

Effect of Exchange-Rate Uncertainty on Labor Market Based on The Grey Relational Analysis

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ABSTRACT

This paper investigates the impacts between exchange-rate uncertainty and unemployment rate during pre- and post-crisis periods and examines the relationship within Asian region, including South Korea, Singapore, Hong Kong and Taiwan. According to the results, GRA has a higher relation than the linear regression with restrictive lag structures model does. The relationship between exchange-rate uncertainty and unemployment rate are high mutually dependent during the pre-crisis period in Taiwan, and South Korea. On the contrary, the relation in Taiwan becomes less dependent during the post-crisis period. The exchange-rate uncertainty has a significant impact on the unemployment rate in Taiwan and South Korea during the pre-crisis period. However, the exchange-rate uncertainty has a significant impact on the unemployment in South Korea during the post-crisis period but it has insignificant impacts on that in others countries during the post-crisis period. Furthermore, the exchange-rate uncertainty is mutually dependent between Taiwan and South Korea during the pre- and post-crisis.

Keywords: Grey relational analysis, Exchange-rate Uncertainty, Unemployment rate, Financial crisis.

1. Introduction

The uncertainty of exchange rates has been a widely concerned issue since the Bretton Woods System was broken up. In the open economics, the exchange rate is an important element of macro-economy. For example, as the domestic

currency appreciates, the exporting firms become with less competitive within foreign markets. In particular, since the financial crisis has seriously hit Asian countries in May 1997, the links between exchange rate and several structural shocks need to be investigated.

According to Keynesian theories, rising unemployment or declining industrial production indicates the slowdown economic slowdown and subsequent domestic currency appreciation. Most empirical works treat exchange-rate uncertainty or volatility as a risk: higher risk leads to a higher cost for risk-averse investor and, also, less creation of jobs. There are two arguments about the uncertainty impact on employment. One is that uncertainty of exchange rate may cause the rational unions to set a high wage in unionized labor markets where contract wages are set in advance [1,2]. The result of the high wage causes a high unemployment. Another is that uncertainty of exchange rate might affect employment because of its impact on investment. If change of exchange rate becomes unpredictable, it creates an uncertainty of further profits and raises the 'option value of waiting' [3]. Therefore, these theoretical arguments provide the uncertainty of exchange rate that may have an adverse impact on employment.

Although most previous studies have provided many empirical evidences on impact of exchange-rate volatility, these evidences mainly detect the effect on mainly international trade [4~7]. Few studies have investigated the impact of exchange-rate uncertainty on unemployment rate [8~13]. However, these studies have extremely relied on the conventional ordinary least squares (OLS) procedure with restrictive lag structures in estimating the (un)employment rate equation. Those models have a trouble that they require large historical data and have an intricate calculating process.

This paper applies the grey relational analysis (GRA hereafter) to examine the relation between exchange-rate uncertainty and unemployment rate to overcome such weaknesses. The GRA has several advantages over those previous models. Those models require relatively little data and easy calculation with simple mathematics. In addition, discontinuous variables can be manipulated.

The purpose of this paper is to provide the relation between exchange-rate uncertainty and

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