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A Review on Output-Inflation Trade-off Based on New Classical and New Keynesian Theories

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Abstract

Any economy is potentially subject to demand-side and supply-side shocks, which may cause output and inflation fluctuations. Thus, most economies have some form of macroeconomic stabilisation policies in place to regulate economic fluctuations. Although macroeconomic stabilisation policies are widely used to stabilise the economic fluctuations in an economy, their effectiveness has proven to be somewhat mixed in past literature. Accordingly, this has led to a long-standing debate between the advocates of interventionism and non-interventionism over the past few decades, particularly between the contending views of new classical and new Keynesians. This paper provides a review of literature on output-inflation trade-off based on new classical and new Keynesian views as an attempt to shed light on this matter.

1. Introduction

Any economy is potentially subject to demand-side and supply-side shocks, which may cause output and inflation fluctuations. Naturally, most economies have some form of macroeconomic stabilisation policies in place to regulate economic fluctuations in maintaining a healthy level of economic growth and stable general price. These macroeconomic stabilisation policies are typically referred to as fiscal policy, which involves governmental spending and taxation, and also monetary policy, which involves adjustment of interest rates and money supply by a central bank.

Although macroeconomic stabilisation policies are widely used to stabilise the economic fluctuations in an economy, their effectiveness has proven to be somewhat mixed in past literature (see, for example, Cheung & Cheung, 1993; Hemming et al., 2002; Kuttner & Posen, 2002; Pua et al., 2008) and even recent (see, for example, Afonso et al., 2016; Borio & Hoffman, 2017; Tan et al., 2020). This has led accordingly to the emergence of advocacy of non-interventionism. Hence, this raises the question: does interventionist policy really do more good than harm, or vice versa? This has been a long-standing debate between the advocates of interventionism and non-interventionism over the past few decades, particularly between the contending views of new classical and new Keynesians.

The new classical view posits that rational expectation of economic agents, perfect competition, and flexible prices and wages will continuously clear up any disequilibrium in goods and labour markets by themselves in an immediate and complete manner. Accordingly, this situation renders macroeconomic stabilisation policies to have no real effect on output and employment, and thus there is little need for macroeconomic stabilisation policies in the economy. However, imperfect market information potentially hinders economic agents in anticipating and differentiating movement between nominal and real prices and wages and may bring about a

short-run output-inflation trade-off in the economy that macroeconomic economic stabilisation policies cannot control. Accordingly, advocates of the new classical view contend that it is variance in nominal aggregate demand and inflation rate that causes short-run trade-off in the economy.

In stark contrast to the new classical view, the new Keynesians argued that imperfect competition, price stickiness due to menu costs and labour contracts, and coordination failure between markets may not cause markets to clear themselves continuously, and the economy may remain in a state of disequilibrium for quite a period of time. Consequently, the advocates of the new Keynesian view have called for some intervention in the form of macroeconomic stabilisation policies to regulate the disequilibrium in the economy since prices and wages are incapable of adapting independently and instantaneously. Hence, the advocates of the new Keynesian view argue that the trade-off in the short-run in the economy is caused by average rate of inflation because prices and wages will only be adjusted by averaging the changes of prices and wages over a period of time in the event of considerable relative price and wage changes.

2. Literature Review

The seminal paper of Lucas (1973) provided empirical evidence of the trade-off between output and inflation, according to the new classical view, utilizing the “natural rate” of real output. By incorporating rational expectations, Lucas (1973) carried out a study using a sample based on an annual time series from 18 countries from 1957 to 1967. The findings indicated an inversely correlated trade-off parameter with variability in inflation rate. Lucas (1973) stated that the trade-off arose as a result of relatively stable structural features of an economy, and that the short-run trade-off arose due to producers’ misinterpretation of general price movements for changes in relative price. Hence, the trade-off is independent of the type of aggregate demand policy pursued.

After the influential paper of Lucas (1973), various studies have been conducted to verify or even challenged the new classical view of trade-off between output and inflation in the short run. The most prominent paper was by Ball et al. (1988), in which they were the first attempt to challenge Lucas (1973) the new classical view by incorporating the effects of price stickiness, as postulated by the new Keynesian view. Using a sample of 43 industrialised countries from 1948 to 1963, they discovered that the trade-off in the short run was brought about by the average inflation rate, instead of the variability of inflation rate as postulated by the new classical view. Accordingly, this has subsequently sparked a great deal of debate over the validity and applicability of new classical and new Keynesian views on the trade-off.

Some studies have found empirical support for the new classical view on the trade-off between output and inflation in the short run, which includes Addison et al. (1986), Asirim (1995), Holmes (2000), Abbott and Martinez (2008), Fendel and Rulke (2012) and Bismut and Ramajo (2018). In contrast, Froyen and Waud (1985), Ball et al. (1988), Defina (1991), Taylor (1994), Asai (1999), Avsar and Gur (2004), Puah et al. (2005), Liew et al. (2006), Benigno and Ricci (2011), Sun (2014), Sim et al. (2015), Puah et al. (2019), Bakas and Chortareas (2019) and Ahiadorme (2020) found empirical evidence for the new Keynesian view on output-inflation trade-off in the short run.

Froyen and Waud (1985) examined the shift in the relationship between inflation rate and real output growth rate of the United States from 1959 to 1983 by using the Lucas (1973) supply function. By examining three possible explanations of the relationship, they discovered that only supply-side shocks had significantly negative impact on real output, and that variability of inflation rate has an effect on natural output rate. However, they found no evidence of short-run trade-off, as claimed by the new classical view.

In an attempt to provide some new international evidence to the framework originally set by Lucas (1973) on output-inflation trade-off, Addison et al. (1986) used the modified Lucas (1973) supply function of Cukierman and Watchel (1979) to examine the new classical view of trade-off in the short run in 34 countries from 1953 to 1980. Their empirical results are not only consistent with Lucas (1973), in which output-inflation trade-off parameters are negatively correlated with the variance of aggregate demand and aggregate inflation, they have also found empirical support for the natural rate theory and for a number of strands of Lucas's natural rate hypothesis. They concluded that higher aggregate demand variance will cause more unfavourable output-inflation trade-off parameters, and vice versa. Similarly, Asirim (1995) discovered that the trade-off in Turkey from 1968 to 1994 also supported the new classical view, since the trade-off worsens as the variance of inflation increases.

Holmes (2000) investigated whether the real output growth in 13 less-developed African countries is negatively correlated to variance of inflation rate from 1960 to 1998. Using the Lucas (1973) supply function and Ball et al. (1988) function, he discovered that real output growth is inversely related to the variance in inflation rate rather than the underlying inflation rate. Although the speed of adjustment between price and nominal output is fairly sluggish in the long run, he concluded that the new classical view on the output-inflation trade-off is very applicable to these African countries, while the new Keynesian view is less relevant.

In the case of 47 countries from 1960 to 1999, Abbott and Martinez (2008) discovered that nominal volatility in inflation rate was more significant than average inflation rate in explaining the output-inflation trade-off. Their results provided empirical support to the new classical view, but were nevertheless inconclusive about the effect of average rate of inflation on trade-off based on the new Keynesian view.

Fendel and Rulke (2012) used the Lucas (1973) supply function to test for the trade-off between output and inflation based on the new classical view in 19 industrial countries from 1989 to 2009. By using actual inflation surprises, they found strong empirical evidence of the relationship between inflation surprises and variability of real output, and that the output gap is negatively correlated with the variability of inflation rate, according to the new classical view. Similarly, Bismut and Ramajo (2018) have also used the Lucas (1973) supply function by using inflation surprises but is augmented by variance of real exchange rates. They have contended that imported inflation has played a role in explaining inflation surprise, thus extending the logic behind the Lucas (1973) supply function.

By employing both linear and non-linear Ball et al. (1988) models, Defina (1991) examined the output-inflation trade-off as postulated by the new Keynesian view. By examining a sample of 43 countries from 1948 to 1986, he found support for the new Keynesian view on the trade-off, since most of the countries under study had exhibited significantly negative relationships between output and average inflation rate. Furthermore, he also found strong evidence for the new Keynesian view even in a cross-country context. Similar to the findings of Defina (1991),

Asai (1999) have also found support for the presence of trade-off based on the new Keynesian view and not the classical view for a group of 7 industrialised countries from 1975 to 1996.

Taylor (1994) have investigated the trade-offs between inflation, unemployment, and real output in the US from 1987 to 1993. He found that while trade-offs do not exist in the long run, his empirical evidence suggested otherwise for trade-offs in the short run. He argued that such trade-offs exist because of price rigidity, and monetary policy can thus substantially affect trade-off in the US. His empirical findings provide concrete support for the new Keynesian view of trade-offs.

By examining whether the degree of inflation rate has any impact on output, Avsar and Gur (2004) have discovered that the adjustment speed of prices in Turkey from 1988 to 2003 is closely related to inflation rate, which in turn determines the degree of output-inflation trade-off. Specifically, frequency of price adjustment decreased sharply with lower inflation rate, which then reduced the real effect of inflation on output in Turkey. This empirical finding backed the notion that it is the average inflation rate that affects the trade-off, as the willingness of economic agents to revise their prices is determined by the average rate of inflation.

Puah et al. (2005) studied the short-run output-inflation trade-off for Indonesia, the Philippines, and Singapore from 1980 to 1999. They did not find the trade-off to be explained by the variance of the inflation rate in these Asian countries, but instead by the average inflation rate, which is consistent with the new Keynesian view. They emphasised the importance of governmental macroeconomic stabilisation policies and policy effectiveness in offsetting the trade-off. Likewise, Liew et al. (2006) also found that it is the average rate of inflation that determined the trade-off faced by policymakers in the ASEAN-5 countries as postulated by the new Keynesian view, instead of the variability of inflation rate according to the new classical view.

By examining the relationship between the slope of the Phillips curve and the degree of price and wage stickiness, Benigno and Ricci (2011) discovered that the Phillips curve of 24 industrial and 24 developing countries from 1980 to 2006 increasingly steepened as the degree of price and wage stickiness declined, in accordance with the new Keynesian view on the output-inflation trade-off. They concluded that macroeconomic stabilisation policies can play a crucial role in improving trade-off in these countries.

In the case of 37 countries for the period spanning 1948 to 2007, Sun (2014) examined both cross-country and time variations in the output-inflation trade-off using Lucas (1973) supply function and Ball et al. (1988) model, in order to determine whether trade-off in these countries can be explained by nominal rigidity, as postulated by the new Keynesian view, or by the effects of nominal growth, as postulated by the new classical view. He discovered that nominal rigidity is the most important determinant of trade-off in these countries, which is in line with the new Keynesian view.

Sim et al. (2015) investigated the output-inflation trade-off in Brazil in the short run from 2004 to 2013. They discovered that trade-off in Brazil was negatively related to the mean inflation rate, as postulated by the new Keynesian view. This finding is consistent with the finding of Puah et al. (2019), in which they also found that trade-offs in Russia are also negatively related to the mean rate of inflation. Accordingly, Sim et al. (2015) and Puah et al. (2019) have stressed the importance of policymakers' intervention in the form of macroeconomic stabilisation policies in controlling trade-off in Brazil and Russia in the short run.

The recent studies of Bakas and Chortareas (2019) and Ahiadorme (2020) have also found empirical evidence supporting the new Keynesian view of output-inflation trade-off in the short-run. Specifically, Bakas and Chortareas (2019) used a panel of 60 countries and discovered that the Phillips curves in these countries have been increasingly flattening since the great moderation, a condition consistent with a new Keynesian Phillips curve. Similarly, Ahiadorme (2020) have also found a new Keynesian Phillips curve in 28 sub-Saharan African countries, in which they attributed short-run behaviour between inflation, output, and unemployment to economic rigidity, as in the new Keynesian view.

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