Relevance of Keynesianism in Nepal: An Empirical Analysis

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Abstract

In this paper, the relevance of Keynesian postulates has been examined in the Nepalese context for the period 1975-2012 using annual time series data. The empirical results from the Johansen co-integration tests clearly show that there is long run equilibrium relationship between government expenditure and real GDP, private consumption and gross fixed capital formation. Likewise, Granger Causality test confirms that there is bilateral causal relationship between government expenditure and gross fixed capital formation in Nepal. However, no causal relationship is observed between government expenditure and real GDP and private consumption. Thus, it is confirmed by this study that the Keynesian postulates are relevant for capital formation rather than for increasing real GDP growth and private consumption in Nepal.

Key Words: Keynesianism, Effective Demand, Casual Relationship, Government Expenditure, Gross Fixed Capital Formation and Real GDP

JEL Classification: E12

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I. INTRODUCTION

Keynesianism is a macroeconomic school of thought based on the ideas of 20th century British Economist John Maynard Keynes. The concepts forming the basis of Keynesianism were first published in "The General Theory of Employment, Interest and Money" in 1936. This book is a repudiation of the foundations of laissez-faire and advocacy of active government because unemployment is primarily a matter of the volume of effective demand. Keynes argues that some individually-rational microeconomic actions, if taken collectively by a large proportion of individuals and firms, can lead to ineffective aggregate macroeconomic outcomes, where in the economy operates below its potential output level (Keynes, 1936). It is further argued that such low level economic situation can be corrected by the Government through active monetary and fiscal policies.

One of the tenets of Keynesian theory is that government spending on consumption and investment, tax cuts and lower interest rates can stimulate demand and induce investment which would have otherwise remained idle to produce wealth (Keynes, 1936). Similarly, redistribution of wealth from wealthy to poor, who are perceived to have higher marginal propensity to spend would generate higher economic growth. Therefore, for four decades from mid-1945 to mid-1970 Keynesianism dominated the thinking of professional economists and public policy makers not only in the United States, and Europe but also in a number of developing countries. However, the Keynesian principles have also been subjected to considerable criticisms during the same period. The critics argue that macroeconomic policies based on Keynesianism are counter-productive to stabilize the economy and these will lead to inflation, income inequality, and incite consumers to spend even more in anticipation of future tax increase (Michael, 2006). At the same time, Keynesians advocate an active stabilization policy for reducing the magnitude of the business cycle, which they rank as the most serious economic problem by raising aggregate demand thereby stimulating economic activities, reducing unemployment and avoiding deflation.

Governments in Nepal have used expansionary fiscal policy since long back to stimulate demand as a countercyclical measure as well as for political reasons. It is believed that large budgets can play influential role in generating higher growth and increasing employment. However, the reality does not confirm this as government expenditure and growth do not seem to move together. Hence, testing causality between government expenditure and economic growth or examining the relevance of Keynesianism would be a worthwhile exercise.

The main objective of this paper is to gauge the relevance and implication of Keynesian notions in the Nepalese context. For this, the study aims to test the causality between the government expenditure and real GDP, private consumption and gross fixed capital formation for the period between 1975 and 2012. Conclusions drawn from the study would provide useful insights to fiscal policy makers of Nepal.

The rest of the paper is organized as follows. The second section provides a precise review of evolution of Keynesianism which covers origin of Keynesian thoughts, dominance of Keynesian policy and monetarist revolution followed by the counter revolution of Keynesianism. Section three covers the review of empirical studies on relevance as well as effectiveness of Keynesian thoughts available so far both in global and Nepalese context. Section four briefly describes the data and methodology used in this study. Section five presents the results and discussion of empirical analysis. The last section concludes the discussion.

II. EVOLUTION OF KEYNESIANISM

Origin

John Maynard Keynes (1883–1946) had acquired an international reputation shortly after World War-I by "The Economic Consequences of Peace". In his 1924 book, "A Tract on Monetary Reform", Keynes declared that gold was a "barbarous relic" and that governments should control money supply to maintain a stable domestic price level as well as a stable foreign exchange rate (Anderson, 1925). In 1930 Keynes published "A Treatise on Money", a two-volume work which established him as the reputed leading monetary theorist for the next five years. Keynes' "The General Theory of Employment, Interest, and Money" published in February 1936 is widely regarded as the cornerstone of Keynesian thought. By the end of World War-II, The General Theory became the foundation of the new "Macroeconomics", which in turn was popularized as Keynesianism (Hutt, 1963).

Keynesian Dominance: 1941–1979

From the end of the Great Depression, Keynesian ideas quickly established in America and Europe also was a leading inspiration for the English speaking common wealth countries of Asia and Africa from 1941 to the mid-1960s. In late 1965, Time Magazine in a cover story entitled "We are all Keynesians now" scaled Keynes's central theme by stating that Keynes was one of the three most important economists ever, and that his General Theory was more influential than the 'magna opera' of his rivals i.e. Adam Smith's 'The Wealth of Nations' and Karl Marx's 'Das Capital'.[1] Hence, from early 1940s to the mid-1970s, which is also known as the Golden Age of capitalism, Keynesianism provides the main inspiration for economic policy makers and for prominent economists including the academia.

Monetarist Revolution: 1979-1999

The stagflation of 1970s including the oil crisis of 1973 followed by the recession questioned the logic behind Keynesianism and lead to the development of new classical

[1] "We are all Keynesians now". Time Magazine, 1965-12-3, Retrieved 2008-11-13.

macroeconomics. Thus, Austrian School of thoughts and Monetarism charged Keynesianism and demand management as tools for 'fools' because wealth, in a better society and cleaner world along with a higher level of development, cannot be directed by the government. Meanwhile, the "Washington Consensus" which propagates that markets work best if they are unregulated came to be used as a notable anti-Keynesian view. That created the space to proliferate the Monetarism and new classical economics, which in turn displaced the Keynesianism for 1979-1999 (Hoover, 2003).

Keynesian Counter Revolution: 1999–2007

The Asian Financial Crisis of 1997 in the developing world and market failure as well as Dotcom crash of the 2000 in advanced economies caused a turn back from free market policies to Keynesianism. In the meantime, Britain and Japan had shown keenness to Keynesianism saying "the real challenge was to interpret Keynes's insights for the modern world" (Carabelli, 2010). By 2007 there had been high promotion of Keynesianism in the English speaking countries including China, India and south East Asia. In the academic world, the advent of the global financial crisis in 2007 had caused the resurgence of Keynesian thought (Anthers, 2010).

Keynesianism After 2008

During the global financial crisis (2007–2009), the Keynesianism was receiving most attention as fiscal stimulus was widely launched across the world. It was mid-2010 that the earlier global consensus for ongoing Keynesian stimulus had broken, especially in Europe, as there was an increasing demand for immediate fiscal tightening. By mid-2012, with the on-going Euro crisis and persistent unemployment problem in the US, there has been renewed consideration of stimulus policies by European and American policy makers, although there is no return to the pro stimulus consensus that existed in 2009 (Farrell and Quiggin, 2012).

III. LITERATURE REVIEW

Numerous studies have been conducted to investigate the relationship between government spending and economic growth with mixed results. Landau (1983) found that the share of government consumption to GDP reduced economic growth which was consistent with the pro-market view that the growth in government constrains overall economic growth. Ram's (1986) study made a rigorous attempt to incorporate a theoretical basis for tracing the impact of government expenditure to growth through the use of production functions specified for both public and private sectors. The author found government capital expenditure to have significant positive externalities on growth particularly in the developing countries. Lin (1994) used a sample of 62 countries (1960-85) and found that non productive spending had no effect in growth in the advanced countries but a positive impact in LDCs. Josaphat et al. (2000) investigate the impact of government spending on economic growth in Tanzania (1965-1996) using time series data for 32 years. The results revealed that expenditure on human capital investment was

insignificant in their regression and confirm the view that public investment in Tanzania was not productive. Junko and Vitali (2008) in an investigation of the impact of government expenditure on economic growth in Azerbaijan suggested that the initial growth performance largely depends on the efficiency of scale-up expenditure.

Komain and Brahmasrene (2007) gauged the relationships between government expenditure and economic growth for Thailand during the period 1970-2005. The results suggest that there was a long-run relationship between government expenditure and economic growth, thus supporting the Keynesian hypothesis. Jamshaid et al. (2010) found a wide range of evidences on the impacts of government expenditure on economic development and concludes that government expenditure contributes to economic growth, both through supply and demand channels in the USA, Japan, Germany, France, United Kingdom, Italy and Canada. The study suggested government expenditure contributes in raising the quality of life by creating amenities, providing consumption goods and contributing to macroeconomic stability.

Amid inconclusive evidences, Keynesian policies have been able to exert some positive impact in the global economy, especially during crises since 1930s great depression to the latest financial crisis of 2007-2009. Skidelsky (2011) made a comparison between the performance of the world economy during the Golden Age period (1951–1973) where Keynesian policies were dominant and the Washington Consensus period (1981–2008) where free market policies were adopted. The study reveals that the 'golden age' period was substantially more stable with higher growth, employment and low inequality. However, during the 'Washington Consensus' period the world economy was quite unstable with increasing inequality.

In Nepalese context, Shrestha (2009) investigated the role of composition of public expenditure, particularly the expenditure on physical infrastructure, on economic growth in Nepal based on the endogenous growth model using time series data. The results suggest that the impact of public expenditure on economic growth was positive. However, Chaudhary (2010) found no causality between real GDP and government expenditure in Nepal. The findings suggest that the increase in the size of government expenditure has no influence on economic growth of Nepal.

Recently, Sharma (2012) tested the impact of government expenditure on economic growth of Nepal. The results reveal that although there is a weak influence on economic growth, growth depends on the size, spending capacity, and effective use of capital expenditure in the development process. Similarly, Kharel (2012) develops a macroeconomic forecasting model focusing on fiscal policy and economic growth in Nepal using annual data from 1992/93 to 2009/10. The evidence suggests that fiscal policy, particularly government' capital expenditure affects economic growth positively and also crowds-in private investment.

However, there exists a trade-off between fiscal stability and high level of economic growth as the policy goal of achieving both objectives seems to be unattainable. Within

the above theoretical and empirical evidences this study analyzes causality between government expenditure and economic growth in Nepal.

IV. DATA AND METHODOLOGY

Many empirical studies of macro impact on government spending were based on the Vector Autoregressive (VAR) model of major macroeconomic variables. A number of the studies were focused to estimate the effect of government spending and fiscal deficit on growth variables. Blanchard and Perotti (1999) used data pertinent to the United States during the postwar period for VAR specification of taxes, government spending and GDP in real per capita terms. Similarly, Heppke-Falk, Tenhofen and Wolff (2006) used Structural Vector Autoregressive (SVAR) approach to investigate short-run effects of fiscal policy shocks on the German economy.

As this study is primarily based on the time series secondary data of Government Expenditure (GE) and Economic Growth, Johansen Co-integration method based on VAR approach has been used. In order to test the causality between natural log values of GE vis-à-vis real GDP, Private Consumption (PC) and Gross Fixed Capital Formation (GFCF), time series annual data for the period 1975 to 2012 have been used.

Model Specification

In order to find out the causality between GE and Economic Growth Variables, natural log value of GE is taken as independent variables while natural log values of real GDP, PC and GFCF are taken as dependent variables. For this purpose the following models have been developed.

$$GDP_t = \alpha_0 + \alpha_1 GE_t + \varepsilon_{t1} \quad \ldots\ldots (1)$$

$$PC_t = \beta_0 + \beta_1 GE_t + \varepsilon_{t2} \quad \ldots\ldots (2)$$

$$GFCF_t = \theta_0 + \theta_1 GE_t + \varepsilon_{t3} \quad \ldots\ldots (3)$$

Where, $\alpha_i,\beta_i,\theta_i$ are parameters to be estimated and ε_{ti} are white noise error terms

Unit Root Tests

Many economic and financial time series data exhibit trending behavior or non-stationary in the mean. A series is said to be stationary if the mean and auto covariance of the series do not depend on the time. A series whose mean and auto covariance depend on time is said to be non-stationary. An important econometric task is determining the most appropriate form of trend in the data. If the data are trending then some trend removal measures are required to transform the data into stationary form prior to analysis. Two common trend removal or de-trending procedures are first differencing and time trend

regression. First differencing is appropriate for time series and time trend regression is appropriate for trend stationary time series.

As the present study is based on the time series data, it is important to check whether a series is stationary or not before analysis. For this purpose, first differencing procedure i.e. Augmented Dickey-Fuller (ADF) test has been performed in this study. Since the ADF test of unit root does not follow the conventional Student's t-distribution, Mackinnon (1991, 1996) t-values have been used.

Co-integration Test

Economically speaking, two variables will be co-integration if they have a long term or equilibrium relationship. Although there are a number of methods for testing the co-integration, the following Vector Auto Regression (VAR) method of order *p* developed by Johansen has been utilized.

$$y_t = \mu_t + A_1 y_{t-1} + \ldots + A_p y_{t-p} + Bx_t + \varepsilon_t \quad \ldots\ldots (4)$$

Where, y_t is an n×1vector of variables that are integrated of order one - commonly denoted I (1) - ε_t is an n×1 vector of innovations.

In this test, the null hypothesis of *r* co-integrating vectors is tested against the alternative of *r* +1 co-integrating vectors. Thus, the null hypothesis *r=0* is tested against the alternative *r=1* against *r=2*, and so forth. Johansen proposes two different likelihood ratio tests of the significance of these canonical correlations and thereby the reduced rank of the Π matrix: the trace test and maximum Eigen value test as follows:

$$j_{trace}(r/p) = -T\sum_{i=r+1}^{n} In(1-\lambda_i) \quad \ldots\ldots (5)$$

$$j_{max}(r/r+1) = -T\, In(1-\lambda_{i+1}) \quad \ldots\ldots (6)$$

Here T is the sample size and λ is the i^{th} largest canonical correlation.

As the co-integration tests are very sensitive to the choice of lag length, following Akaike Information Criteria (AIC) and Schwarz Information Criteria (SIC) after existence of co-integration between the variables in the equations, the Granger Causality test has been performed.

Granger Causality Test

The common practice in testing the direction of causation between two variables is the Granger Causality test. According to Granger (1969), series X causes Y if the past values of X can more accurately predict Y than simply the past values of Y. In simple words, if past value X improves the prediction of Y with statistical significance, then we can

conclude that X "Granger Causes" Y. The Granger Causality test for the above equations (1), (2) and (3) has been performed on the basis of the following fundamental model.

$$Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \cdots \beta_2 Y_{t-n} + \lambda_1 X_{t-1} + \cdots + \lambda_m X_{t-m} + U_t \quad \ldots\ldots (7)$$

Where, U_t white noise error is term series.

V. RESULTS AND DISCUSSIONS

Findings

In order to gauge the relevance of Keynesianism in Nepal, in this study, first of all ADF tests have been performed to examine the unit root in all the set of 4 series comprising log values of GE, GDP, PC and GFCF for the period of 1975-2012. The results of ADF tests presented in the table-1 support that the log value series under consideration are not stationary at both level and first difference. This is confirmed as the calculated values of t-statistics, in absolute sense, are smaller than the tabulated values at both 1% and 5% level of significance accepting the null hypotheses that the series are non-stationary. This indicates that there is trending behavior in mean of all the series under consideration.

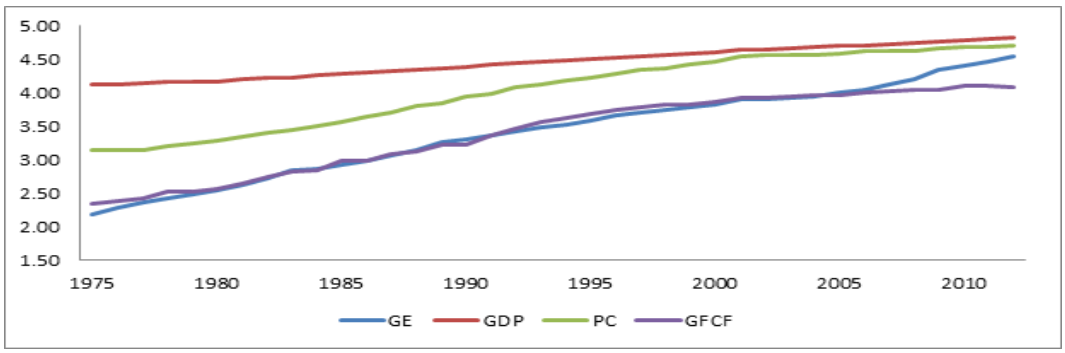
Table 1**: Unit Root Tests**

Variables	t-statistics		MacKinnon p-value	
	At Level	First Difference	At Level	First Difference
NLGDP	0.535	0.300	0.9859	0.9774
NLGE	-1.411	-0.787	0.5770	0.8229
NLPC	-2.192	-2.179	0.2092	0.2141
NLGFCF	-2.532	-2.779	0.1079	0.0614

Critical values for level at 1% and 5% are respectively -3.668 and -2.966

Similarly critical values for first difference at 1% and 5% respectively are -3.675 and -2.969

Figure-1: Log Value of Variables under Consideration



Johansen Co-integration Tests

After confirming the non-stationary nature of series under consideration, it is required to test whether the variables are co-integrated or not i.e. whether they exhibit the tendency of co-movement over the long run and converge towards equilibrium.

Table 2 depicts the results of the Johansen Co-integration tests. Both the trace test and maximum Eigen value test reject the null hypotheses of all models that there is no co-integration between the variables under consideration at 99 percent confidence level.

Table 2: **Results of Johansen Co-integration Tests**

GDP and GE (Sample-1976 – 2012), Trend- Linear, Lags-1

Null Hypothesis (H0)	Eigen Value	Trace Statistics	Critical Value 5%/1%	Max-Eigen Statistics	Critical Value 5%/1%
r=0	0.59018	47.6995	15.41/20.04	31.2217	14.07/18.63
r≤1	0.37549	16.4778	3.76/6.65	16.4778	3.76/6.65

PC and GE (Sample-1976 – 2012), Trend- Linear, Lags-1

Null Hypothesis (H0)	Eigen Value	Trace Statistics	Critical Value 5%/1%	Max-Eigen Statistics	Critical Value 5%/1%
r=0	0.56200	42.0988	15.41/20.04	28.8935	14.07/18.63
r≤1	0.31429	13.2053	3.76/6.65	13.2053	3.76/6.65

GFCF and GE (Sample-1976 – 2012), Trend- Linear, Lags-1

Null Hypothesis (H0)	Eigen Value	Trace Statistics	Critical Value 5%/1%	Max-Eigen Statistics	Critical Value 5%/1%
r=0	0.61558	49.9874	15.41/20.04	33.4608	14.07/18.63
r≤1	0.37636	16.5266	3.76/6.65	16.5266	3.76/6.65

The above result of Johansen co-integration tests confirms that there is co-integration of the Government Expenditure vis-à-vis real GDP, Private Consumption and Gross Fixed Capital Formation of Nepal. The existence of co-integration implies that there is long-run relationship between the Government Expenditure variables and Economic Growth Variables in Nepal partially supporting the Keynesian notion.

Granger Causality Tests

The results of Granger Causality Test are reported in the following Table 3. The Wald F-statistics and the corresponding critical values indicate there is no any causality between the Government Expenditure vis-à-vis real GDP and Private Consumption, since the null hypotheses of equations (1) and (2) that GE does not Granger Cause real GDP and PC accepted with high probability values. However, there is a bilateral causality

between the Government Expenditure and Gross Fixed Capital Formation. This is confirmed since the null hypothesis of equation (3) that GE does not Granger Causes GFCF is rejected at 5 % level of significance to very low probability values.

Table 3: **Pairs wise Granger causality (Wald) tests (Sample-1976 – 2012), Lags-1**

Null Hypothesis (H_0)	F-Statistics	Probability	Decision
GE does not granger cause GDP	.40944	0.6675	(H_0) Accepted
GE does not granger cause PC	.39971	0.6738	(H_0) Accepted
GE does not granger cause GFCF	4.9003 (3.32)*	0.0139	(H_0) Rejected
GFCF does not granger cause GE	5.3341 (3.32)*	0.0100	(H_0) Rejected

* indicates the rejection of H_0 at 5% level of significance respectively. Figures in parenthesis are the tabulated values of F-distribution for corresponding degree of freedoms.

VI. CONCLUSION

This paper examined co-integration and causality between the Government Expenditure (GE) vis-à-vis real Gross Domestic Product (GDP), Private Consumption (PC) and Gross Fixed Capital Formation (GFCF) with an aim of testing the relevancy of Keynesianism in the context of Nepal using time series data of 1975 to 2012. Using the methods of the unit root tests and co-integration tests, the study confirmed that there is long-run equilibrium relationship between the Government Expenditure variables and Economic Growth variables in Nepal. However, Granger Causality test revealed that there is no causality between the Government Expenditure and real GDP as well as private consumption for the review period. However, there is bilateral causality between Government Expenditure and Gross Fixed Capital Formation (GFCF) in Nepal.

The evidence from this study reveals that Keynesian notion, which claims positive impact of Government Expenditure on real GDP and private consumption, is not valid for Nepal. This may be because that the GDP of Nepal is mainly dependent on agriculture production which is subject to the favorable weather conditions and the private consumption is highly depends on remittance received from foreign employment. Similarly, because of high propensity to consume and supply side constraints in the economy a given increment in government expenditure is leaked out of the country in the form of imports. But the Keynesian notion that the Government can play pivotal role in capital formation through its expenditure, which in turn stimulate the private investment and growth of the economy is proved. Thus the Government can contribute in creating favorable environment for private sector and business community through infrastructure development and capital formation by raising capital expenditure.

The results of this study, in line of some literatures, confirm that the notion of Keynesianism to promote economic activities and growth through government intervention is partially relevant in Nepal. This means the Keynesian notion which is based on industrialized economies could not fully perform in the agriculture dominated least developed economies like Nepal. However, there is a role of Government in such economies where there are market imperfections and the private sector is not capable enough for huge investment in infrastructure development and capital formation.

The findings of this study suggest that the Government should not be involved in general kind of business activities such as production and distribution of goods and services rather should focus on effective governance and mobilization of resources in order to increase the capital expenditure for capital formation and infrastructure development.

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Appendix 1

Data Used in the Study (Figure in Rs 10 Million)

Year	Government Expenditure	Real GDP	Private Consumption	Gross Fixed Capital Formation
1975	151.4	13106.2	1365.2	222.3
1976	191.3	13609.4	1406.0	244.3
1977	233.0	13838.9	1368.9	258.0
1978	267.5	14288.6	1572.9	329.4
1979	302.5	14524.0	1774.1	326.3
1980	347.1	14573.4	1919.5	368.1
1981	409.2	15874.7	2241.1	429.9
1982	536.1	16644.1	2527.2	546.5
1983	697.9	16820.4	2745.8	657.6
1984	743.7	18299.2	3186.0	690.7
1985	839.5	19552.9	3597.7	938.6
1986	979.7	20483.8	4478.2	943.1
1987	1151.3	20915.2	5074.6	1182.5
1988	1410.5	22390.3	6240.7	1341.4
1989	1800.5	23597.9	7017.3	1639.2
1990	1966.9	24749.1	8631.4	1700.2
1991	2355.0	26395.5	9777.1	2278.0
1992	2641.8	27687.5	12137.2	2927.7
1993	3089.8	28644.9	13340.2	3727.8
1994	3359.7	30911.5	15406.5	4203.2
1995	3906.0	31840.7	16644.3	4837.0
1996	4654.2	33668.1	19146.9	5608.1
1997	5072.4	35358.6	21636.4	6079.4
1998	5611.8	36559.2	23139.2	6537.5
1999	5957.9	38234.8	26494.4	6526.9
2000	6627.3	40574.6	28794.7	7332.4
2001	7983.5	44151.8	34898.9	8475.1
2002	8007.2	44204.9	36094.7	8486.3
2003	8400.6	45948.8	37142.1	8806.9
2004	8944.3	48100.8	37405.7	9094.9
2005	10256.0	49773.9	39221.9	9142.7
2006	11088.9	51448.6	41321.7	10157.0
2007	13360.5	53203.8	42541.9	10694.0
2008	16135.0	56451.7	43076.3	10892.2
2009	21966.2	58941.9	45546.8	10945.9
2010	25968.9	61625.7	48298.4	12764.7
2011	29536.3	64255.3	48524.9	12672.3
2012	34514.6	67232.6	51025.7	12197.9

Source: Economic Survey Various Issues (CBS)