markets.

uncertainty on the investment decisions of Italian manufacturing firms.

Uncertainty over the future economy stems from a variety of concerns, but policy uncertainty accompanied with political events, such as government change, is one of the major causes of economic uncertainty. In the literature, cross-country growth regression analyses have indicated that political instability is harmful to economic growth (Barro, 1991; Alesina et al., 1996; Devereux and Wen, 1998; Carmignani, 2003). Recently, several studies investigate the relationship between political events and economic outcomes. Bialkowski et al. (2008) present empirical findings that national elections induce higher stock market volatility for a sample of OECD countries. Julio and Yook (2012), using a cross-country data set for 48 countries, demonstrate that firms reduce their investment expenditures during election years by an average of 4.8% relative to nonelection years, controlling for growth opportunities and economic conditions. The authors interpret that political uncertainty leads firms to reduce investment expenditures until the electoral uncertainty is resolved. Aisen and Veiga (2013) indicate that the frequency of government change has a large negative effect on economic growth by using a large cross-country data set.[4] Baker et al. (2013) develop a unique index of economic policy uncertainty (EPU) and study the relationship between this index and the major macroeconomic variables, including investment and employment in the U.S., by estimating a vector autoregressive (VAR) model. The index is calculated as the weighted average of the three measures: 1) the frequency of references to economic uncertainty and policy in 10 leading newspapers such as the New York Times and the Wall Street Journal; 2) the number of federal tax code provisions set to expire in future years; and 3) the extent of disagreement among economic forecasters over future government purchases and the CPI. According to the VAR analysis, an increase in policy uncertainty has a substantial negative effect on economic activities: from 2006 to 2011, an increase in economic policy uncertainty explains an approximate 2.5% decline in industrial production and a 2.3 million reduction in employment.[5] Fatas and Mihov (2013) present evidence that fiscal policy volatility has a strong negative impact on economic growth. According to their results for a set of 93 countries, one standard deviation increase in fiscal policy volatility reduces long-term economic growth by more than 0.7%. Chong and Gradstein (2009), using a cross-country firm-level survey data, find an adverse effect of perceived policy volatility on firms' sales growth. They use self-reported information about firms' perceptions of economic policy

[4] Bernal-Verdugo et al. (2013), using a panel of 183 countries, present evidence that social and political instability have a negative impact on output in the short-term, but that the medium-term effects depend on the ability of the country to implement reforms aimed at improving the level of governance.

[5] The index can be seen on the website (http://www.policyuncertainty.com/papers.html). In addition to the figures for the U.S., the index is calculated for Canada, Europe, China, and India.

unpredictability: similar to our study. In Japan, Morikawa (2012) surveyed more than 3,000 companies on the economic factors affecting their operations. The result indicates that approximately 33% of companies mention "stability of the government and economic policy" as a significant determinant of their managerial decisions.

The studies cited above generally use aggregated measures of policy uncertainty. However, there are various economic policies that affect the behavior of economic agents. To expand our understanding of policy uncertainty, we conducted an original survey of Japanese companies to investigate the subjective uncertainties over various economic policies and the effects of these uncertainties on business operations.

3. Data

The data used in this paper originate from the "Survey on the Outlook of the Japanese Economy and Economic Policy" by the Research Institute of Economy, Trade and Industry (RIETI). The survey was conducted from February to March 2013: following the release of the "Emergency Economic Measures for The Revitalization of the Japanese Economy" that was decided by the Abe Cabinet and the "Joint Statement of the Government and the Bank of Japan on Overcoming Deflation and Achieving Sustainable Economic Growth", which set a 2% inflation target in late January 2013.[6] The questionnaire was sent to all firms listed in the Tokyo and Osaka Stock Exchange (2,309 firms), and a total of 294 firms responded to the survey (the response rate was 12.7%). However, missing responses in certain questionnaires caused the actual number of firms used in the analyses to be less than the total number of respondent firms.

The survey questionnaires included: the current situation and the outlook for company sales, prices, and employment; perception about uncertainty over the economic environment and policies; the effects of uncertainty on business operations, and major managerial decisions affected by the policy uncertainty. Specific questionnaires are explained in the next section with the results. With respect to the outlook for sales, prices, and employment, we surveyed for subjective 90% confidence intervals as well as the point outlooks for the subsequent 1 and 3 year period.

The distribution of the companies that responded to the survey by industry and the average company size is presented in Table 1. The share of manufacturing companies is 52.4%. The mean and median number of regular employees is 4,481 and 900, respectively. We present

[6] Following the Joint Statement, the Bank of Japan led by the new Governor Haruhiko Kuroda, announced an aggressive monetary policy easing in April 2013.

the simple descriptive statistics of the responses to the questionnaire. The separate figures for manufacturing and non-manufacturing companies and t-test results for the statistical difference between the industries are presented.

4. Results

4-1 Outlook of sales, prices, and employment

The survey asked respondents to report the expected growth rate of 1) total sales, 2) the selling price of major products/services, and 3) employment for the subsequent year (fiscal year 2013) and the subsequent three years (fiscal years 2013 to 2015) on an annual basis. Table 2 summarizes the results of the responses.

The mean outlook for the sales growth rate for fiscal year 2013 is +4.86% and for the next three years the sales growth rate is +5.96%: rapid recovery is expected (panel A column (1) of Table 2). The median figures for fiscal year 2013 and the next three years are +4.0% and +5.0%, respectively. The difference between manufacturing and non-manufacturing industry is statistically insignificant.

The survey examined 90% confidence intervals of the companies' point outlook. Specifically, the survey asked companies to choose from 10 confidence intervals: 1) less than ±0.5%, 2) ±0.5% to 1%, 3) ±1% to 2%, 4) ±2% to 3%, 5) ±3% to 5%, 6) ±5% to 7%, 7) ±7% to 10%, 8) ±10% to 15%, 9) ±15% to 20%, and 10) ±20% or over. Based upon the responses, we calculated the standard deviation of the outlook under the assumption of a normal distribution. The central values of the choices were used in this calculation and 20% were assigned to the "±20% or over" category. This paper uses the results from this calculation as the measure of outlook uncertainty. Panel B of Table 2 indicates the mean value of the uncertainty measure. The sample mean of the uncertainty for sales growth is 3.20% for fiscal year 2013 and 3.59% for the next three years (all industries on an annual basis). The companies assume a certain level of uncertainty about their expected sales growth rates. When comparing manufacturing and non-manufacturing companies, manufacturers have higher subjective uncertainty over their sales growth: the mean difference between the two sectors is statistically significant at the 1% level (see panel B column (1) of Table 2). A higher subjective uncertainty over sales growth among manufacturing companies likely reflects that the manufacturing industry is heavily affected by global economic growth or fluctuations in the exchange rate.

The survey also examined the outlook of the change in selling price of the company's

major products or services. The mean outlook for the selling price for fiscal year 2013 is -0.07%, and for the next three years it is +0.06% (see panel A column (2) of Table 2). Both of these figures suggest flat expectations about future sales prices. However, the mean price change during the past year of -1.82% implies that Japanese companies now exhibit positive signs of recovery from prolonged deflation. A comparison of manufacturing and non-manufacturing companies demonstrates that manufacturers expect continuous downward price changes of -0.47% (next year) and -0.64% (for the next three years), but non-manufacturers expect upward price changes for the next year and the next three years: +0.40% and +0.89%, respectively. The mean value of the subjective uncertainty measure (the standard deviation) of price change is approximately 2% and the difference between industries is small (panel B column (2) of Table 2).

The outlook for the employment growth rate of regular employees is shown in Table 3. In the survey, "regular employee" is defined as the employees hired directly by the company over a one-month period: part-time workers are included, but temporary agency workers are not included. The survey also requested separate outlook for standard employees ("*seishain*" in Japanese) and regular employees other than standard employees (non-standard employees). The mean outlook for employment growth is +1.45% for the next year and +0.92% for the next three years (panel A column (1) of Table 3). By industry, non-manufacturing companies expect higher employment growth than manufacturing companies, similar to the actual pattern observed in recent years. The subjective uncertainty about the employment outlook is significantly larger among non-manufacturing companies (panel B column (1) of Table 3).

By employee type, Japanese companies expect a higher growth rate for non-standard employees than standard employees (panel A columns (2) and (3) of Table 3). Both manufacturing and non-manufacturing companies expect relatively higher growth rates for non-standard employees. However, the subjective uncertainty measure is larger for non-standard employees than for standard employees and the difference is statistically significant at the 5% level (panel B of Table 3). [7] This result suggests that non-standard employees are used as a buffer for unexpected change in company performance. As we have seen in section 2, recent empirical studies indicate that sales volatility causes an increase in the number of non-standard workers (Morikawa, 2010; Ono and Sullivan, 2013). The results of the survey are consistent with these studies.

[7] When categorizing the sample companies by industry, the difference in subjective uncertainty between standard and non-standard employees is statistically significant only for manufacturing companies.

4-2 Uncertainty over economic environments

The survey asked respondents to indicate the degree of subjective uncertainty they feel about the future course of the global and Japanese economy. Specifically, the survey examined uncertainty about the seven economic variables: 1) global economic growth, 2) exchange rates, 3) interest rates, 4) the stock market condition, 5) the government budget deficit, 6) energy and electricity prices, and 7) diplomatic and trade relations with foreign countries. The first question in the survey examined the degree of subjective uncertainty concerning these variables in the medium-term by asking the respondent to select from the following three choices: “high degree of uncertainty,” “moderate degree of uncertainty,” and “no significant degree of uncertainty.” The second question examined the effects of the uncertainty of the variables on their business, and the choices were “significantly affected,” “somewhat affected,” and “hardly affected.”

Table 4 summarizes the results of the responses. Diplomatic and trade relations, energy price, budget deficit, exchange rate, and global economic growth are very uncertain among Japanese companies: approximately 40% of the companies selected these five variables as being highly uncertain (column (1) of Table 4). Compared with non-manufacturing companies, manufacturing companies tend to feel uncertainty over exchange rates and global economic growth: the differences by industry are statistically significant for both variables. The results reflect that manufacturers face keen competition in the global market. However, the percentage of respondents who were highly uncertain about the budget deficit is significantly larger among non-manufacturing companies than manufacturing companies. One possible interpretation is that non-manufacturing companies are more concerned about the government budget condition because they depend more on domestic demand including government expenditure.

Concerning the effects of economic uncertainty on business operation, uncertainties over the prices of energy and electricity followed by exchange rates have the greatest impact on business: approximately 50% of companies responded that these uncertainties significantly affect their managerial decision (column (2) of Table 4). Uncertainty over global economic growth is ranked third, and approximately 36% of companies consider it to be a significant factor in their business operations. The ratio of “significantly affected” for these three variables are higher among manufacturing companies than non-manufacturing companies, which indicates that manufacturers depend heavily on the global economic environment. The number of companies whose management decisions are significantly affected by the uncertainty over budget deficit is relatively low, whereas the uncertainty itself is substantial. We interpret the result that the government budget condition only has a direct effect on

companies whose sales depend on government procurement or public works. If the government's debt becomes unsustainable, the long-term interest rate may rapidly increase. We conjecture that, for ordinary companies, such a risk may be reflected in the response to questions concerning the "interest rate" uncertainty and not in the response to questions concerning the "budget deficit of the government."

4-3 Economic policy uncertainty

We asked respondents to indicate the degree of uncertainty they feel about the future course of various types of government policies and regulations by selecting from the following three choices: "high degree of uncertainty," "moderate degree of uncertainty," and "no significant degree of uncertainty." The survey covered nine economic policies: 1) tax policy, 2) the social security system, 3) the business licensing system, 4) labor market regulations, 5) environmental regulations, 6) land use and zoning restrictions, 7) consumer protection laws and regulations, 8) corporate laws and regulations, and 9) international trade policy.

The results indicate that international trade policy causes the greatest uncertainty among Japanese companies followed sequentially by the social security system, environmental regulations, tax policy, and labor market regulations (see column (1) of Table 5). One possible reason for the high uncertainty over "international trade policy" is the frequent mass media reports concerning Japan's participation in the Trans-Pacific Partnership (TPP) Agreement negotiations at the time that the survey was conducted. Comparing manufacturing and non-manufacturing companies, manufacturers perceive more uncertainty over "international trade policy" (statistically significant at the 5% level). On the other hand, a large number of non-manufacturing companies feel uncertainty over the "social security system," although the difference with manufacturing companies is not statistically significant.

Similar to the questionnaire concerning the uncertainty over economic environments, we surveyed to what extent management decisions are affected by such uncertainty. For each type of government policy and institution, respondents were asked to select from three options: "significantly affected," "somewhat affected," and "hardly affected." According to the results, we found that uncertainty over tax policy has the greatest impact on corporate management decisions with approximately half of the respondents (47.1%) indicating that their management decisions are "significantly affected" by tax policy (see column (2) of Table 5). International trade policy and environmental regulations followed with the ratio of

those “significantly affected” by uncertainty at approximately 30%, and the ratio of those “significantly affected” by uncertainty concerning labor market regulations, corporate laws and regulations, and social security system was approximately 20%. A comparison between manufacturers and non-manufacturers indicates that the percentages of those significantly affected by uncertainty about international trade policy and environmental regulations are substantially higher among manufacturers, whereas the percentages of those significantly affected by uncertainty about land use and zoning restrictions, as well as consumer protection law and regulations, are higher among non-manufacturers. The differences between industries on these four policies are all statistically significant at the 1% level.

The percentage of companies that responded that they experience high uncertainty over the business licensing system is only 7.6%, and the percentage of companies significantly affected by uncertainty over the business licensing system is 15.5%: both of these figures are lower than the figures reported from other policy areas. Many people argue that deregulation is central to improving potential growth rates of the Japanese economy. However, from the companies’ viewpoint, cross-industry policies and institutions, such as tax policy, social security system, and labor market regulations, are more influential on their business operations than licensing or regulations at the industry level. The results suggest that, to facilitate future-oriented company behavior, it is essential to remove uncertainties over fundamental policies and institutions.

Uncertainty could affect corporate behavior in a wide range of activities including equipment investment, innovation, mergers and acquisitions (M&As), and the hiring of new employees. This study examined the type of management decisions that are significantly affected by policy uncertainty. The respondents were asked to choose up to two activities from eight decisions: 1) equipment investment, 2) R&D investment, 3) ITC investment, 4) advertisement, 5) entry into or withdrawal from overseas markets, 6) organizational restructuring (including M&As), 7) hiring of full-time regular (standard) employees, and 8) hiring of non-standard employees.

The results are presented in Table 6. Cited by approximately two-thirds (65.9%) of the respondents, equipment investment was found to be most affected by uncertainty, followed by decisions to enter into or to withdraw from overseas markets, which was cited by approximately half (47.0%) of the respondents. Decisions concerning the hiring of permanent full-time employees (27.5%) and organizational restructuring (24.0%) were also sizably affected. The results suggest that the predictability of government economic policies and regulations is a critical factor in long-term investment decisions.[8] When categorizing

[8] The percentages of companies choosing R&D investment and ICT investment are relatively small (14.6% and 4.5%, respectively). A possible reason is that the absolute amount of equipment

the sample by industry, all of the activities are significantly different between manufacturers and non-manufacturers. For example, equipment investment and overseas operations are rated higher by manufacturing companies, but organizational restructuring and hiring of full-time regular employees are rated higher by non-manufacturing companies.

Table 7 presents the cross tabulation results for both the policy uncertainty over the social security system and labor market regulations and the effect of these policy uncertainties on the hiring of regular full-time employees. Among the companies that responded that the social security system and labor market regulations were highly uncertain, the percentage of companies that considered hiring decisions to be affected by the uncertainties is larger (51.3% with respect to the social security system, and 20.5% with respect to labor market regulations) than for companies that did not rate the social security system and labor market regulations as highly uncertain (33.8% and 7.8%, respectively). Because the hiring of regular full-time employees is a irreversible long-term investment, the predictability of the social security system and labor market policies are essential for the creation of regular jobs.

Finally, we conducted a simple regression analysis to explain the relationship between policy uncertainty and the expected sales growth rate. The dependent variable is the expected sales growth over the next three years (on an annual basis) and the main explanatory variable is the measure of policy uncertainty. We assigned 1.0 for "high degree of uncertainty," 0.5 for "moderate degree of uncertainty," and 0.0 for "no significant degree of uncertainty." In addition to the individual policy uncertainties, we created a composite index for the overall policy uncertainty by summing up the value of eight individual policy uncertainty measures.[9] To control for the industry characteristics and the trend growth rates of the individual companies, we used industry dummies (1 digit) and the sales growth rate during the previous year as control variables. The equation to be estimated can be expressed as follows.

$$\textit{Sales growth}_{0,+3} = \beta_0 + \beta_1\, \textit{Policy uncertainty} + \beta_2\, \textit{Sales growth}_{-1,0} + \beta_i\, \textit{Industry dummies} \qquad (1)$$

We expect the coefficient for β_1 to be negative if policy uncertainty hinders growth enhancing investments.

The result of the regression analysis is presented in Table 8. While we do not report the coefficients for the sales growth rate during the previous year, the estimated coefficients are all positive and significant. This result indicates that past sales growth is a significant

investment is larger than those of R&D and ICT investments.

[9] We also create a composite policy uncertainty index after standardizing individual uncertainty measures by using zero as the average and a unity standard deviation. The result is similar to the result using the simple sum of the individual uncertainty measures.

determinant of the expected sales growth. The coefficients for individual policy uncertainty are all negative suggesting that policy uncertainty is detrimental to the expansion of production. The coefficients for tax policy, labor market regulations, environmental regulations, and consumer protection are statistically significant. By definition, the size of the coefficient can be interpreted as the change in expected sales growth rate by a shift from "no significant degree of uncertainty" to a "high degree of uncertainty." Because the sample mean of the expected sales growth rate over the next three years is 6.0% per annum, uncertainty over these policies approximately halves the expected sales growth. The last row of Table 8 indicates the effect of the composite policy uncertainty index. The coefficient is negative and statistically significant at the 5% level and the effect of a standard deviation increase in the composite uncertainty (0.60) is associated with an approximate 1.0% reduction in the expected sales growth rate. These results indicate that the effect of policy uncertainty on the operation of business is economically significant.

5. Conclusions

Recently, the effects of policy uncertainty on the real economy have been widely studied. However, the effects of uncertainties over individual policies have not been investigated to date. This study examines this topic by conducting an original survey for Japanese listed companies to present findings about the subjective uncertainties over specific economic policies and the effects of these uncertainties on business operations. The analysis is straightforward and demonstrates several new findings.

First, Japanese companies perceive uncertainty over the direction of several economic policies. Cross-industry policies and institutions, such as tax policy, the social security system, and labor market regulations, have more influence on business operations than do the licensing or regulation of individual industries. Second, manufacturing and non-manufacturing companies differ in their perception of policy uncertainty and the effects of this uncertainty on their business operations. For example, manufacturers feel more uncertainty over international trade policy and their managerial decisions are significantly affected by trade policy uncertainty. The results reflect that manufacturing companies often operate globally and face international competition. Third, among the various management decisions, equipment investment is found to be most affected by uncertainty followed by entry into or withdrawal from overseas markets and, next, hiring of permanent full-time employees. Finally, policy uncertainty has a negative and economically significant relationship with the expected sales growth of companies.

Our findings suggest that improving the predictability of cross-industry policies and institutions, such as international trade policy, the social security system, and labor market regulations, would significantly help revitalize the economy by facilitating future-oriented behavior of companies. In Japan, as a result of the House of Councillors election that took place in July 2013, the ruling coalition parties won the majority in the upper chamber of the Diet. This election put an end to the "divided diet" and the ruling coalition's dominance in both chambers is likely to continue for the next three years. It is hoped that greater political stability will lead to the improved predictability of economic policies and end the prolonged stagnation of the Japanese economy.

The analysis of this paper is unique, but the sample is limited to a relatively small number of listed companies. We reserve that the result may be different for small- and medium-sized companies. Additionally, the survey examined only a selection of economic policies and institutions. In future work, we plan to expand the sample and the questionnaires to explore further the policy uncertainty issue.

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Table 1 Distribution of sample companies by industry and average size

Industry	Sample companies	(%)
Manufacturing	154	52.4
Non-manufacturing	140	47.6
Construction	13	4.4
Information & communication	10	3.4
Transportation	11	3.7
Wholesale	27	9.2
Retail	25	8.5
Service	17	5.8
Other industries	32	10.9
N.A.	5	1.7
Total	294	100
	Mean	Median
Regular employees	4,481	900

Table 2 Point outlooks and the uncertainties of sales growth and price change (%)

A. Mean outlook								
	(1) Sales				(2) Price			
	All	M	NM		All	M	NM	
Previous 1 year	1.23	-1.38	4.09	***	-1.82	-2.78	-0.70	***
Next 1 year	4.86	4.39	5.38		-0.07	-0.47	0.40	
Next 3 years	5.96	6.26	5.61		0.06	-0.64	0.89	**
B. Uncertainty (mean of the standard deviations of individual companies' outlook)								
	(1) Sales				(2) Price			
	All	M	NM		All	M	NM	
Next 1 year	3.20	3.58	2.76	***	2.05	2.31	1.72	*
Next 3 years	3.59	4.04	3.03	***	2.34	2.59	2.03	

(Notes) The figures for the next three years are on an annual basis. M and NM denote manufacturing and non-manufacturing. ***, **, and * indicate the statistically significant differences between M and MN at 1%, 5%, and 10%, respectively.

Table 3 Point outlooks and the uncertainties of employment changes (%)

A. Mean outlook												
	(1) All regular employees				(2) Standard employees				(3) Non-standard employees			
	All	M	NM		All	M	NM		All	M	NM	
Previous 1 year	1.23	-1.66	4.67	***	0.13	-0.92	1.31		2.64	-2.94	8.82	***
Next 1 year	1.45	0.37	2.66	**	0.81	0.20	1.47		0.92	0.27	1.65	
Next 3 years	0.92	-0.01	2.01	***	0.98	-0.09	2.17	*	2.03	1.31	2.85	
B. Uncertainty (mean of the standard deviations of individual companies' outlook)												
	(1) All regular employees				(2) Standard employees				(3) Non-standard employees			
	All	M	NM		All	M	NM		All	M	NM	
Next 1 year	1.88	1.72	2.06		1.76	1.72	2.06		2.16	2.41	1.88	
Next 3 years	2.05	1.80	2.36	*	1.99	1.80	2.36		2.43	2.56	2.27	

(Notes) The figures for the next three years are on an annual basis. M and NM denote manufacturing and non-manufacturing. ***, **, and * indicate the statistically significant differences between M and MN at 1%, 5%, and 10%, respectively.

Table 4 Uncertainties over economic environments and their effects on business

		(1) High degree of uncertainty				(2) Significantly affected			
		All	M	NM		All	M	NM	
1	World economic growth	42.4	48.0	36.2	**	36.3	53.6	17.3	***
2	Exchange rate	44.7	54.9	33.3	***	48.5	64.9	30.2	***
3	Interest rate	15.2	15.7	14.6		23.0	23.4	22.5	
4	Stock market condition	22.1	26.8	16.8	**	18.4	18.2	18.7	
5	Budget deficit	45.7	39.9	52.2	**	7.9	6.5	9.4	
6	Electricity and energy prices	46.4	49.7	42.8		49.8	58.4	40.3	***
7	Diplomatic and trade relations	46.9	48.4	45.3		23.6	31.8	14.4	***

(Note) ***, **, and * indicate the statistically significant differences between M and MN at 1%, 5%, and 10%, respectively.

Table 5 Uncertainties over economic policies and their effects on business

		(1) High degree of uncertainty				(2) Significantly affected			
		All	M	NM		All	M	NM	
1	Tax policy	13.5	14.4	12.6		47.1	50.0	43.7	
2	Social security system	39.1	36.0	42.7		19.7	19.5	20.0	
3	Business licensing system	7.6	5.2	10.3		15.5	13.6	17.7	
4	Labor market regulations	11.1	9.2	13.2		23.5	22.1	25.0	
5	Environmental regulations	15.2	17.7	12.5		27.6	35.1	19.1	***
6	Land use and zoning restrictions	4.9	2.6	7.4	*	10.7	5.9	16.2	***
7	Consumer protection laws and regulations	5.9	3.3	8.9	**	9.7	3.3	16.9	***
8	Corporate law and regulations	9.7	7.2	12.5		22.6	22.9	22.2	
9	International trade policy	50.4	56.6	43.4	**	30.2	41.2	17.8	***

(Note) ***, **, and * indicate the statistically significant differences between M and MN at 1%, 5%, and 10%, respectively.

Table 6 Type of management decisions significantly affected by policy uncertainty

		All	M	NM	
1	Equipment investment	65.9%	71.7%	59.3%	**
2	R&D investment	14.6%	21.7%	6.7%	***
3	ICT investment	4.5%	2.0%	7.4%	**
4	Advertising	3.5%	1.3%	5.9%	**
5	Entry into or withdrawal from overseas market	47.0%	59.2%	33.3%	***
6	Organizational restructuring (M&A, etc.)	24.0%	16.4%	32.6%	***
7	Hiring of regular full-time employees	27.5%	19.1%	37.0%	***
8	Hiring of non-regular employees	11.8%	8.6%	15.6%	*

(Note) ***, **, and * indicate the statistically significant differences between M and MN at 1%, 5%, and 10%, respectively.

Table 7 Policy uncertainty and the hiring of regular full-time employees

Policies	Policy uncertainty	
	High degree	Moderate degree / no significant degree
Social security system	51.3%	33.8%
Labor market regulations	20.5%	7.8%

(Note) The figures are the percentage of companies that choose the “hiring of regular full-time employees” as the decision that is significantly affected by policy uncertainties.

Table 8 Regression results for the 3 year sales growth

1	Tax policy	-3.300	*
		(1.761)	
2	Social security system	-1.716	
		(1.510)	
3	Business licensing system	-1.449	
		(1.477)	
4	Labor market regulations	-3.175	*
		(1.693)	
5	Environmental regulations	-2.344	*
		(1.369)	
6	Land use and zoning restrictions	-2.054	
		(1.482)	
7	Consumer protection laws and regulations	-3.546	**
		(1.476)	
8	Corporate law and regulations	-1.570	
		(1.408)	
9	International trade policy	-1.736	
		(1.533)	
	Composite index	-0.595	**
		(0.260)	

(Notes) OLS estimates with standard errors in parentheses. *** Significant at 1%; ** significant at 5%; * significant at 10%. The dependent variable is the expected sales growth rate for the next three years (on an annual basis). The explanatory variables include industry dummies (1 digit) and the sales growth rate during the previous year. Composite index is the sum of the nine individual policy uncertainty measures.