The Dynamic Relationship between Unemployment, Inflation, Interest Rate and Economic Growth

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The focal point of this study is the investigation of the dynamic relationship between selected macroeconomic variables, including unemployment, inflation, interest rate and economic growth, in Malaysia. In order to achieve the aims of this study, quarterly time series data from the first quarter of 2001 until the fourth quarter of 2017 was utilised. The Johansen Juselius Co-integration test was used to investigate long run equilibrium in the equation system, and the Granger Causality test in Vector Error Correction framework was used to evaluate the long-term and short-term relationships between the study variables. The findings suggest that a relationship exists between the variables in the long term, including unemployment interest rate, inflation and economic growth across the system equations. The results further suggest that, in the short run, a two-way causality exists between unemployment and economic growth. Moreover, the results show that unemployment affects economic growth, both in the short and the long-term. By implication, this suggests the government should pay particular attention, in both the short and long term, to the unemployment rate, in order to bring this to a desirable level. In this respect unemployment can be reduced by enhancing employment opportunities throughout both governmental and private sectors of the country.

Key words: Unemployment, Inflation, Interest Rate, Economic Growth

Introduction

The labour force can be defined as the number of people in the working age bracket of 15-64 years, who are currently working or are actively looking for work. Traditionally, unemployment occurs when a person is actively searching for employment but is unable to find suitable work. An unemployed person can be identified as someone that is seeking work, without work during the reference period, and who is currently available for work. Unemployment implies that the person is still seeking jobs. Various types of unemployment exist, with unemployment of a longer duration having a significant impact on the economy in the form of frictional unemployment, structural unemployment, seasonal unemployment and cyclical unemployment, where the macro-economic goal is looking for low unemployment but not zero unemployment. This is because in a dynamic economy the labour market would move freely from one job to another. Therefore, there will always be situations in which frictional unemployment occurs. Besides, the changes will frequently happen within an innovative society and make peoples' lives easier from time to time by way of structural unemployment. To avoid this situation, each employee must be appointed an ongoing job, and technology improvements should be constrained in order to minimise structural change. Many studies have also stated that the unemployment rate adds negative impact to negative growth (Ademola and Badiru, 2016). Hamidah Muhd Irpan, Rosfadzimi Mat Saad, Abu Hassan Shaari Md Nor, Abd Halim Md Noor & Noorazilah Ibrahim (2016) have stated that many factors can influence the unemployment rate and are not necessarily similar across countries due to differences in social behaviour and the development of the economy. Numerous studies have shown that many macro-economic factors can affect unemployment, both negatively and positively. Therefore, the motivation behind this study is to investigate the dynamic relationship between economic growth, unemployment and selected macro-economic variables, namely inflation (Furuoka, 2007; Puzon, 2009) and the interest rate (Yasar Mahmood, Rabia Bokhari & Muhammad Aslam, 2013).

Methodology and Model Specification

This study adapted the model proposed by Hamidah et al. (2016). The data was retrieved from the International Financial Statistic (IFS) from the World Bank database. By using a dynamic econometrics approach, namely the Augmented Dickey Fuller (ADF) unit root test, the Johansen Juselius test and the Granger Causality in the Vector Error Correction Model (VECM) framework, the general model specification is as follows:

$$UR_t = \alpha_0 + \alpha_1 IR_t + \alpha_2 INF_t + GDP_t + \varepsilon_t \qquad (1)$$

Where;

UR_t	= rate of unemployment (%)
IR_t	= rate of interest (%)
INF_t	=inflation (%)
GDP_t	= Gross Domestic Product (%)
ε_t	= error term
t	= observations

Findings

The unit root test supports that all the data series are integrated at first differently (I(1)). Table 1 summarises the Johansen Juselius (JJ) test results. According to the results, at least one co-integrating vector in the long term exists at a 5 percent level.

Table 1: Johansen Juselius Cointegration Test

COUNTRY	H0: Rank<=r	Trace Stat.	5% Crit. Value	Max-Eigen St.	5% Crit. Value
MALAYSIA	None *	**164.3771**	**62.99**	**118.7262**	**31.46**
	At most 1	41.65089	42.44	23.91336	25.54
	At most 2	17.73753	25.32	14.46291	18.96
	At most 3	3.274625	12.25	3.274625	12.25

Moreover, the study found a statistically two-way causality between GDP-UR and GDP-INF in Malaysia. The result further supports ECT terms that are significant across the systems.

Table 2: Granger Causality in VECM

Variable	UR	IR	INF	GDP	ECT
UR		0.758271 (0.85994)	3.933198 (0.0688)*	4.073896 (0.0948)*	**-0.023389*** (0.00819)**
IR	5.521817 (0.1373)		2.010808 (0.5702)	0.338109 (0.0527)*	**-0.020386** (0.01060)**
INF	2.214074 (0.5292)	3.211148 (0.3602)		0.241137 (0.9707)	**-0.260624* (0.06963)**
GDP	**12.59855 (0.0056)**	0.920940 (0.8204)	**47.78539 (0.0000)**		**-0.721642* (0.08052)**

Note: ***, **, *, indicates significance at 1%, 5%, 10% level, respectively

Conclusion and Recommendations

From these results, one can conclude that the dynamic relationship between the unemployment rate, economic growth, the interest rate and inflation is recorded. Accordingly, a short-term relationship exists between unemployment and economic growth, indicating that the unemployment rate is significantly affected by economic growth in the short run. In other words, every change in unemployment at the aggregate level will drastically affect economic growth in the short term. By implication, the government should provide extra attention, both in the short and long term, to controlling the unemployment rate, so that it stays at a desirable level. In this manner unemployment can be reduced by enhancing employment opportunities throughout governmental and private sectors of the country.

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