The Asset-Pricing Implications of Policy Uncertainty

A thesis submitted by

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Abstract

This paper investigates the asset-pricing implications of policy uncertainty. Using the news-based measure and monthly data of Baker et al. (2016) to capture trade policy uncertainty (TPU) and other categorical policy uncertainties surrounding the United States from 1990 to 2019, I examine the impact of policy uncertainty on stock returns, and the risk premia related to each type of policy uncertainty. I show the results for the overall 30 years but also breaking down into each decade, then compare how each uncertainty help price the assets for different time span. This study has important implications for investors and policy makers, highlighting the need for considering policy uncertainty in investment decisions and reducing policy uncertainty to promote financial stability.

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1 Introduction

Uncertainty around the government policy is a major concern for policymakers and investors. The lack of clarity regarding the direction and nature of policy changes can have a significant impact on asset pricing and investment decisions. This paper contributes to the literature on the asset-pricing implications of policy uncertainty, by examining the effect of policy uncertainty on stock returns and the risk premium that certain policy uncertainty carries.

I use a comprehensive dataset that covers the period from 1985 to 2021 and includes monthly data on policy uncertainty, stock returns, volatility, and macroeconomic variables. Policy uncertainty is measured using the Economic Policy Uncertainty (EPU) index developed by Baker et al. (2016), which captures the level of uncertainty surrounding economic policy, and extended to include multiple categorical policy uncertainty–fiscal and monetary, taxation, expenditure, regulatory, trade, etc. To remove the extra noise caused by the Covid-19 pandemic starting from 2020, and to enable comparison across decades, I trim the data to include observations from 1990 to 2019.

I employ a variety of asset-pricing models and econometric techniques, including time series regressions, CAPM (Capital Asset Pricing Model), and GMM (Generalized Method of Moments) estimation, to examine the predicting power of trade policy uncertainty and the risk premium each categorical policy uncertainty carries in pricing the assets. The results indicate that trade policy has significant predicting power for future stock market returns on horizon of 1-month and 12-month. It also shows that market volatility factor, taxation, government spending, and regulatory policy factors carry significant risk premiums over most time spans.

In terms of the structure of this paper, section 2 provides an overview of the existing literature on the asset-pricing implications of policy uncertainty. Section 3 presents the description of data used in this study. Section 4 introduces the details of all the methods and models.

Section 5 presents and discusses the results.

2 Literature Review

2.1 The Asset-Pricing Implications of Government EPU

Brogaard & Detzel (2014) provides a framework for uncertainty pricing, which can be applied in my research. They study the impact of government Economic Policy Uncertainty (EPU)–including taxation, expenditure, monetary and regulatory–on U.S. stock market using data from 1985 to 2012. They use the Baker et al. (2016) measure to examine EPU and found that an increase of one standard deviation in EPU is associated with a contemporaneous 1.31% decrease in market returns and a 1.53% increase in future three-month log excess returns. They also find that changes in EPU do not affect cash flows or dividend growth over the 1 to 24-month horizons. Their cross section and time series analysis show evidence that EPU is an economically important risk factor.

2.2 Trade Policy Uncertainty and Stock Returns

Bianconi, Esposito, and Sammon (2021) studies Trade Policy Uncertainty (TPU) arising from annual votes by U.S. Congress to revoke China's "Most Favored Nation" (MFN) status between 1990 and 2001 before China's accession to WTO. This study is directly related to Trade Policy Uncertainty and provides a setting for difference-in-difference method, which inspired my idea of studying TPU in a different setting. They exploit the large cross-sectional variation in the exposure to tariff uncertainty and use a difference-in-difference approach to regress monthly firm level stock returns on the industry-level tariff uncertainty. Their baseline results suggest that U.S. firms more exposed to tariff uncertainty experienced significantly higher stock return than less exposed firms between 1990 and 2001.

2.3 Measuring Economic Policy Uncertainty

Baker et al. (2016) develops a new index of economic policy uncertainty (EPU) based on newspaper coverage frequency. They also used firm-level data to find that policy uncertainty is associated with greater stock price volatility and reduced investment and employment in policy-sensitive sectors like health care, finance, and infrastructure construction. They also extended the methodology to more categorical policy uncertainties, which will be the main variables of interests for my study.

2.4 A Five-Factor Asset Pricing Model

Fama and French (2014) uses time-series regression to quantify the pricing of five factors in market returns. The five factors include size, value, quality, profitability and investment pattern. They then update multiple portfolios that measure different sectors' performace. I will use some of these managed portfolios as the test asset to price the risk premiums related to each policy uncertainty index.

2.5 Asset Pricing

Cochrane (2005) explains asset pricing models such as ICAPM (Intertemporal Capital Asset Pricing Model) and APT (Arbitrage Pricing Theory), then provides detailed explanation of GMM (Generalized Method of Moments) Estimation and its applications in asset pricing. I will use the two-step GMM estimation process in the later stage of my research, to provide consistent and efficient estimates of each policy uncertainty's impact in the market and cross-sections.

3 Data Description and Variable Construction

I use the Baker et al. (2016) news-based measure of policy uncertainty, which provides monthly indexes on the overall economic policy uncertainty along with ten categorical policy uncertainties regarding monetary policy, taxes, fiscal policy and government spending, health care, national security, entitlement programs, regulation, financial regulation, trade policy, sovereign debt and currency crises. To illustrate, Figure 1 shows a graph of trade policy uncertainty (TPU) index from 1985 to 2022. It fluctuates in the time, and jumps around 1993 when the negotiation and ratification of NAFTA (North American Free Trade Agreement) was causing serious uncertainty regarding the future U.S. trade policy. It also has a spike between 2016 and 2020, when multiple domestic and foreign events created an unstable economic environment, especially around trade policy. As mentioned by Caldara (2020), those events include EU referendum, Trump election victory, U.S. pulling out of TPP (Trans-Pacific Partnership) Agreement, trade policy conflicts with China, etc.

I use the monthly Center for Research in Security Prices (CRSP) value-weighted index as a measure of the U.S. stock market performance from 1990 to 2019. I obtain Fama-French three factors (MKT, SMB, and HML), the Carhart momentum factor (UMD), and the test portfolios from Kenneth R. French Data Library. I create a monthly volatility index (VOL) by computing the standard deviation of daily stock returns within a month. I create a monthly variance index (VAR) as the square of the volatility index (VOL).

I also use a variety of business cycle variables from the Federal Reserve to serve as control variables. VXO is the Chicago Board Options Exchange monthly index of implied volatility on S&P 100 index. $BILL$ is the yield on the three-month Treasury bill. $RREL$ is equal to $BILL$ minus the 12-month rolling average of $BILL$. $TERM$ is the yield on the 10-year Treasury bond minus the yield on the three-month Treasury bill. $DEFAULT$ is equal to the Moody's BAA corporate bond yield minus the Moody's AAA corporate bond yield. CFI is the Chicago Fed National Activity Index.

For the GMM estimation, the Fama-French 25 size and momentum portfolios and the set of factors from the Fama-French three-factor model (*MKT, SMB, HML*)), as well as the Carhart momentum factor (*UMD*) are obtained from Kenneth R. French - Data Library.

4 Models

4.1 Model 1: Contemporaneous Returns

To investigate the relationship between changes in TPU and contemporaneous returns, we estimate the following regression:

$$r_t = \alpha + \beta' \Delta TPU_t + \gamma \Delta X_t + \epsilon_t \tag{1}$$

where r_t denotes the log excess return of the CRSP value-weighted portfolio in month t, and X_t denotes month t values of the control variables including *VAR, VXO, TERM, DEFAULT, RREL*.

4.2 Model 2: Stock Return Forecasts

To measure the link between expected stock returns and TPU, we estimate a variety of time-series forecasting regressions of the following form:

$$r_{t+1,t+h} = \alpha + \beta' TPU_t + \gamma X_t + \epsilon_{t+1} \tag{2}$$

where r_t denotes the log excess return on the CRSP value-weighted index during month t, and $r_{t+1,t+h}$ denotes the log excess return on the CRSP value-weighted index during months *t+1* through *t+h*. In other words, $r_{t+1} = log(1 + R_{m,t+1}) - log(1 + R_{f,t+1})$, where $R_{m,t+1}$ denotes the holding period return on the CRSP value-weighted index in month *t+1*, and $R_{f,t+1}$ denotes the holding period return on the one-month Treasury bill in month *t+1*.

4.3 Innovations for the Risk Factors

Pastor and Veronesi (2012) shows that firms with differing exposure to policy uncertainty typically have different expected returns. Similarly, innovations in policy uncertainty could affect investment opportunities by increasing or decreasing uncertainty.

To create innovations for each policy uncertainty or other potential risk factors such as VXO and VAR, we estimate

$$RF = a + b_1 RF_{t-1} + b_2 RF_{t-2} + ... + b_{t1} RF_{t-t1} + \epsilon_t^{RF}$$

Where RF denotes each risk factor, and $t1$ is decided by minimizing the Bayesian Information Criterion (BIC; with up to 12 lags). MKT_{t-1} denotes one lag of the excess return on the market into the right-hand side of the equation if it has significant impact on the risk factor. Then we are able to extract the innovations ϵ_t^{RF} for the following steps.

4.4 ICAPM and Factor-Mimicking Portfolios

Linear factor models such as the ICAPM (Intertemporal Capital Asset Pricing Model) imply linear pricing kernel models of the form:

$$E[m_t R_t^e] = 0 \tag{3}$$

$$m_t = a + b'(f_t - E(f)) \tag{4}$$

where R_t^e denotes a vector of excess returns, f_t is a vector of factors, a is a constant and b is a vector of coefficients. Consider the projection $b' R_t^e$ of the pricing kernel m_t onto the space of excess returns, R_t^e:

$$m_t = b' R_t^e + \epsilon_t \tag{5}$$

$$E(\epsilon_t R_t^e) = 0 \tag{6}$$

It follows from Equations (3)-(6) that:

$$0 = E(m_t R_t^e) = E((b' R_t^e + \epsilon_t) R_t^e) = E((b' R_t^e) R_t^e) \tag{7}$$

The projection $b' R_t^e$ is called the *factor-mimicking portfolio* of m. It is a regression of the discount factor on the returns R_t^e. In particular, $b' R_t^e$ contains all the relevant asset-pricing information that m_t does but does not have the portion ϵ_t, which is uninformative for pricing R_t^e. Therefore, it is convenient in empirical work to form mimicking portfolios for a proposed discount factor because they can reduce measurement error and filter out the information that is irrelevant to the prices of the test assets.

By Equation (4), the factor-mimicking portfolio of the discount factor can be obtained from a linear combination of the mimicking portfolios for each individual factor. Following Ang et al. (2006), I create factor-mimicking portfolios F_X for $X = TPU, VXO, VAR$ and any other types of policy uncertainty, by estimating the following regression:

$$\hat{\epsilon}_t^X = a_X + b'_X R_t^e + \eta_t^X \tag{8}$$

where $\hat{\epsilon}_t^X$ denotes the innovations for variable $X = TPU, VXO, VAR$ and any other types of policy uncertainty, and R_t^e denotes the excess returns on a set of basis assets. Then, the mimicking portfolios are constructed by:

$$F_X = \hat{b}'_X R_t^e, \tag{9}$$

where $\hat{b}'_X$ is the estimate from Equation (8). Following Brogaard & Detzel (2014), I choose the excess returns on the Fama-French 25 size and momentum portfolios, since these portfolios' returns are not explained by only a few factors like the average returns on the size and book-to-market portfolios.

4.5 GMM Estimation

I use standard GMM tests of the linear factor model in Equations (3) and (4). We estimate the risk premiums associated with each policy uncertainty variable and determine whether its factor-mimicking portfolio F_X helps to price assets. As mentioned in previous subsection, we use the Fama-French 25 size and momentum portfolios as test assets. I follow the two-step GMM method detailed in Cochrane (2005), and used by Brogaard & Detzel (2014), among many others. That is, we test the asset-pricing equation

$$E[m_t R^e_{pt}] = 0 \tag{10}$$

with the linear pricing kernel

$$m_t = 1 + b'(f_t - \bar{f}) \tag{11}$$

where b is a vector of constants and $f_t - \bar{f}$ is a demeaned set of factors including the Fama-French three-factor model, the Carhart momentum factor, the mimicking factor for one or all of the policy uncertainty factors, the VXO mimicking factor and the VAR mimicking factor.

Here I briefly summarize the procedure of GMM estimation. Given a matrix W, a GMM estimate, $\hat{b}(W)$ of b minimizes the form $g_T(b)'Wg_T(b)$ where $g_T(b) = T^{-1}\sum_{t=1}^{T} m_t(b)R^e_t$ and $m_t(b)$ is given by Equation (11). The one-step GMM estimator is then $\hat{b}(I)$, where I denotes the identity matrix. The two-step GMM estimator is given by $\hat{b}(\hat{S}^{-1}(\hat{b}(I)))$, where S is the estimated covariance matrix of the pricing erros from the one-step estimation. That is, $\hat{S}$ is an estimate of

$$S = \sum_{j=-\infty}^{\infty} E(u_t u'_{t-j}) \tag{12}$$

where $u_t = m_t R_t^e$. Here I follow Brogaard & Detzel (2014) and use the Newey-West (1987) estimator of S:

$$\hat{S} = T^{-1} \sum_{t=1}^{T} \sum_{j=-k}^{k} (\frac{k-|j|}{k}) u_t u'_{t-j} \tag{13}$$

I use the Newey-West estimator of S because it accounts for possible serial correlation. The two-step GMM is different than the one-step GMM in that it puts different weight on the assets in R_t^e instead of treating the pricing of all assets as equally important.

4.6 Economic Significance

Once I complete the previous steps, to decide if the estimates of the coefficients are economically significant, I estimate each test portfolio's exposure to the corresponding factors by estimating the regression:

$$\begin{aligned} R_{it}^e = &\alpha + \beta_{i,MKT} MKT_t + \beta_{i,SMB} SMB_t + \beta_{i,HML} HML_t \\ &+ \beta_{i,UMD} UMD_t + \beta_{i,F_X} F_{X,t} + \beta_{i,F_{VXO}} F_{VXO,t} \\ &+ \beta_{i,F_{VAR}} F_{VAR,t} + \eta_t \end{aligned} \tag{14}$$

where $i = Small, 2, 3, 4, Big$ and $j = Low, 2, 3, 4, High$. Then I could use the estimated coefficients from Equation (14) along with the GMM estimation results to calculate the annual premium from holding the portfolio with the highest exposure to a particular risk factor compared to holding the portfolio with the lowest exposure to such risk factor. The detailed calculations will be given in the next section.

5 Results

5.1 Changes in TPU and contemporaneous returns

The results for Model 1 (from 1990:1-2019:12) are reported in Table 1.

While the results cannot prove that TPU could partially explain the market movement, they show the correlation between the changes in TPU and the changes in the market returns, which is informative to both policy makers and investors.

The first difference of TPU has a significantly negative correlation with the excess return on the market. However, once the main control variables are included, then the first difference of TPU is no longer significantly correlated with the excess return on the market. Instead, variables measuring the monthly volatility such as VAR and VXO are significant at 5% and 1% level.

5.2 TPU's predicting power

The results for Model 2 (from 1990:1-2019:12) are reported in Table 2.

While the results cannot prove that the point estimate of TPU can serve as a prediction for future market returns, they show the correlation between the TPU in current month and the market movement in the future months. More studies are needed to find a causal relationship.

The point estimate of TPU has no significant predicting power over the future log excess return on any time horizons (h=1,2,3,6,12 months) with no controls. However, once I include all the control variables, TPU serves as a forecast for future stock market returns on horizon of 1-month and 12-month. Additionally, the two volatility measurement variable VAR and VXO remain significant on all time horizons. The variable $RREL$, which equals to the yield on the three-month Treasury bill minus the 12-month rolling average of three-month Treasury bill yield and tracks the fluctuation of short-term interest rate, also serves as a significant factor throughout all horizons.

5.3 Lag Lengths for Key Factors

The results of time-series regressions for the key risk factors (TPU, VAR, VXO) are reported in Table 3. The AR length for each variable is decided by the Bayesian Information Criterion (BIC).

From the regression results, the key risk factors can be estimated by:

$$TPU_t = a + b_1 TPU_{t-1} + b_2 TPU_{t-2} + c_1 MKT_{t-1} + \epsilon_t^{TPU}$$
$$VXO_t = a + b_1 VXO_{t-1} + b_2 VXO_{t-2} + b_3 VXO_{t-3} + c_1 MKT_{t-1} + \epsilon_t^{VXO}$$
$$VAR_t = a + b_1 VAR_{t-1} + b_2 VAR_{t-2} + c_1 MKT_{t-1} + \epsilon_t^{VAR}$$

From the Dickey-Fuller test results, I reject the null hypothesis that any of the risk factors has a unit root, at 1% significance level.

5.4 GMM Estimation of Risk Premiums

The estimates of the coefficients b from Equation (10) and Equation(11) are reported in Panel A of Table 4, and the estimated risk premiums are reported in Panel B of Table 4. Equation (10) and Equation (11) are as below, and the details can be found in section 4.5.

$$E[m_t R_{pt}^e] = 0 \tag{10}$$
$$m_t = 1 + b'(f_t - \bar{f}) \tag{11}$$

Panel A shows that MKT–the excess return on the market–is a significant factor to help price assets. The negative coefficients on HML (book-to-market values) and UMD (Carhart momentum) suggest that they covariate negatively with the marginal utility over the time span (year 1990-2019), and they carry positive risk premiums that are shown in panel B.

The pricing kernel coefficients on SMB (size of firms) are negative across all specifications, but none of them is significant.

In terms of the three factor mimicking portfolios (F_{TPU}, F_{VXO}, F_{VAR}), while their pricing kernel coefficients are not significant over this time span, they carry significant risk premiums. Specifically, F_{TPU} carries a significantly negative risk premium by itself, suggesting that investors will demand lower returns to hold assets that hedge against increases in TPU, which are the assets with positive TPU betas.

Column (3) uses F_{VXO} instead of F_{TPU} and it shows a statistically insignificant discount factor coefficient of -0.04 but carries a significantly negative risk premium. Column (4) shows a significantly negative risk premium for each of F_{TPU} and F_{VXO}. These results are consistent with the evidence from Brogaard & Detzel (2014), and they suggest that it is likely that the presence of F_{VXO} helps to separate the policy uncertainty news shocks in F_{TPU} from the other uncertainty shocks captured by F_{VXO}.

Column (5) and column (6) use the other volatility factor F_{VAR} and it shows a similar characteristics as F_{VXO}, and F_{TPU} still carries a significantly negative risk premium. However, its risk premium is not significant when including both F_{VXO} and F_{VAR}, as column (7) suggests.

5.5 Economic Significance of Risk Premiums

To see the economic significance of the estimates risk premiums, I follow Brogaard & Detzel (2014) to calculate the expected returns in each of the 25 size-and-momentum-sorted portfolios that can be explained by exposure to TPU. Specifically, I estimate Equation (14) for each of the 25 portfolios, over the time span 1990-2019. The results are reported in Table 5.

The return R_{51} has the highest beta of 0.03, and R_{11} has the lowest TPU beta of -0.01. The spread between the two is around 0.04. Since the risk premium of F_{TPU} is -2.67% per month, as shown in column (7) of Table 4 panel B, the lowest TPU-beta portfolio has a return that is $-0.04 * (-2.67\%) * 12 = -1.14\%$ lower per annum than that of the highest TPU-beta portfolio. This is a nontrivial premium to hedge against exposure to TPU. However, this economic significance result may not have a strong explanation power, considering that the risk premium itself is not statistically significant.

5.6 Extension to Multiple Policy Uncertainties

The insignificant pricing kernel coefficient and risk premium related to TPU (when including both volatility factors) are not surprising, since trade policy is only a small portion of the whole economic environment. Therefore, I extend the study by replacing TPU with every other categorical policy uncertainty index from Baker (2016). To compare across decades, I also apply the same GMM estimation to each decade: 1990-1999, 2000-2009, 2010-2019.

A summary of each policy uncertainty factor's pricing kernel coefficient and risk premium is provided in Table 6. The detailed GMM estimation results are provided from Table 7 to Table 10.

It shows that the pricing kernel coefficient of TPU is significant within each decade, even though the risk premium is only 10% significant for 2000-2009. In particular, the pricing kernel coefficient is significantly negative during 2000-2009 while carrying a significantly positive risk premium.

It is worth noting that while the risk premium of TPU is positive for the overall time period from 1990 to 2019, the risk premium of TPU within each decade is negative. This could be due to the relatively sample size for each decade or statistical noise. Moreover, the reason could also be that the TPU may have been more volatile in some decades compared to the others or the overall time-frame, which could affect the estimated risk premiums. More studies are needed to pin down the exact cause of this contrary.

From the overall results and the breakdown by decade, there are several factors that consistently have significant pricing kernel coefficients or risk premiums, including Fiscal Policy, Taxes, Government Spending, National Security, Regulation, and the broad Economic Policy Uncertainty. On the contrary, Sovereign Debt Policy does not have significant coefficients or risk premiums for most of the time span.

Moreover, HML (book-to-market values), UMD (Carhart momentum), and VXO (volatility index) demonstrate a substantial impact and aid in asset pricing throughout various timeframes. Notably, the period between 2010 and 2019, which exhibited minimal significant policy factors, coincides with the highest level of significance observed for HML, UMD, and VXO.

I then combine all the categorical policy uncertainty factors (not including the overall EPU), along with the same controls, in one regression and test which ones remain significant. The results are reported in Table 11.

It shows that Taxes, Government Spending, and Regulation factors remain significant across most timeframes. However, it should be noted that potential over-fitting issue might exist as this regression include seventeen variables, and there might be correlations among some factors.

6 Conclusion

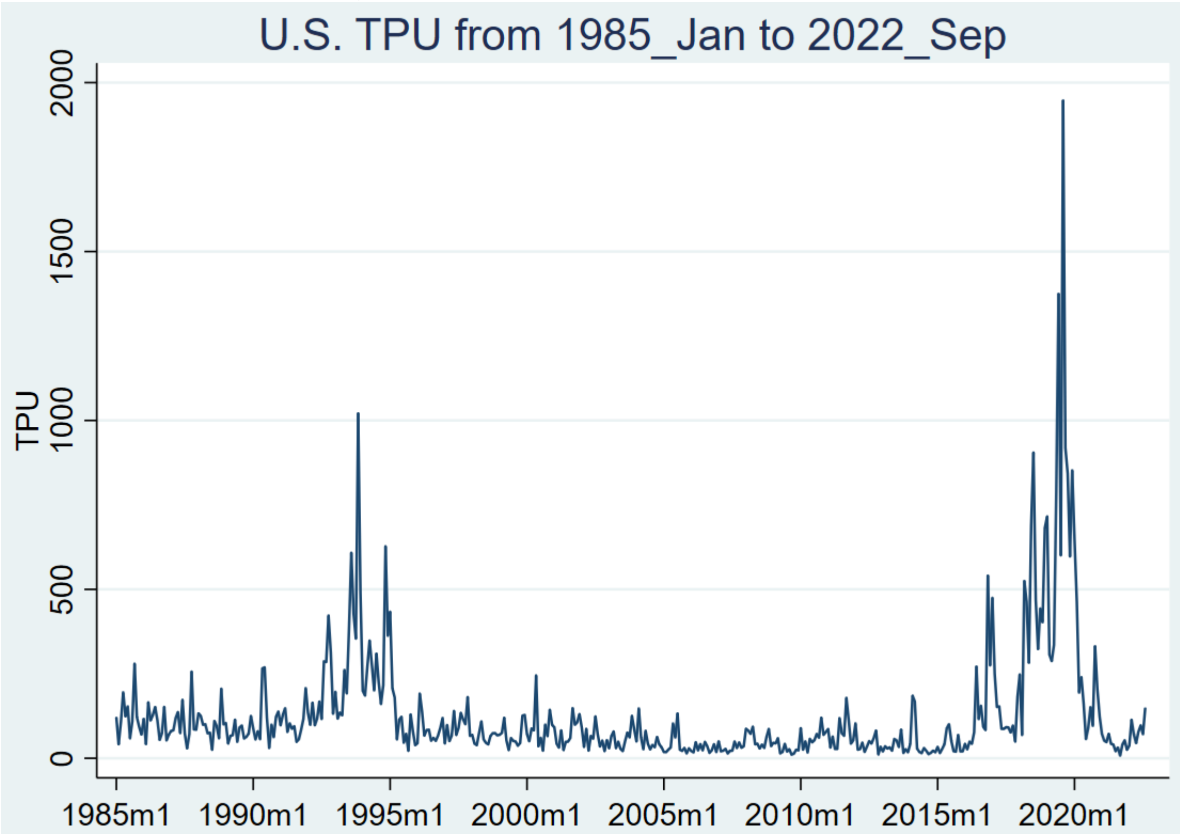
Government policies–including that of monetary and fiscal policy, taxation, spending, trade, and regulatory–have varying economic effects on the market. Economic agents make investment decisions based on expectations about the future policy environment. Therefore, policy makers can increase certain risks by generating more uncertainty about the future policy environment, and investors may react based on the pricing of the particular type of risk.

This paper contributes to the literature on the asset-pricing implications of policy uncertainty by examining the effect of policy uncertainty on stock returns and the risk premia they carry, using the Baker et al. (2016) measure to quantify the policy uncertainties. Through a variety of tests, I find that fiscal policy, taxation, expenditure, national security, and regulation are statistically significant risk factors across multiple time spans, from 1990 to 2019.

There are some potential limitations to the study. For instance, my analysis is based on a single measure of policy uncertainty, and it is possible that other measures may produce different resutls. Additionally, this study focuses on the US economy during 1990-2019, and the findings may not apply to other countries or time periods.

Future research could address these limitations by examining the asset-pricing implications of policy uncertainty using alternative measures of uncertainty and applying different methodologies to estimate the impacts of policy uncertainties across different regions and times. Overall, this study highlights the importance of policy uncertainty as a factor that affects asset prices and returns, and underscores the need for further research in this area.

Figure 1: TPU Index from 1985 to 2022



1991-1995: Negotiation and Ratification of NAFTA
2016-2020: EU Referendum, Trump Election Victory, U.S. Pulls Out of TPP, Trade Policy Conflicts

Table 1: Regression of log excess market return on ΔTPU

	r_t	r_t
D.TPU	-0.081**	0.046
	(-2.22)	(1.58)
D.VAR		0.203**
		(2.16)
D.VXO		-0.776***
		(-8.87)
D.TERM		-0.053
		(-1.24)
D.DEFAULT		-0.034
		(-0.67)
D.RREL		-0.145***
		(-3.14)
D.CFI		-0.002
		(-0.05)
N	359	359
R^2	0.006	0.400

(Standardized beta coefficients; t statistics in parentheses)
(*,**,*** represent significant at the 10%, 5%, 1% levels)

Table 2: Forecasting of Log Excess Returns on TPU

	(h=1)	(h=2)	(h=3)	(h=6)	(h=12)
			Univariate forecasts		
TPU	0.073	0.042	0.007	-0.031	0.046
	(1.38)	(0.80)	(0.13)	(-0.58)	(0.87)
N	360	360	360	360	360
R^2	0.005	0.002	0.000	0.001	0.002
			TPU forecasts with controls		
TPU	0.089*	0.062	0.031	0.001	0.090*
	(1.69)	(1.17)	(0.59)	(0.02)	(1.89)
VAR	-0.377***	-0.353***	-0.422***	-0.234***	-0.141*
	(-4.26)	(-4.01)	(-4.87)	(-2.75)	(-1.76)
VXO	0.333***	0.374***	0.429***	0.358***	0.232***
	(3.51)	(3.96)	(4.62)	(3.93)	(2.70)
TERM	0.051	0.069	0.088	0.157***	0.275***
	(0.91)	(1.24)	(1.61)	(2.92)	(5.43)
DEFAULT	0.044	0.024	0.073	0.101	0.223***
	(0.63)	(0.34)	(1.05)	(1.48)	(3.48)
RREL	0.152**	0.222***	0.293***	0.424***	0.519***
	(2.45)	(3.58)	(4.80)	(7.09)	(9.20)
N	360	360	360	360	360
R^2	0.062	0.069	0.101	0.135	0.230

(Standardized beta coefficients; t statistics in parentheses)
(*,**,*** represent significant at the 10%, 5%, 1% levels)

Table 3: AR(p) coefficients and Dickey-Fuller tests

	TPU		**VXO**		**VAR**	
AR(1)	0.456***	0.448***	1.055***	0.888***	0.834***	0.771***
	(9.21)	(9.10)	(20.08)	(13.90)	(15.86)	(13.56)
AR(2)	0.394***	0.405***	-0.309***	-0.151*	-0.133***	-0.099***
	(7.89)	(8.14)	(-4.11)	(-1.85)	(-2.52)	(-1.85)
AR(3)			0.148***	0.138*		
			(2.81)	(2.69)		
MKT_{t-1}		-3.815**		-24.361**		-.001***
		(-2.41)		(-4.38)		(-2.78)
DFuller	-7.087***		-4.490***		-7.350***	
N	358	358	357	357	358	358
R^2	0.592	0.598	0.806	0.816	0.551	0.560

(t-stats in parentheses)

(*,**,*** represent significant at the 10%, 5%, 1% levels)

DF: Dickey-Fuller test rejects at 1% level that TPU has a unit root.

Table 4: GMM Estimations with Trade Policy Uncertainty (1990-2019)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Panel A: Pricing kernel coefficients						
MKT	-0.09***	-0.09***	-0.11***	-0.11***	-0.09***	-0.09***	-0.15***
	(-5.84)	(-5.74)	(-2.58)	(-2.61)	(-3.97)	(-3.93)	(-2.86)
SMB	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.5)	(0.52)	(0.31)	(0.34)	(0.54)	(0.53)	(0.47)
HML	-.16***	-0.15***	-0.16***	-0.16***	-0.15***	-0.15***	-0.17***
	(-5.51)	(-5.28)	(-4.75)	(-4.7)	(-5.26)	(-5.07)	(-4.69)
UMD	-0.07***	-0.07***	-0.07***	-0.07***	-0.07***	-0.07***	-0.07***
	(-4.36)	(-4.13)	(-4.38)	(-4.23)	(-4.35)	(-4.15)	(-4.31)
F_{TPU}		0.04		0.03		0.04	0.03
		(0.3)		(0.19)		(0.24)	(0.21)
F_{VXO}			-0.04	-0.05			-0.17
			(-0.51)	(-0.54)			(-1.29)
F_{VAR}					0.66	0.62	2.53
					(0.44)	(0.42)	(1.19)
	Panel B: Estimated risk premiums (in % per month)						
MKT	0.93***	0.94***	0.94***	0.95***	0.98***	0.98***	1.01***
	(3.73)	(3.73)	(3.74)	(3.75)	(3.75)	(3.75)	(3.85)
SMB	-0.15	-0.15	-0.14	-0.14	-0.12	-0.12	-0.16
	(-0.82)	(-0.81)	(-0.74)	(-0.76)	(-0.66)	(-0.64)	(-0.87)
HML	1***	0.98***	0.95***	0.95***	0.98***	0.97***	1.04***
	(4.6)	(4.48)	(4.31)	(4.27)	(4.53)	(4.42)	(4.35)
UMD	0.68**	0.66**	0.74**	0.74**	0.68**	0.66**	0.75**
	(2.04)	(1.96)	(2.17)	(2.15)	(2.04)	(1.98)	(2.24)
F_{TPU}		-3.71**		-3.28*		-3.66**	-2.67
		(-2.11)		(-1.83)		(-2.08)	(-1.39)
F_{VXO}			-50.21***	-50.48***			-51.83***
			(-3.27)	(-3.28)			(-3.29)
F_{VAR}					-1.71***	-1.7***	-1.71***
					(-3.12)	(-3.1)	(-3.13)

(t-stats in parentheses)
(*,**,*** represent significant at the 10%, 5%, 1% levels)

Table 5: F_{TPU} Beta Estimates for 25 Size&Momentum Sorted Portfolios

Panel A: $\beta_{i,F_{TPU}}$ - Beta Values

Size\Momentum	Low	2	3	4	High
Small	-0.0103795	-0.0082687	0.0015709	-0.007535	-0.0019345
2	0.0155784	-0.0060772	-0.0031089	0.0134895	0.0055424
3	0.0033378	-0.0000847	0.0010835	0.0071442	-0.0030034
4	0.0003306	-0.0019014	0.0118467	0.004527	0.015104
Big	0.0250691	-0.0059718	-0.0060667	0.0002672	0.0027614

Panel B: $t(\beta_{i,F_{TPU}})$ - t-stat Values

Size\Momentum	Low	2	3	4	High
Small	-2.508671	-3.170362	0.6351973	-2.885704	-0.5473523
2	5.340813	-2.330702	-1.267348	5.757291	2.119547
3	0.9156113	-0.0347835	0.4462145	2.656932	-1.155957
4	0.0901279	-0.7800916	5.289112	1.853176	6.784072
Big	6.03509	-2.283291	-2.673485	0.1239123	1.114696

Table 6: Summary of GMM Estimations of 10 Factors

	1990-1999		2000-2009		2010-2019		1990-2019	
	b	Premium	b	Premium	b	Premium	b	Premium
F1	3.73***	-7.22***	2.49**	-7.22***	-0.09	-1.93***	0.98	-2.31***
F2a	1.04	-10.91***	0.98*	-8.57***	-0.24	-2.37	-0.03	-2.68***
F2b	2.56***	-8.45***	1.86**	-7.3***	0.07	-3.5**	1.55**	-3.38***
F3	2.51***	-8.4***	1.55**	-7.44***	0.39	-5.66***	1.35*	-3.72***
F4	2.22***	-19.31***	2***	-8.59***	-0.28	2.39	0.94**	-3.81***
F5	1.74***	-15.15***	-0.5	-2.09	0.39	-5.63**	0.81**	-5.05***
F6	1.15**	-20.66***	0.73	-15.81**	-2.43***	0.17	0.85**	-3.44***
F7	0.67	-5.67	1.11***	-5.71**	-0.01	0.72	0.71**	-3.33**
F8a	2.92***	-13.26***	-0.42	-3.16	1.81***	-5.41***	1.24*	-2.86***
F8b	-0.21	0.73	-0.06	-15.36**	0.4	5.26*	-0.03	0.24
F9	-0.55*	3.55	-1.58***	2.88*	-0.41***	6.62	0.03	-2.67
F10	0.01	-21.05	0.25	-0.81	-0.48**	1.8	-0.29*	2.51

(*,**,*** represent significant at the 10%, 5%, 1% levels)

Notes: b represents the pricing kernel coefficients, Premium represents the risk premium (in % per month). For simplicity, this table only includes estimated values. Values of t-stats can be found in Table 7-10.

F1 - F10 represent the 10 policy factors from Baker (2016), as:

F1: Economic Policy

F2a: Monetary Policy

F2b: Fiscal Policy (Taxes OR Spending)

F3: Taxes

F4: Government Spending

F5: Health Care

F6: National Security

F7: Entitlement Programs

F8a: Regulation

F8b: Financial Regulation

F9: Trade Policy

F10: Sovereign Debt, Currency Crises

Table 7: GMM Estimations with 10 Policy Uncertainties (1990-1999)

	F1	F2a	F2b	F3	F4	F5	F6	F7	F8a	F8b	F9	F10
Panel A: Pricing kernel coefficients												
MKT	-0.25***	-0.26***	-0.28***	-0.31***	-0.2***	-0.32***	-0.21***	-0.28***	-0.27***	-0.24***	-0.24***	-0.27***
	(-3.08)	(-3.2)	(-3.73)	(-4.15)	(-2.98)	(-4.14)	(-2.36)	(-3.08)	(-3.86)	(-2.83)	(-3.12)	(-3.35)
SMB	0.02	0.06	0	0	-0.05	-0.03	0.08	0.06	-0.02	0.09	0.09	0.11
	(0.3)4	(0.93)	(0.05)	(0.04)	(-0.89)	(-0.49)	(1.19)	(0.81)	(-0.35)	(1.37)	(1.32)	(1.56)
HML	-0.21**	-0.16	-0.25***	-0.27***	-0.27***	-0.34***	-0.11	-0.24**	-0.24***	-0.2*	-0.17*	-0.17*
	(-1.98)	(-1.45)	(-2.76)	(-2.95)	(-3.34)	(-3.79)	(-1.09)	(-2.19)	(-2.93)	(-1.68)	(-1.74)	(-1.67)
UMD	-0.11**	-0.09*	-0.1**	-0.1**	-0.09**	-0.17***	-0.09*	-0.12**	-0.1**	-0.12**	-0.11**	-0.1*
	(-2.15)	(-1.66)	(-2.06)	(-2.08)	(-2.15)	(-3.62)	(-1.78)	(-2.46)	(-2.42)	(-2.18)	(-2.07)	(-1.75)
F_{INDEX}	3.73***	1.04	2.56***	2.51***	2.22***	1.74***	1.15**	0.67	2.92***	-0.21	-0.55*	0.01
	(2.98)	(1.23)	(3.75)	(3.85)	(4.68)	(4.69)	(2.57)	(1.45)	(3.4)	(-0.39)	(-1.88)	(0.04)
F_{VXO}	-0.67***	-0.61***	-0.53***	-0.56***	-0.28**	-0.58***	-0.48***	-0.52***	-0.43***	-0.54***	-0.45***	-0.61***
	(-4.17)	(-3.6)	(-3.46)	(-3.69)	(-2.03)	(-3.78)	(-2.67)	(-3.3)	(-3.06)	(-3.26)	(-2.68)	(-3.54)
F_{VAR}	6.82	8.44	5.86	5.28	2.04	6.96	8.19	8.58	4.23	11.98	10.82	14.15**
	(1.1)	(1.29)	(0.95)	(0.87)	(0.32)	(1.15)	(1.3)	(1.24)	(0.78)	(1.51)	(1.64)	(2.04)
Panel B: Estimated risk premiums (in % per month)												
MKT	1.35**	1.57***	1.69***	1.8***	1.62***	1.55***	1.36**	1.42**	1.95***	1.46**	1.69***	1.76***
	(2.37)	(2.73)	(2.74)	(2.87)	(2.86)	(2.62)	(2.33)	(2.43)	(3.14)	(2.56)	(3.04)	(2.98)
SMB	-0.77*	-0.9**	-0.58	-0.67	-0.08	-0.57	-0.82*	-0.94**	-0.48	-1**	-0.88**	-1.05**
	(-1.9)	(-2)	(-1.44)	(-1.61)	(-0.24)	(-1.39)	(-1.91)	(-2.23)	(-1.54)	(-2.36)	(-2.07)	(-2.25)
HML	0.4	0.17	0.37	0.4	0.38	0.42	0.19	0.36	0.36	0.33	0.17	0.18
	(1.06)	(0.43)	(1.09)	(1.17)	(1.3)	(1.26)	(0.51)	(0.98)	(1.08)	(0.87)	(0.47)	(0.47)
UMD	0.93**	0.9**	0.66	0.71**	0.49	1.36***	1.15**	1.07**	1.12***	1.02**	0.78	0.92*
	(2.13)	(1.98)	(1.58)	(1.65)	(1.43)	(3.12)	(2.21)	(2.36)	(3.14)	(2.29)	(1.63)	(1.79)
F_{INDEX}	-7.22***	-10.91***	-8.45***	-8.4***	-19.31***	-15.15***	-20.66***	-5.67	-13.26***	0.73	3.55	-21.05
	(-5.08)	(-3.25)	(-5.08)	(-4.77)	(-5.71)	(-3.93)	(-3.42)	(-1.14)	(-5.26)	(0.25)	(0.59)	(-1.39)
F_{VXO}	-7.59	-15.23	-22.19	-23.86	-28.89	-18.49	-14.64	-18.81	-36.62*	-22.05	-30.79	-24.13
	(-0.33)	(-0.63)	(-0.92)	(-1)	(-1.27)	(-0.89)	(-0.59)	(-0.83)	(-1.76)	(-0.89)	(-1.32)	(-1)
F_{VAR}	-0.54	-0.75	-0.8	-0.81	-0.87	-0.85*	-0.58	-0.79	-1.05**	-0.85	-0.92	-0.95
	(-0.94)	(-1.25)	(-1.31)	(-1.34)	(-1.43)	(-1.69)	(-0.95)	(-1.42)	(-2.02)	(-1.36)	(-1.55)	(-1.51)

(t-stats in parentheses)
(*,**,*** represent significant at the 10%, 5%, 1% levels)

Notes: F1-F10 represent the same set of policy uncertainties as shown under Table 6

Table 8: GMM Estimations with 10 Policy Uncertainties (2000-2009)

	F1	F2a	F2b	F3	F4	F5	F6	F7	F8a	F8b	F9	F10
Panel A: Pricing kernel coefficients												
MKT	0.09	0.07	0.11*	0.1*	0.16***	0.02	0.05	0.14**	0.05	0.06	-0.04	0.05
	(1.33)	(1.29)	(1.95)	(1.74)	(3)	(0.36)	(1.02)	(2.3)	(0.94)	(1.26)	(-0.71)	(0.98)
SMB	-0.04	-0.05	-0.05	-0.05	-0.05	-0.03	-0.06	-0.05*	-0.06**	-0.07**	-0.11***	-0.06**
	(-0.84)	(-1.35)	(-1.43)	(-1.54)	(-1.61)	(-0.93)	(-1.33)	(-1.68)	(-2.21)	(-2.4)	(-3.94)	(-2.15)
HML	-0.08	-0.09**	-0.07**	-0.08**	-0.05*	-0.11***	-0.08*	-0.1***	-0.1***	-0.09***	-0.12***	-0.11***
	(-1.58)	(-2.09)	(-2.2)	(-2.54)	(-1.68)	(-3.28)	(-1.79)	(-3)	(-3.25)	(-3.21)	(-3.98)	(-3.5)
UMD	-0.02	0	-0.01	-0.01	0	-0.02	0	-0.01	0.02	0.01	-0.03	0
	(-0.7)	(-0.02)	(-0.71)	(-0.72)	(-0.01)	(-1)	(-0.25)	(-0.34)	(1.13)	(0.99)	(-1.16)	(0.08)
F_{INDEX}	2.49**	0.98*	1.86**	1.55**	2***	-0.5	0.73	1.11***	-0.42	-0.06	-1.58***	0.25
	(2.32)	(1.94)	(2.48)	(2.42)	(2.63)	(-1.2)	(1.32)	(2.84)	(-0.97)	(-0.38)	(-2.97)	(0.67)
F_{VXO}	0.14	0.08	0.14	0.14	0.2**	0.1	0.1	0.18*	0.13	0.14	-0.03	0.13
	(1.22)	(0.78)	(1.41)	(1.31)	(2.11)	(1.04)	(0.96)	(1.68)	(1.25)	(1.37)	(-0.21)	(1.26)
F_{VAR}	-1.4	0.16	-1.4	-1.26	-1.51	0.7	-0.28	-1.25	-0.06	-0.34	1.23	-0.67
	(-0.71)	(0.09)	(-0.81)	(-0.72)	(-0.94)	(0.38)	(-0.15)	(-0.74)	(-0.03)	(-0.2)	(0.61)	(-0.39)
Panel B: Estimated risk premiums (in % per month)												
MKT	0.25	0.11	-0.13	-0.07	-0.35	0.36	0.7	-0.36	0.61	0.43	0.84*	0.29
	(0.51)	(0.25)	(-0.27)	(-0.15)	(-0.7)	(0.87)	(1.48)	(-0.74)	(1.31)	(1)	(1.69)	(0.6)
SMB	0.69*	0.81*	0.47	0.49	0.47	0.66**	1.11***	0.49	1***	0.99***	0.95***	0.76***
	(1.73)	(1.89)	(1.39)	(1.45)	(1.38)	(1.97)	(2.87)	(1.39)	(2.7)	(2.65)	(3.12)	(2.2)
HML	0.8	0.8*	0.82**	0.88**	0.71*	1.05**	0.7	1.06**	0.83**	0.8**	1.18***	0.99***
	(1.6)	(1.68)	(2.17)	(2.36)	(1.94)	(2.47)	(1.55)	(2.75)	(2.16)	(2.1)	(3.19)	(2.59)
UMD	1.2*	0.76	1.29*	1.27*	1.03	0.66	-0.02	1.09*	-0.34	-0.18	0.06	0.23
	(1.68)	(1.37)	(1.83)	(1.87)	(1.48)	(1.28)	(-0.03)	(1.7)	(-0.76)	(-0.42)	(0.12)	(0.42)
F_{INDEX}	-7.22***	-8.57***	-7.3***	-7.44***	-8.59***	-2.09	-15.81**	-5.71**	-3.16	-15.36**	2.88*	-0.81
	(-3.62)	(-2.92)	(-3.03)	(-2.9)	(-2.72)	(-0.86)	(-2.52)	(-2.23)	(-1.55)	(-2.19)	(1.75)	(-0.38)
F_{VXO}	-95.34***	-86.41***	-60.45*	-60.93**	-53.13	-97.89***	-120.93***	-46.02	-100.22***	-90.7***	-91.19***	-78.67**
	(-3.18)	(-2.83)	(-1.92)	(-1.97)	(-1.6)	(-3.06)	(-3.46)	(-1.46)	(-3.15)	(-2.97)	(-3.21)	(-2.53)
F_{VAR}	-4.1***	-4.02***	-2.52*	-2.6*	-2.04	-5.14***	-5.26***	-2.27	-4.7***	-4.35***	-4.61***	-3.88***
	(-2.88)	(-2.94)	(-1.65)	(-1.73)	(-1.31)	(-3.22)	(-3.27)	(-1.59)	(-3)	(-2.94)	(-3.24)	(-2.7)

(t-stats in parentheses)

(*,**,*** represent significant at the 10%, 5%, 1% levels)

Notes: F1-F10 represent the same set of policy uncertainties as shown under Table 6

Table 9: GMM Estimations with 10 Policy Uncertainties (2010-2019)

	F1	F2a	F2b	F3	F4	F5	F6	F7	F8a	F8b	F9	F10
Panel A: Pricing kernel coefficients												
MKT	-0.12*	-0.12*	-0.1	-0.11**	-0.12*	-0.07	-0.15**	-0.12*	-0.08	-0.09	-0.11	-0.11*
	(-1.86)	(-1.87)	(-1.58)	(-1.81)	(-1.73)	(-0.98)	(-2.03)	(-1.84)	(-1.22)	(-1.57)	(-1.51)	(-1.79)
SMB	0.15***	0.15***	0.15***	0.13**	0.15***	0.14**	0.18***	0.15***	0.09	0.13**	0.19***	0.17***
	(2.66)	(2.67)	(2.63)	(2.35)	(2.81)	(2.51)	(2.98)	(2.71)	(1.41)	(2.26)	(3.3)	(3.28)
HML	-0.18**	-0.21***	-0.18**	-0.19**	-0.21***	-0.14*	-0.24***	-0.2***	-0.25***	-0.19**	-0.27***	-0.17**
	(-2.43)	(-2.9)	(-2.25)	(-2.53)	(-2.95)	(-1.65)	(-3.21)	(-2.62)	(-3.26)	(-2.38)	(-3.23)	(-2.41)
UMD	-0.15***	-0.15***	-0.15***	-0.16***	-0.16***	-0.14***	-0.14***	-0.16***	-0.2***	-0.18***	-0.16***	-0.11***
	(-3.41)	(-3.53)	(-3.43)	(-3.51)	(-3.81)	(-2.98)	(-3.03)	(-3.57)	(-3.93)	(-3.68)	(-3.28)	(-2.63)
F_{INDEX}	-0.09	-0.24	0.07	0.39	-0.28	0.39	-2.43***	-0.01	1.81***	0.4	-0.41***	-0.48**
	(-0.09)	(-0.4)	(0.11)	(0.62)	(-1.09)	(1.23)	(-2.6)	(-0.03)	(3.62)	(1.46)	(-3.52)	(-2.33)
F_{VXO}	0.25	0.28	0.28	0.25	0.28	0.32*	0.32*	0.27	0.34**	0.37**	0.38**	0.17
	(1.48)	(1.62)	(1.62)	(1.45)	(1.64)	(1.72)	(1.69)	(1.56)	(2.04)	(2.05)	(2.01)	(1.03)
F_{VAR}	-9.14*	-9.85**	-9.5**	-9.22*	-9.63**	-9.31*	-12.23**	-9.4**	-9.05*	-12.32**	-15.2***	-4.22
	(-1.93)	(-2.16)	(-1.99)	(-1.95)	(-2.08)	(-1.84)	(-2.53)	(-2)	(-1.84)	(-2.28)	(-2.99)	(-0.82)
Panel B: Estimated risk premiums (in % per month)												
MKT	1.75***	1.82***	1.72***	1.8***	1.79***	1.58***	1.66***	1.8***	2.15***	1.71***	1.38***	1.24***
	(4.76)	(5.04)	(4.74)	(5.1)	(4.63)	(4.17)	(4.12)	(4.71)	(4.78)	(4.32)	(3.54)	(3.54)
SMB	-0.17	-0.16	-0.18	-0.09	-0.23	-0.17	-0.3	-0.17	0.09	-0.13	-0.26	-0.27
	(-0.72)	(-0.65)	(-0.75)	(-0.38)	(-0.97)	(-0.71)	(-1.13)	(-0.7)	(0.3)	(-0.51)	(-1.11)	(-1.21)
HML	0.56*	0.65**	0.52*	0.62**	0.61***	0.42	0.64**	0.61**	0.82***	0.54*	0.77**	0.44
	(1.86)	(2.31)	(1.72)	(2.1)	(2.2)	(1.25)	(2.2)	(2.04)	(2.64)	(1.73)	(2.43)	(1.63)
UMD	0.46*	0.43*	0.47*	0.44*	0.48*	0.44	0.48**	0.46*	0.59*	0.49*	0.43*	0.36
	(1.76)	(1.7)	(1.79)	(1.67)	(1.86)	(1.59)	(2.09)	(1.78)	(1.87)	(1.95)	(1.87)	(1.49)
F_{INDEX}	-1.93***	-2.37	-3.5**	-5.66***	2.39	-5.63**	0.17	0.72	-5.41***	5.26*	6.62	1.8
	(-2.69)	(-1.31)	(-2.27)	(-4.04)	(0.75)	(-1.98)	(0.11)	(0.25)	(-4.72)	(1.65)	(0.78)	(0.3)
F_{VXO}	-104.05***	-108.56***	-105.16***	-106.8***	-109.27***	-101.29***	-89.95***	-108.27***	-132.56***	-108.46***	-71.29**	-74.24***
	(-3.57)	(-3.73)	(-3.61)	(-3.75)	(-3.68)	(-3.32)	(-2.78)	(-3.57)	(-4.04)	(-3.58)	(-2.32)	(-2.67)
F_{VAR}	-1.82***	-1.9***	-1.84***	-1.87***	-1.94***	-1.76***	-1.51**	-1.91***	-2.47***	-1.87***	-1.1*	-1.11*
	(-2.92)	(-3.05)	(-2.94)	(-3.06)	(-3.04)	(-2.67)	(-2.21)	(-2.97)	(-3.34)	(-2.91)	(-1.65)	(-1.83)

(t-stats in parentheses)

(*,**,*** represent significant at the 10%, 5%, 1% levels)

Notes: F1-F10 represent the same set of policy uncertainties as shown under Table 6

Table 10: GMM Estimations with 10 Policy Uncertainties (1990-2019)

	F1	F2a	F2b	F3	F4	F5	F6	F7	F8a	F8b	F9	F10
Panel A: Pricing kernel coefficients												
MKT	-0.14***	-0.15***	-0.11**	-0.12**	-0.1*	-0.11**	-0.18***	-0.11*	-0.14***	-0.15***	-0.15***	-0.11**
	(-2.61)	(-2.88)	(-2.08)	(-2.18)	(-1.88)	(-2.12)	(-3.33)	(-1.91)	(-2.67)	(-2.75)	(-2.86)	(-2.1)
SMB	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	-0.01	0.01	0.01	0.02
	(0.51)	(0.41)	(0.6)	(0.47)	(0.85)	(0.84)	(0.69)	(0.43)	(-0.41)	(0.34)	(0.47)	(0.87)
HML	-0.17***	-0.17***	-0.17***	-0.17***	-0.16***	-0.16***	-0.17***	-0.17***	-0.18***	-0.17***	-0.17***	-0.16***
	(-4.64)	(-4.74)	(-4.33)	(-4.38)	(-4.27)	(-4.25)	(-4.8)	(-4.56)	(-4.91)	(-4.28)	(-4.69)	(-4.38)
UMD	-0.08***	-0.07***	-0.08***	-0.08***	-0.08***	-0.08***	-0.08***	-0.09***	-0.08***	-0.07***	-0.07***	-0.07***
	(-4.4)	(-4.44)	(-4.43)	(-4.34)	(-4.58)	(-4.46)	(-4.29)	(-4.46)	(-4.41)	(-4.01)	(-4.31)	(-4.24)
F_{INDEX}	0.98	-0.03	1.55**	1.35*	0.94**	0.81**	0.85**	0.71**	1.24*	-0.03	0.03	-0.29*
	(0.91)	(-0.05)	(2.12)	(1.83)	(2.4)	(2)	(2.16)	(1.99)	(1.95)	(-0.12)	(0.21)	(-1.74)
F_{VXO}	-0.19	-0.17	-0.16	-0.17	-0.12	-0.14	-0.3***	-0.11	-0.18	-0.16	-0.17	-0.09
	(-1.43)	(-1.25)	(-1.24)	(-1.28)	(-0.95)	(-1.05)	(-2.11)	(-0.78)	(-1.36)	(-1.25)	(-1.29)	(-0.68)
F_{VAR}	2.67	2.59	2.44	2.63	2.33	2.58	3.26	2.37	2.01	2.67	2.53	2.42
	(1.23)	(1.2)	(1.1)	(1.18)	(1.08)	(1.19)	(1.52)	(1.06)	(0.89)	(1.21)	(1.19)	(1.15)
Panel B: Estimated risk premiums (in % per month)												
MKT	0.97***	1.01***	0.87***	0.92***	0.81***	0.93***	0.95***	0.88***	0.94***	1.01***	1.01***	1***
	(3.65)	(3.77)	(3.26)	(3.45)	(3.02)	(3.53)	(3.55)	(3.27)	(3.37)	(3.86)	(3.85)	(3.81)
SMB	-0.16	-0.15	-0.18	-0.18	-0.15	-0.14	-0.23	-0.15	-0.08	-0.13	-0.16	-0.22
	(-0.86)	(-0.82)	(-0.98)	(-0.98)	(-0.83)	(-0.79)	(-1.23)	(-0.82)	(-0.48)	(-0.74)	(-0.87)	(-1.09)
HML	1.05***	1.05***	1.04***	1.05***	1.01***	0.99***	1.04***	1.06***	1.07***	1.04***	1.04***	1.05***
	(4.45)	(4.38)	(4.24)	(4.25)	(4.22)	(4.2)	(4.39)	(4.37)	(4.62)	(4.19)	(4.35)	(4.25)
UMD	0.81**	0.76**	0.94**	0.92**	0.89**	0.9**	0.76**	0.96***	0.91**	0.77**	0.75**	0.65*
	(2.33)	(2.25)	(2.52)	(2.45)	(2.54)	(2.52)	(2.11)	(2.59)	(2.52)	(2.29)	(2.24)	(1.9)
F_{INDEX}	-2.31***	-2.68***	-3.38***	-3.72***	-3.81***	-5.05***	-3.44***	-3.33**	-2.86***	0.24	-2.67	2.51
	(-3.95)	(-2.98)	(-4.59)	(-4.62)	(-4.16)	(-4.29)	(-2.79)	(-2.55)	(-4.59)	(0.12)	(-1.39)	(1.04)
F_{VXO}	-49.46***	-51.68***	-44.12***	-46.53***	-41.91***	-46.14***	-46.11***	-44.23***	-48.09***	-52.23***	-51.83***	-52.49***
	(-3.09)	(-3.24)	(-2.69)	(-2.85)	(-2.58)	(-2.87)	(-2.86)	(-2.71)	(-2.88)	(-3.31)	(-3.29)	(-3.32)
F_{VAR}	-1.68***	-1.72***	-1.5***	-1.58***	-1.44**	-1.57***	-1.53***	-1.53***	-1.67***	-1.74***	-1.71***	-1.67***
	(-3.02)	(-3.13)	(-2.64)	(-2.77)	(-2.57)	(-2.82)	(-2.75)	(-2.67)	(-2.89)	(-3.17)	(-3.13)	(-3.02)

(t-stats in parentheses)

(*,**,*** represent significant at the 10%, 5%, 1% levels)

Notes: F1-F10 represent the same set of policy uncertainties as shown under Table 6

Table 11: GMM Estimations Combining All Categorical Policy Uncertainties

	1990-1999		2000-2009		2010-2019		1990-2019	
	b	Premium	b	Premium	b	Premium	b	Premium
MKT	-0.17	1.62***	0.11*	-0.61	-0.17*	1.24**	-0.07	0.53*
	(-1.6)	(2.78)	(1.76)	(-1.3)	(-1.74)	(2.36)	(-1.01)	(1.66)
SMB	-0.09	-0.1	0.01	0.14	0.19***	-0.13	0.01	-0.16
	(-0.92)	(-0.23)	(0.11)	(0.34)	(2.59)	(-0.48)	(0.32)	(-0.81)
HML	-0.4***	0.41	-0.18***	1.39***	-0.29***	0.92**	-0.11**	0.73**
	(-2.91)	(0.99)	(-2.92)	(3.19)	(-2.61)	(2.3)	(-2.1)	(2.41)
UMD	-0.23***	1.44***	-0.02	0.76	-0.19***	0.44	-0.08**	1.08**
	(-3.61)	(2.96)	(-0.76)	(1.41)	(-2.75)	(1.5)	(-2.52)	(2.34)
F2a	0.53	-7.52**	0.14	-3.37	0.79	-2.35	-1.23	-1.97**
	(0.42)	(-2.4)	(0.16)	(-1.04)	(0.33)	(-1.19)	(-1.05)	(-1.99)
F2b	-17.31***	-7.27***	7.03	-3.5	5.75	-3.2**	9.55	-2.34***
	(-2.62)	(-3.19)	(0.28)	(-1.12)	(0.96)	(-2.1)	(0.84)	(-2.71)
F3	13.16**	-7.34***	-10.11	-3.77	0.8	-5.24***	-8.04	-2.46***
	(2.35)	(-3.15)	(-0.5)	(-1.11)	(0.19)	(-3.18)	(-0.97)	(-2.77)
F4	2.4*	-15.61***	2.32	-5.49	-1.91**	2.31	0.16	-3.35***
	(1.73)	-(3.78)	(0.71)	(-1.46)	(-1.81)	(0.76)	(0.08)	(-3.06)
F5	3.88**	-12.53***	-1.87	-2.35	-1.05	-3.98	-1.75**	-3.79***
	(1.97)	(-2.87)	(-1.2)	(-0.68)	(-0.57)	(-1.46)	(-2.02)	(-3.06)
F6	1.25	-18.63***	0.35	-6.03	1.84	-1.2	0.95	-1.99
	(1.42)	(-3.54)	(0.36)	(-1.32)	(0.76)	(-0.66)	(1.32)	(-1.47)
F7	-3.56**	-6.02	3.15	-3.84	-0.34	-0.2	0.66	-2.55*
	(-2.35)	(-1.23)	(1.55)	(-0.92)	(-0.31)	(-0.07)	(0.75)	(-1.85)
F8a	0.38	-7.43**	-6.08**	2.51	-0.28	-4.08***	3.5***	-2.24***
	(0.18)	(-2.47)	(-2.05)	(1.46)	(-0.19)	(-2.91)	(2.9)	(-3.47)
F8b	-3.02**	2.77	0.78	5.21	0.58	5.31	-0.98	2.84
	(-2.18)	(0.84)	(0.92)	(0.78)	(0.87)	(1.58)	(-1.54)	(1.26)
F9	-1.67**	-1.43	-1.22*	2.78*	-0.73**	-4.63	0.21	-2.41
	(-2.5)	(-0.21)	(-1.84)	(1.81)	(-2.1)	(-0.42)	(0.88)	(-1.26)
F10	-0.17	3.91	1.83**	-1.79	-1.01	-2.8	-0.14	2.68
	(-0.7)	(0.31)	(2.2)	(-0.59)	(-1.62)	(-0.4)	(-0.54)	(1.07)
F_{VXO}	-0.2	-44.14**	0.23*	-17.72	0.05	-66.13*	-0.09	-24.76
	(-1.17)	(-2.3)	(1.71)	(-0.52)	(0.2)	(-1.7)	(-0.54)	(-1.38)
F_{VAR}	1.49	-0.88*	0.79	-0.33	-5.13	-0.96	1.88	-0.77
	(0.16)	(-1.81)	(0.35)	(-0.22)	(-0.57)	(-1.15)	(0.78)	(-1.3)

(t-stats in parentheses)

(*,**,*** represent significant at the 10%, 5%, 1% levels)

Notes: F2-F10 represent the same set of policy uncertainties as shown under Table 6.

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