Does partisan conflict predict a reduction in US stock market (realized) volatility? Evidence from a quantile-on-quantile regression model☆

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ABSTRACT

Theory suggests that partisan conflict negatively affects the possibility of economic policy change, implying that financial markets tend to operate under lower policy risk. Given that stock-return volatility measures risk, if the gridlock argument holds, stock-market volatility should be lower under divided than under a unified government. Using a partisan conflict index (PCI), we empirically confirm this theoretical argument for the U.S. stock market based on quantiles-based regressions. In particular, quantile-on-quantile regressions show that PCI tends to predict reduced volatility, with the effect being stronger at levels of volatility that are moderately low (i.e., below the median, but not at its extreme) for an increase in the predictor, especially with moderately low and high initial values (i.e., when PCI is at quantiles around the median).

1. Introduction

Bechtel and Füss (2008), using Fiorina’s (1991) balancing model (dealing with the possibility of economic policy change under unified and divided government) have developed a simple model to demonstrate that, under certain extreme conditions, the risk of policy change is reduced with a divided government (partisan conflict), since there is no alternative policy which all veto players prefer over the existing one. The result that lower policy uncertainty leads to lower macroeconomic volatility has also been theoretically derived more recently by Pastor and Veronesi (2012), Pastor and Veronesi (2013). One of the implications of this result, empirically verified for Germany over 1970–2005 by Bechtel and Füss (2008), is that higher partisan conflict is likely to dampen stock-market volatility because, with a divided government, stock markets can operate under lower policy risk.1

Given that stock market volatility is a key factor in asset allocation, portfolio optimization, and risk management (Rapach, Strauss, & Wohar, 2008), the objective of this paper is to analyze whether a measure of the degree of partisan conflict in the US, based on an index developed by Azzimonti (2015), can help predict (realized) volatility of the S&P500. In order to obtain the partisan

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1 The link between stock-market developments and politics has also been studied extensively in the literature dealing with the implications of political cycles and the political orientation of the government for stock returns. See for example, Santa-Clara and Valkanov (2003), Döpke and Pierdzioch (2006), and Bohl, Döpke, and Pierdzioch (2008), among others.

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conflict index (PCI), Azzimonti (2015) uses a semantic search approach to measure the frequency of newspaper coverage of articles reporting political disagreement about government policy (both within and between national parties) normalized by the total number of news articles within a given period. This data is available at a monthly frequency since January 1981, and with stock market data available at daily frequency, we can compute a model free-measure of volatility, that is, realized volatility (sum of daily squared returns over a month, see Andersen & Bollerslev, 1998).

We analyze the predictive ability of the PCI for realized stock-market volatility using standard Ordinary Least Squares (OLS) and two different quantile-based predictive regression approaches (standard quantile regressions and quantile-on-quantile [QQ] regressions), using data covering the period from January 1981 to April, 2017. The advantage of the quantile-regression approaches over conditional mean-based models is that the quantiles of PCI might have on the various quantiles of RV. We allow the function $\beta_\tau$ to be unknown, since we do not have a priori knowledge about RV and PCI are interlinked. In order to examine the linkage between these variables, we use the QQ approach by (i) selecting a number of quantiles of lagged PCI, and, (ii), estimating the local effect these particular quantiles of the lagged PCI might have on the various quantiles of RV. While there is also the triangular system of equations-based approach of Ma and Koenker (2006) for estimating QQ models, we use the single equation regression method of Sim and Zhou (2015) given that it can be easily estimated.

Let the $\theta$ superscript denote the quantile of RV. We first postulate a model for the $\theta$-quantile of RV as a function of its past lag, $RV_{t-1}$, and one lag of both the PCI and the first principal component ($F$) obtained from measures of output growth, inflation, and the short-term interest rate (discussed in detail in the data section) to control for omitted variable bias, based on the suggestions of Engle and Rangel (2008), Rangel and Engle (2011), and Engle, Ghysels, and Sohn (2013). Note that the lag-length of one is based on the Schwarz Information Criterion (SIC). We have

$$RV_t = \alpha^\theta RV_{t-1} + \beta^\theta PCI_{t-1} + \gamma^\theta F_{t-1} + \varepsilon^\theta_t,$$  

(1)

where $\varepsilon^\theta_t$ is an error term that has a zero $\theta$-quantile. We allow the function $\beta^\theta(.)$ to be unknown, since we do not have a priori knowledge about the nature (i.e., low, normal, or high levels) of PCI also could influence the way RV is predicted. Modeling this type of dependence requires a QQ approach. Using the QQ approach, we are able to model the quantile of RV as a function of the quantile of lagged PCI, so that the relationship between these variables could vary at each point of their respective distributions. The QQ approach, thus, provides a more complete picture of dependence. We implement the QQ approach by (i) selecting a number of quantiles of lagged PCI, and, (ii), estimating the local effect these particular quantiles of the lagged PCI might have on the various quantiles of RV.

Next, substitute the QQ approach by (i) selecting a number of quantiles of lagged PCI, and, (ii), estimating the local effect these particular quantiles of the lagged PCI might have on the various quantiles of RV.

Based on the study by Sim and Zhou (2015), we re-examine the quantile-on-quantile (QQ) approach using the QQ approach by (i) selecting a number of quantiles of lagged PCI, and, (ii), estimating the local effect these particular quantiles of the lagged PCI might have on the various quantiles of RV.

2 In somewhat related studies by Cheng, Hankins, and Chiu (2016) and Gupta, Mwamba, and Wohar (forthcoming), the PCI has been shown to predict stock returns in- and out-of-sample, based on conditional mean-based linear and nonlinear models.

3 Quantile regression was introduced in the seminal paper by Koenker and Bassett (1978). It is a generalization of median regression to other quantiles. The coefficients of the $h$th conditional quantile distribution are estimated as $\tilde{\beta}(\tau) = \arg min \sum_{i=1}^{n} \text{max}(h_i - \tau, 0) |y_i - \tilde{\beta}(\tau) |$, where the quantile regression coefficient $\beta(\tau)$ determines the connection between the vector of independent variables and the conditional quantile of the dependent variable, with $1_{y_i \text{quantile} (\tau)}$ being the usual indicator function.

4 The AIC criterion is known to select a parsimonious number of lags and, thereby, prevents overparameterization problems. Hurvich and Tsai (1989) examine the AIC and show that it is biased towards selecting an overparameterized model, while the SIC is asymptotically consistent. Complete details of the lag-length tests are available upon request from the authors.
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