CHAPTER 2

Literature Review

2.1 Tourism demand

Being one of the important areas in tourism research, tourism demand modeling has attracted much attention from academics. More and more studies on tourism demand applying various economics and statistical models to research volatility and relationship in tourism demand, the frequencies and samples range from year, quarter and month. One of the most widely used models is multivariate autoregressive conditional heteroskedasticity (GARCH) model as their tourism model. A number of multivariate generalized autoregressive conditional heteroskedasticity (GARCH) models have been proposed, containing symmetric constant conditional correlation (CCC) GARCH model, dynamic conditional correlation (DCC) GARCH model, symmetric vector ARMA-GARCH model, asymmetric vector ARMA-GARCH model, and BEKK-GARCH model.

Particularly, applying multivariate GARCH model, the authors of McAleer, Chan, Shareef, and Hoti have made a great contribution to tourism demand research. Hoti, Leon and McAleer (2004) study international tourist arrivals to the Canary Islands by CCC-GARCH model. They find that the conditional correlations are generally positive, varying from small negative to large positive correlations in the monthly tourist arrivals shocks. Chan, Lim and McAleer (2005) use the symmetric CCC-MGARCH, symmetric VARMA-GARCH, and asymmetric VARMA-GARCH to study Australia's tourism demand from the four leading source countries. They examine the presence of interdependent effects in the conditional variance among Japan, New Zealand, UK, and USA, and the asymmetric effect of shocks in two of the four countries. Shareef and McAleer (2006) apply the symmetric VARMA-GARCH model to research international tourism demand and uncertainty in the Maldives and Seychelles. This study points out that there are spillover effects between the Maldives and Seychelles. Shareef and McAleer (2007) study the Maldives inbound tourism demand by CCC- GARCH model and VARMA-GARCH model, and find that static conditional correlations and the respective transformed series are significantly different from zero, but also relatively low among eight major tourist source countries (Italy, Germany, UK, Japan, France, Switzerland, Austria and the Netherlands). Álvares, Hoti and McAleer (2007) use CCC-GARCH model in Spanish domestic tourism market. It aims to research the correlation among five major Spanish destinations namely Canary Islands, Catalonia and the community of Madrid. They find five destinations are substitutes and independent to shocks. Seo, Park and Yu (2009) apply the DCC-GARCH model to analyze of the relationships in Korea outbound tourism demand. Coşkun and Özer (2011) used BEKK-GARCH (1, 1) model for inbound tourism demand in Turkey. In this paper, authors got cross-country interdependent and dependent effects in the conditional correlations for Germany, France, United Kingdom, and the Netherlands.

Multivariate GARCH model (dynamic conditional correlation (DCC GARCH model, symmetric vector ARMA-GARCH model, asymmetric vector ARMA-GARCH model, and BEKK-GARCH model) have some drawbacks as follows:

- a. They are somewhat restrictive, since their requirements of normality for the joint distribution and of linear relationships among variables (Wang, Chen and Huang, 2009).
- b. They cannot capture tail dependence.

2.2 China international tourism

The rapid growth of China's international tourism, not only inbound tourism, but also outbound tourism, has attracted a great deal of attention in recent years. However, the academic literature is still sparse in this area.

Zhang, Pine and Zhang (2000) analyze China's international tourism opportunities and challenges and give some suggestion for international tourism development. With regard to China's inbound tourism, Shan and Wilson (2001) investigate the causal relationship, between China international tourism and international trade by a vector autoregression (VAR) model. Kulendran and Shan (2002) forecast China's monthly inbound travel demand by seasonal ARIMA model. Lim and Pan (2005) review the development of the Chinese inbound tourism industry and use Box-Jenkins univariate time series to analyze tourist arrival patterns in inbound tourism for China from Japan. They find that tourist arrivals from Japan to China display strong seasonal patterns.

Researches on Chinese outbound tourism are as follows. Hangin and Lam (1999) analyze the motivations of Mainland Chinese visitors to Hong Kong. Wang and Sheldon (1995), Chai (1996), and Zhang and Heung (2001) analyze the contributing factors of Chinese outbound tourism, which they find that population growth, income, investment and trade, changes in the structure of the economy, price, interest rates, as well as regulatory factors are the main factors of Chinese outbound tourism. Qu and Lam (1997) use the multiple regression method to study what exogenous variables best explain the travel demand for Mainland Chinese tourists to Hong Kong. Guo, Kim and Timothy (2007) mainly analyze the impacts of the Mainland Chinese outbound tourism market and find that a multitude of political, social and economic variables are the main factors which influence the growth of Mainland Chinese outbound tourism. They note that disposable income per capita and relaxation of visa can explain ravel demand for Mainland Chinese tourists to Hong Kong. Lim and Wang (2008) discuss the development of Chinese outbound tourism in general, and particular analyze Chinese tourist arrival patterns to Australia. Keating and Kriz (2008) apply a theoretical framework to undertake a systematic review of the academic literature on outbound tourism from China. They provide some direction for future empirical research on outbound tourism from China. Moutinho et al. (2008) investigate the factors that affect the Mainland Chinese arrivals to Taiwan and use by neural networks to forecast its corresponding tourism demand. Cai, Li & Knutson (2008) introduce ameta-review of 30 academic articles, which have been published about China's outbound tourism market. Sang and Cathy (2011) provide an overview of paper about China's tourism and hospitality management, which were published in six leading English language academic texts from 1978 to 2008.

As far as my knowledge, no study exists that analyzes China international tourism demand volatility and co-movement (or dependence). This study tries to fill this gap by applying copula based GARCH model.

2.3 Tourism demand and exchange rate

A number of studies have been devoted to investigate the influence of exchange rate on international tourism demand. Crouch (1994a, 1994b) points out that the effect of the exchange rate on tourism demand change from study to study. Main findings can be divided in two groups. Firstly, some empirical studies have found that exchange rate doesn't have significant effects on tourism demand. Quayson and Var (1982) research Okanagan tourism demand and found that the exchange rate doesn't have a determinant impact on tourism receipts. Vanegas and Croes (2000) find that exchange rate variable is not statistically significant for tourism demand from the United States to Aruba. In addition, Croes and Vanegas (2005) document that exchange rate had a positive effect on tourist arrivals to Aruba from the United States, The Netherlands and Venezuela, but the coefficient of exchange rate variables is not statistically significantly different from zero except for Venezuela. Quadri and Zheng (2010) find that exchange rates have no effect on 11 out of the 19 nations being examined.

On the contrary, other empirical studies have found strong significant effects of the exchange rate on tourism demand. For example, applying the spatial distribution to research tourism demand and exchange rate variation in OECD European countries, Bond, Cohen, and Schachter (1977) find that the flow of international tourists is directly and indirectly impacted by exchange rate variations. Webber (2001) studies exchange rate volatility and cointegration in Australian outbound tourism demand and documents that fluctuation in the exchange rate is a significant decisive factor thatdetermines50% of the long-run tourism demand. Adopting a copula approach to study the correlation between tourism demand and exchange rates for some Asian Countries, Wang, Chen, Lu, and Hwang (2008) observe that currency appreciation has a greater effect on tourism demand than the currency depreciation. In addition, employing the DCC-GARCH and VEC models, Seo, Park, and Yu (2009) find that exchange rates yield positive or negative impact on conditional correlations. Using the bivariate GARCH approach, Akar (2012) finds that tourism demands from the Euro zone and the USA to Turkey are positively related to exchange rates, and tourism destinations are more popular to people from countries where their currency is more valuable. Saayman (2013) use GARCH models and ADL models to study the relationship between exchange rate volatility and tourism. He find that the volatility of exchange rate is a deterrent for tourism to South Africa from countries such as China France, Brazil and Australia,

while the UK, Germany and the USA volatility does not influence arrivals to South Africa.

2.4 Copula based-GARCH model

The application of copula to analyze economic issues began at the beginning of the twenty-first century. For example, Patton (2001) is one of the earliest papers to use the copula based GARCH model to analyze exchange rate dependence. Jondeaua and Rockingerb (2002) apply copula based GARCH model and find that conditional dependency increases subsequent to large extreme realizations for many market indices and becomes stronger after crashes for several index pairs. Later on, Jondeaua and Rockingerb (2006) apply copula base GARCH-skewed Student-t model in international stock market and find that the conditional dependency between European markets changes over time and increases significantly and subsequently to movements in the same direction during a crash or boom. Recently, the copula based GARCH model has become popular in analyzing economic studies, especially in financial. For example, Ning and Wirjanto (2009) measure dependence in East-Asian stocks using copula approach. Wang, Chen, and Huang (2011) apply the dynamic copula based-GARCH model to examine the dynamic dependence between China stock market and other international stock markets. Wu, Chung, and Chang (2012) study the co-movement between oil price and exchange rate by using copula based GARCH model. Reboredo (2011, 2012) also use copula approach to study the co-movement between oil price and exchange rate. In addition, Zimmer (2012) applies six various copula specifications to measure conditional dependence between price changes in different geographic areas. He finds that among housing prices in different states there is a stronger conditional dependence, and the Clayton-Gumbel mixture copula fits the data better than the Gaussian copula. As far as we know, there is no study applying the copula based-GARCH model to investigate the conditional dependence in China international tourism market. Thus, in this study, we fill in the gap in literature by employing the copula-GARCH model to examine conditional dependence in China's tourism market. The copula-GARCH model can capture the static and time-varying conditional dependence, as well as investigate the asymmetric and symmetric conditional dependence.

To sum up, the advantage of copula-GARCH model can be summarized as follows:

- a. Most of time series are skewed and leptokurtic, following different marginal distributions, as well as different degrees of freedom parameters. Copula based GARCH model can capture these characteristics and a better fit of the time series data.
- b. The relationship or dependence which is measured by copula approach does not place restrictions on static. Dynamic copula theory can examine time-varying conditional dependence.
- c. The copula approach can measure symmetric or asymmetric tail dependence.



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