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US economic policy uncertainty and co-movements between Chinese and US stock markets

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ABSTRACT

This paper investigates the impact of innovations in US economic policy uncertainty on the co-movements of China's A/B stock markets with the US stock market. We show that it is the absolute changes in the US economic policy uncertainty index that have a negative impact on the co-movements. The finding is robust to the asymmetric effects of non-policy-uncertainty shocks, to a break in the correlation structure, and to the four Chinese A/B stock markets investigated. Our results provide the first evidence regarding how stock market correlations are driven by policy-related uncertainty shocks in the international context.

1. Introduction

Does economic policy uncertainty (EPU) in the US matter for China's stock markets? In the present study, we approach this general question by investigating specifically the impact of US EPU innovations on the co-movements between the Chinese and the US stock market. Our study is motivated by the following considerations.

First, there is growing interest in studying the link between economic policy uncertainty and financial risk management. In a recent review article, Hammoudeh and McAleer (2015, page 2) note that "research papers in financial risk management and economic policy uncertainty are among the most widely cited, downloaded and viewed articles in finance and financial economics". Overall, the twenty-two studies reviewed therein have demonstrated that economic policy uncertainty does confound market participants and policy-makers, in terms of financial risk. However, the findings provided by these research endeavours are mainly concerned with how US EPU shocks influence the European economies or how Chinese EPU shocks affect the Greater China economy. No studies have looked at the impact of US EPU shocks on the Chinese stock markets. While Hammoudeh and McAleer's (2015) review only covers the papers published in one journal, similar important contributions have also appeared in other journals, including Karnizova and Li (2014), Antonakakis et al. (2013), Jones and Olson (2013), Colombo (2013), Klößner and Sekkel (2014), and Li et al. (2015). Again, these studies have also overlooked the Chinese stock market as an affectee of US EPU shocks.

Why is a study on this neglected issue interesting? Our second consideration pertains to the relevance of the research question posed above to investors trading in the Chinese, US and even other Asian stock markets (see, e.g., Shu et al., 2015). Nowadays a Google-Scholar search for articles on China's stock markets will return about 147,000 results, and many of them conduct analyses from the perspective of international investors. Indeed, since the Chinese government launched the QFII (Qualified Foreign Institutional Investors) scheme in 2003, the Chinese A-share market has become increasingly integrated with the international market.¹ By the end of 2014, more than 280 companies from 20 countries registered as QFIIs in China, the total QFIIs' investment capital exceeded 400 billion US dollars, and there were more than 49 US companies with 60 billion US dollars or more of investment capital. Furthermore, by the end of February 2014, the total quotas issued under the QFII programme rose to \$52.3 billion from \$51.4 billion at the end of December 2013, and to 180.4 billion yuan (\$29.44 billion) from 167.8 billion yuan under the RQFII programme, according to data released by China's State Administrative of Foreign Exchange.

Accordingly, changes in US EPU are likely to influence the behaviour of all those foreign institutional investors who partake in both the American stock market and the Chinese A- and B-share markets. This will likely enable US EPU shocks to drive the co-movements of the stock markets of the two nations. In addition, there is evidence that many Chinese retail investors tend to follow the investment trends of institutional investors including QFIIs (Hurtle,

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2011). Observing changes in the trading behaviour of QFIIs brought about by US EPU shocks, Chinese retail investors may well come up with new trading decisions accordingly. As far as the US market is concerned, it is well known that institutional investors are dominant market players who will generally respond to US EPU shocks in a similar, *rational* way. These further imply the possible effect of US EPU shocks on the co-movements of the Chinese and US stock markets, despite the different compositions regarding retail and institutional investors in the stock market across China and the US.²

Thirdly, asset market correlations play a crucial role in constructing a well-diversified international portfolio that strikes a balance between risk and return. Li (2011) argues that the value of diversification will be overstated (understated) if investors do not take into account the increase (decrease) in downside correlation. As two examples, Vanguard's Emerging Markets Stock Index Fund once had 29% of its portfolio, and the Oppenheimer Developing Markets Fund about 20% of its portfolio, in China. The weights attached to the portfolios' exposure to China are not constant, but vary depending on, *ceteris paribus*, time-varying correlations among constituent markets. The same can also be said to the portfolios of QFIIs consisting of Chinese and US shares. Thus, their portfolio managers cannot turn a blind eye to how US policy uncertainty shocks alter the correlations, for the sake of diversification.

Many recent studies on policy uncertainty (See, e.g., the articles cited above) employ the EPU indexes developed by Baker et al. (2016), and so does the present paper. Following Li et al. (2015), we treat innovations in the EPU index as policy-induced shocks. While Li et al. (2015) consider stock-bond correlations within the US, our interest is in stock-stock correlations between China and the US.

Then, what might be the sign of the impact of US EPU shocks on the correlations? Let us carry out some reasoning. Suppose a representative risk-averse QFII holds a portfolio comprising Chinese and US shares or stock indexes. Given everything else, when the American EPU index rises (a positive EPU shock), there will be three possibilities: the investor tends to (a) sell in the US stock market and buy in the Chinese stock market; (b) sell in the US stock market while doing nothing in the Chinese stock market; and (c) sell in both markets. When the American EPU index falls (a negative EPU shock), there will also be three possibilities: the investor may raise demand for (d) both US and Chinese shares; (e) the former while not changing demand for the latter; and (f) the former while reducing the holdings of the latter. In addition, we suppose that many, if not all, other QFIIs do the same, and many, if not all, Chinese retail and institutional investors follow the suit of this representative QFII.

Then, different outcomes are possible. Following positive EPU shocks, (a) and (b) would lead to a decline, while (c) would lead to a rise, in the China-US correlations. In other words, the effect of positive EPU shocks is negative in (a) and (b) but positive in (c). Following negative EPU shocks, (d) would lead to a rise, while (e) and (f) would lead to a fall, in the China-US correlations. Put differently, the effect of negative EPU shocks is negative in (d) but positive in (e) and (f). Note that, even if no QFIIs respond to US EPU innovations, American domestic investors will: They will sell (buy) in the US stock market following a rise (fall) in policy uncertainty, also driving the China-US stock market correlations to change. Since there is, *a priori*, no knowledge or theory for us to determine which outcome should be expected, we adopt Li et al. (2015) general framework to accommodate all these possibilities and let the data speak. Specifically, this asymmetric DCC framework incorporates positive and negative EPU shocks

² One might point out a research direction to differentiate between institutional and retail investors in the Chinese stock market and examine the differences in the effects of US EPU on the correlations of their respective stock movements with the US market. However, the fact that stocks are traded by both groups of investors prevents the idea from being implemented, due to the impossibility in getting the data that solely describe the trading behavior of either group.

as separate exogenous variables and then estimates their respective coefficients. Throughout this paper, we refer to the framework as ADCCX.

Employing the ADCCX framework, we examine the impacts of US EPU changes on four China-US stock market correlations. That is, we consider four well-known stock markets on the part of China: the Shanghai A-share (SHA), Shenzhen A-share (SZA), Shanghai B-share (SHB) and Shenzhen B-share (SZB) markets. The differences between A- and B-shares³ make it necessary for us to check if the impact of US policy uncertainty innovations on the correlation would be different across them. To anticipate, our main result shows that it is absolute changes in the US EPU index that have a negative effect on each of the four correlations.⁴

Our study makes contributions to the broad literature on how economic/political uncertainty affects financial markets in general (See, for example, Boutchkova et al., 2012; Pastor and Veronesi, 2012 and 2013; and Smales, 2016), and three strands of the literature in particular, as follows.

One strand looks at the power of print in terms of the effects of news-based policy uncertainty shocks on asset markets. Whereas it has been found that policy uncertainty shocks significantly change stock market volatility and returns (See, e.g., Hammoudeh and McAleer, 2015), and stock-bond market correlations (See, e.g., Li et al., 2015) within the national context, we offer evidence that this is the case for stock-stock market co-movements and from an international perspective.

The other strand is relevant to those who are interested in the interdependence between the Chinese and other national stock markets, and embraces a large number of articles (See, e.g., Huang et al., 2000; Johnson and Soenen, 2002; Aloui et al., 2011; and Wang et al., 2011). Whereas these studies have deepened our understanding of the interdependence, one important issue omitted is how policy-related uncertainty shocks, especially the US ones, may influence such interdependence. Addressing the issue is our contribution to this strand.

The third strand deals with the power of print associated with Chinese EPU and its influences on the domestic or the Greater China economy in particular. However, to the best of our knowledge, there are limited studies in this strand (for example, Wang et al., 2014; and Kang and Ratti, 2015). Wang et al. (2014) show that higher EPU dampens corporate investment in China, while Sin (2015) suggests that changes in mainland China's EPU do not have significant influence on Taiwan but on Hong Kong. We turn to the financial market, instead of the real sector, in China, and to US EPU rather than Chinese EPU. Our results suggest that, not just Chinese own EPU shocks studied previously, but also US EPU shocks, may be relevant to fluctuations in the Chinese

³ Apart from different currency denomination, for a long time, the main difference from a regulatory standpoint was that the A-share market was closed to foreign investors while the B-share market was open only to foreigners. However in 2001, the Chinese authorities tried to boost the B-share market by opening it to individual Chinese investors. And in 2003, a QFII scheme was introduced whereby selected foreign institutions were allowed to buy A-shares.

⁴ Studying the aggregate Chinese stock market to see the effect of US EPU on its correlation with the US stock market is undesirable for two reasons. First, whether the results turn out to be different than or similar to the results from investigating the four Chinese sub stock markets, they would not be informative in that differences between the four sub stock markets would be obliterated away by aggregation. As a result, conclusions would unlikely be convincing and reliable (to serve, e.g., robustness check purposes). More specifically, A-share markets (SHA and SZA) can only trade A-shares, B-share markets (SHB and SZB) can only trade B-shares, and different regulations applied to different A-share markets (SHA and SZA) and to different B-share markets (SHB and SZB). For instance, traded in the SHA market are larger market-cap companies, than in the SZA market, and traded in A-share markets are larger companies than in B-share markets. So, traders with different interests/opinions about large/small shares would behave differently. All these further justify that we must study four Chinese stock markets separately, and must not group them as one market since this would make the results much less informative. Second, there are no stock price indexes available that fully cover and so represent the entire Chinese stock market. For example, even the MSCI China index does not include the mainland-traded Chinese A-shares.

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