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Financial portfolio approach to optimal tourist market mixes

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Abstract

This study applied a financial portfolio theory to estimate optimal market mixes to minimize the instability of inbound tourist market demand. An empirical analysis was applied to inbound tourists to Taiwan. The results shed light on diversification in tourism market and offer tourism authorities and policy-makers explicit guidelines for risk management in the destination planning process. Specifically, using optimal mixes with various return/risk options can facilitate a more stable pattern of arrivals from foreign countries. To achieve the Doubling Tourist Arrivals Plan, introduced by the Taiwanese government in 2002, the tourism authorities should take the high-return/ high-risk option and shift available resources to Japan. More policy implications are provided to guide tourism authorities and policy makers.
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1. Introduction

International tourism plays a significant role in the economic development of many destination countries. It becomes an important source of business activities, contributing to income and generating employment. The tourism industry, however, shows considerable instability in demand (Sinclair, 1999). It is desirable that tourist arrivals keep increasing and contributing to the growth of income and employment. Decreased arrivals can adversely affect a local economy, with an especially substantial effect if one of the primary tourist markets sees a sharp decrease in international arrivals. Accordingly, efforts should be made to alleviate the level of fluctuation in tourist demand. Thus, the goal of volatility management for tourist arrivals from different source countries needs to be incorporated into the tourism planning process. A destination country should attract a distribution of nationalities, so the total level of volatility in tourist arrivals is minimized.

The instability of demand for international tourism may be the result of changes in exchange rates, prices, economic upheavals, political unrest, and promotional activity among other things (Sinclair, 1999). The instability pattern of arrivals can differ by nationality because tourists from each country are sensitive in different ways to changes in these variables (Board, Sinclair, & Sutcliffe, 1987). For economic, political, and social changes, different tourist nationalities have different levels of volatility, or risk, as measured by the variations in demand. Policy makers in charge of the long-term development of the tourism industry should make good use of available resources to attract a distribution of tourists by nationalities to minimize the volatility of tourism demand.

Minimizing instability in tourism demand is quite similar to stock investors trying to choose optimal portfolios that minimize return volatility. Mutual fund managers decide on optimal stock mixes that minimize return volatility (risk), based on a financial portfolio theory. In general, the portfolio theory helps investors choose the proportion of their total investment budgets to allocate to different securities. Tourism policy makers may be able to borrow the portfolio theory for deciding optimal market mixes.

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In developing a financial portfolio theory, Markowitz (1952, 1959), the 1990 Nobel Laureate in economics, suggested that particular combinations of securities could reduce the overall level of instability of returns, because each security has a unique level of risk and expected return. He defines risk as a variation in return in the theory. Simply put, the portfolio theory recommends that investors construct security mixes that have minimum risks for any level of return, or maximum return for any level of risk. In the contemporary finance world, the portfolio theory has become the most popular tool to build risk-minimizing portfolios of securities, given the expected returns of the individual securities. Sets of these optimal portfolios comprise an efficient frontier, which specifies the maximum return for any risk level from the possible investments (Fig. 1). Among the optimal points on the efficient frontier, some investors may prefer lower-risk, lower-return portfolios; others, medium-risk and medium-return portfolios. Still others may choose high-risk, high-return portfolios. Given the knowledge of the investor's return/risk trade-off and estimates of the expected return and risk associated with each security, portfolio analysis can determine optimal mixes of securities for the investor (Board et al., 1987).

The basic principles of the financial portfolio theory can be applied to optimal foreign tourist market mixes. Similar to stock markets, tourist markets have different levels of return (arrivals) and risk (instability). Even though return and risk in tourism cannot be defined in exactly the same way as in the finance field, Jang, Morrison, and O'Leary (2002, 2004) provide a hint about an application of finance-related idea to tourism research. Indeed, Jang et al. (2002, 2004) explained how return and risk concepts in finance can be applied to tourism. What they actually employed in their study includes profitability measured with mean travel expenditure, risk gauged with the standard deviation, and coefficient of variance (CV) using both mean and standard

deviation. Along the similar line, we use the number of arrivals as the tourist market return and the standard deviation of a mean arrival as volatility, or market risk, in this study. As in selecting an optimal combination of securities, portfolio analysis can help determine the optimal tourist market mixes to minimize variance in demand.

The application of the financial portfolio theory is not absolutely new in travel and tourism research, but only a few studies have used the theory for optimizing regional tourism (Board et al., 1987; Board & Sutcliffe, 1991; Sinclair, 1999) and mitigating seasonality (Jang, 2004), until recently. Earlier studies using the portfolio theory for tourism have primarily dealt with specific objectives such as bed-night demand optimization and seasonality minimization. However, to make wide use of the theory in the tourism industry, it is critical to apply it using readily available data. In that respect, this study uses easily obtained tourist arrival data. Also, the uniqueness of this research among the few financial portfolio studies in tourism is that it attempts to segment foreign tourists by nationality, as often is done in the industry, and to propose an efficient frontier to tourism authorities to optimize tourist arrivals, so that they can use the frontier as a long-term guide for development and resource allocation. That is, this research provides more practical and realistic solutions to achieve destination policy-makers' objectives of stable foreign tourism demand on a long-term basis.

Thus, the primary goal of this research is to propose and demonstrate a practical tool to help the tourism industry understand optimal foreign tourist market mixes through the financial portfolio technique. This study explores the volatility and tourist arrivals associated with Taiwanese inbound tourist markets and applies the financial portfolio theory to estimate optimal market mixes that will minimize the instability of tourist demand. Each portfolio is associated with a different expected level of arrivals and level of instability, depending on the weight taken by its component markets. The optimal mix solutions sought in this study are based upon tourist arrivals in Taiwan during 1996–2005 (a 10-year period).

This study is organized in the following sections: The next section briefly describes the Taiwanese tourism development and its contribution to economic growth in Taiwan. Section 3 presents foreign tourism demand for Taiwan. Financial portfolio theory and objective function are addressed in Section 4. Section 5 shows empirical results, and Section 6 concludes this study. The final section offers some limitations and future research direction.

2. Tourism development and Taiwanese economy

Traditionally, Taiwan has been known as an exports-oriented economy (Ghartey, 1993; Jin, 1995), and the tourism sector has never been considered a leading industry in Taiwan. Nonetheless, Kim, Chen, and Jang (2006) have showed that the tourism industry contributed to the
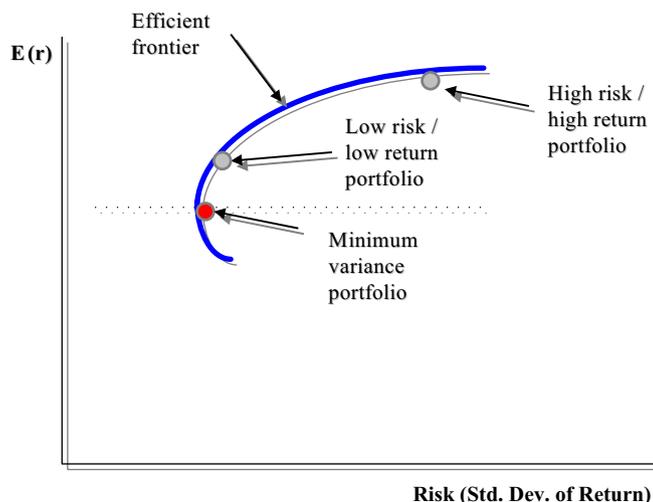

Fig. 1. The efficient frontier.