



International economic policy uncertainty and stock prices revisited: Multiple and Partial wavelet approach

Debojyoti Das*, Surya Bhushan Kumar

Indian Institute of Management Raipur, GEC Campus, Sejbahar, Raipur-492015, Chhattisgarh, India



HIGHLIGHTS

- Emerging markets are less prone to both country-specific and international EPU.
- Emerging markets are comparatively less vulnerable to international shocks than developed markets.
- European countries are more susceptible towards US induced policy shocks.

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ABSTRACT

This paper introduces a new dimension to the relationship between Economic Policy Uncertainty (EPU) and Stock Prices (SP) by extending the contributions of Ko and Lee (2015) by using multiple and partial wavelet coherence techniques. The vulnerability of SP due to combined and isolated impact of international (US EPU) and Domestic Policy Uncertainty (DEPU) is investigated. The main findings are; (a) the combined effect of DEPU and US EPU is more significant for developed market's SP, (b) the emerging market's SP are more sensitive to DEPU and (c) Amongst developed markets, Japan and European countries are more sensitive to US EPU than DEPU.

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1. Introduction

This paper adds a new dimension to the relationship between Economic Policy Uncertainty (EPU) and Stock Prices (SP) by extending the scope of a recent paper by Ko and Lee (2015). Ko and Lee (2015) contribute to the literature by establishing the relationship between a country-specific Domestic EPU (DEPU) and SP. They also attempt to delineate the relationship between DEPU and US EPU (EPU index of US) using a time–frequency featured analysis. Their study shows evidences of negative links between DEPU and SP, which is consistent with findings of previous studies, such as (Antonakakis et al., 2013; Brogaard and Detzel, 2015). Their results also substantiate overlapping phenomenon between DEPU and US EPU. Similar artifact of EPU spillover between US and Eurozone are documented by Colombo (2013) and Klößner and Sekkel (2014). Nevertheless, Ko and Lee (2015) adds value to the literature by revealing a time-varying feature of this relationship.

As a corollary to above relationships, a direct causal relationship between US EPU and domestic SP is also investigated in recent literature (Dakhlaoui and Aloui, 2016; Yang and Jiang, 2016). The pertinence of these studies is backed by prior literature. For instance,

Forbes and Chinn (2004) argue trade related fluctuations in world's largest market (US) influence financial markets around the world. Ehrmann and Fratzscher (2009) further document that a negative stimulant is emitted by tightening of US monetary policy to 50 equity markets across globe. Hence, US EPU is widely considered by scholars as a benchmark of international policy uncertainty.

Thus, there exists a transitive relationship between SP and EPU. Both DEPU and US EPU influence the SP. In other words, the asset price of a country is susceptible to interaction of domestic as well as international EPU factors. However, two intriguing questions remain unanswered yet. First, what is the combined impact of DEPU and US EPU on domestic SP? And second, how DEPU impacts domestic SP, when the influence of US EPU is eliminated? Or the other way, how US EPU impacts domestic SP, when the influence of DEPU is eliminated? An inquiry to these questions is of paramount importance since it unveils whether domestic SP is more exposed to domestic uncertainty factors (DEPU) or international policy uncertainties (US EPU). This paper attempts to contribute to the literature by probing these mentioned questions in a time–frequency domain.

The paper has three main findings: (a) the combined effect of DEPU and US EPU is more significant for developed market's SP as compared to the emerging markets, (b) the emerging market's SP are more sensitive to DEPU as compared to US EPU, with marginal

* Corresponding author.

E-mail addresses: debojyoti.fpm2014@iimraipur.ac.in (D. Das), surya.fpm2014@iimraipur.ac.in (S.B. Kumar).

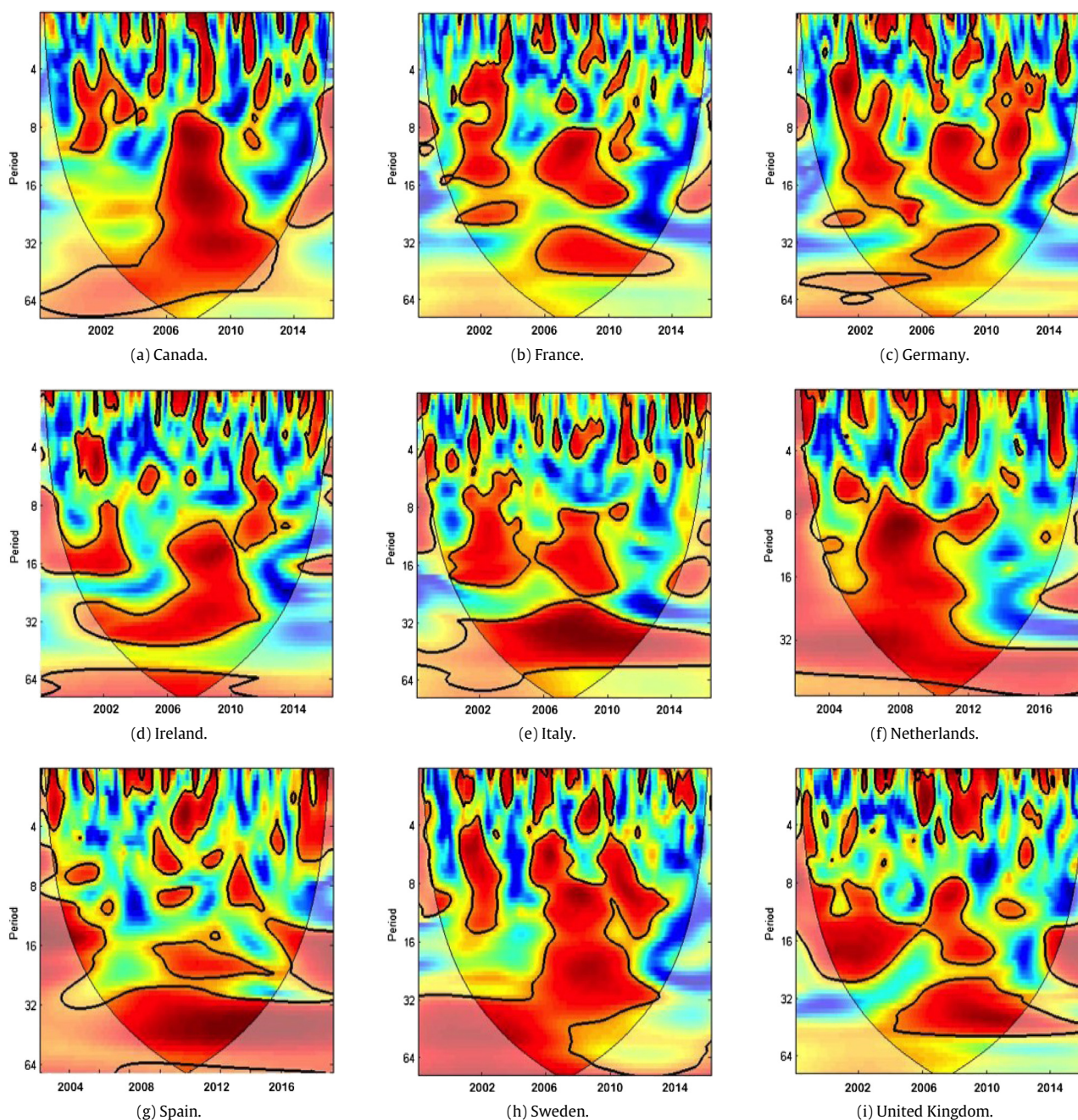


Fig. 1. Multiple wavelet coherence. **Note:** Multiple wavelet coherencies computed to gauge the combined impact of DEPU and US EPU on domestic SPs. The black contour designates the 5% significance level estimated from Monte Carlo simulations. The region with large (small) coherency is described in red (blue) colors. The coherence power scale is also provided in (r). The vertical axis represents frequencies in months. Figs. (a) to (k) correspond to developed markets. Figs. (l) to (q) represent emerging markets. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

exception to Brazil and Russia and (c) Amongst developed markets, Japan and European countries are more sensitive to US EPU than DEPU (except Australia and Canada).

2. Estimation strategy

Ko and Lee (2015) apply wavelet coherence analysis to draw inferences in a time–frequency frame. This paper applies two wavelet based techniques; multiple and partial wavelet coherence, developed by Mihanović et al. (2009). Multiple wavelet coherence (MWC) is useful to determine the coherence of multiple independent variables on the dependent one [$y_n \leftarrow (x_{1n}, x_{2n})$]. Partial wavelet coherence (PWC) is used to eliminate the influence

of common dependence between two time series on dependent variable to generate coherence results [$\{y_n \leftarrow (x_{1n}|x_{2n})\}$] or [$y_n \leftarrow (x_{2n}|x_{1n})$] (Ng and Chan, 2012). The usability of these techniques can be traced in recent literature of economics and finance, (refer Dima et al., 2014). Given the objective of this paper, the application of these techniques appears a logical premise.

A concise introduction to the theory of wavelets and its application to time-series is already discussed by Ko and Lee (2015). In continuation, this paper precisely discusses the extended concept of wavelet coherence technique i.e. MWC and PWC as per Mihanović et al. (2009).

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