



Applied Economics Studies, Iran (AESI)

P. ISSN:2322-2530 & E. ISSN: 2322-472X

Journal Homepage: <https://aes.basu.ac.ir/>

Scientific Journal of Department of Economics, Faculty of Economic and Social Sciences, Bu-Ali Sina University, Hamadan, Iran.

Publisher: Bu-Ali Sina University. All rights reserved.

Copyright©2022, The Authors. This open-access article is published under the terms of the Creative Commons.




Bu-Ali Sina
University

Investigating the Sudden Changes in the Money on the Welfare cost of Inflation in Iran

Sabbaghchi-Firouzabad, M.¹, Tabataba'i Nasab, Z.², Alavirad, A.³

Type of Article: Research

 <https://dx.doi.org/10.22084/AES.2022.25336.3375>

Received: 2021.12.10; Accepted: 2022.01.31

Pp: 279-313

Abstract

The present study examines between inflation and prosperity for the Iranian economy in the Q1 1367 - Q1 1399 and its nonlinear relationship with increasing money with the Markov switching approach. For this purpose, using a standard method that was followed by Lucas (2000), Ireland (2009) and Mogliani and Urga (2018), two demand functions with full logarithm and semi-logarithmic specification are estimated. The results indicate a nonlinear relationship between the volume of money and the cost of inflation. Also, at the interest rate, 10% of inflation welfare costs for a complete logarithm model in the diet of 0.75% GDP in the diet were two 0.67% GDP and in the diet of 0,78% GDP. And for the semi-logarithmic model in the diet, 0.039% of GDP in the diet is two 0.036% GDP and in the diet of 0.031% GDP. In addition, an orientation in monetary policies and increasing the volume of money caused instability in the performance of money and the cost of inflation.

Keywords: Welfare Cost of Inflation, Money Demand, Markov Switching, Divisia Index.

JEL Classification: P36, E41, C24, E49.

1. Ph.D. student, Department of Economics, Abarkouh Branch, Islamic Azad University, Yazd, Iran.

2. Assistant Professor, Department of Humanities, Yazd Branch, Islamic Azad University, Yazd, Iran (Corresponding Author).

Email: tabatabaienasab@iauyazd.ac.ir

3. Associate Professor Department of Economics, Abarkouh Branch, Islamic Azad University, Yazd, Iran.

Citations: Sabbaghchi Firouzabad, M.; Tabataba'i Nasab, Z. & Alavi Rad, A., (2022). "Investigating the Sudden Changes in the Money on the Welfare cost of Inflation in Iran". *Journal of Applied Economics Studies in Iran*, 11(42), 279-313 (doi: 10.22084/aes.2022.25336.3375).

Homepage of this Article: https://aes.basu.ac.ir/article_4427.html?lang=en

1. Introduction

Economists have raised many issues about the cost of inflation and its effects on welfare under the title of welfare cost of inflation. In defining the welfare cost of inflation, it can be written that inflation in two ways can cause welfare reduction. The first is that households spend less time on manufacturing activity as inflation costs increase so they have more time to make deals. On the other way, inflation causes the demand for banking services to increase to save time on transactions. This causes scarce resources to be transferred from the manufacturing sector to the bank. This is a social loss, because if there was no inflation, these resources would be used directly in the production of goods and services. The money demand function is an important basis in the mechanism of transferring monetary policy to the real sector of the economy and must have the necessary stability. Because in this case, an accurate and accurate prediction of the effects of money supply changes on other macroeconomic variables such as prices and exchange rates can be provided. Therefore, irregularities in monetary policies and the increase in money and inflation resulting from it can lead to instability in the money demand function and affect the welfare cost of inflation. In this paper, we try to evaluate the nonlinear relationship between money and welfare cost of inflation with Markov Switching approach. For this purpose, the money demand function in Iran is estimated using Divisia index and then the welfare costs of inflation in the period (1988-2020) are calculated.

2. Materials and Methods

In order to calculate the welfare cost of inflation in this study, a standard method followed by Lucas (2000) and Ireland (2009) and Mogliani and Urga (2018) is used as follows:

if $m(i)$ is the money demand function and $\Psi(x)$ its inverse, then the welfare cost of inflation is

$$W(i) = \int_{m(i)}^{m(\cdot)} \Psi(x) dx = \int_0^1 m(x) dx - im(i) \quad (1)$$

where $w(i)$ is the welfare cost of inflation, expressed as a fraction of income.

Clearly, the first step in the calculation of the welfare cost of inflation is the estimation of a money demand function. In this regard, Lucas (2000) suggests two competing specifications. One is linear in the (natural) logarithms of m (the ratio of nominal money balances to nominal income, M/Y) and i (the short-term nominal interest rate)

$$\text{Ln}m = \text{Ln}A - \eta \text{Ln}i \quad (2)$$

and the other specification links the logarithm of m to the level of i

$$\text{Ln}m = \text{Ln}B - \xi i \quad (3)$$

where $A > 0$ and $B > 0$ are constants. Eq. (2) was inspired by Meltzer (1963) and is known as the log-log (or double log) specification, whereas Eq. (3) was adapted from Cagan (1956) and is known as the semi-log specification. The key difference between the two specifications is the coefficient of the interest rate term. In Eq. (2), $\eta > 0$ measures the absolute value of the interest elasticity of money demand, while $\xi > 0$ in Eq. (3) measures

the absolute value of the interest semi-elasticity of money demand. Lucas (2000) shows that when the money demand function takes the log-log form the welfare cost of inflation is

$$W(i) = \int_0^i Ax^{-\eta} dx - iAi^{-\eta} = A\left(\frac{\eta}{1-\eta}\right) i^{1-\eta} \quad (4)$$

and when it takes semi-log form the welfare cost of inflation is

$$W(i) = \left(\int_0^i B^{-\xi x} dx - iBe^{-\xi x}\right) = \frac{B}{\xi} [1 - (1 + \xi i)e^{-\xi i}] \quad (5)$$

Thus, the welfare cost of inflation, $w(i)$, can be obtained from Eqs. (4) and (5) by using estimated coefficients from Eqs. (2) and (3), respectively.

3. Data

In this research, the model model for welfare cost of inflation in Iran's economy is estimated by Markov Switching approach. For this purpose, in the first step, using Divisia sum and consumer surplus approach and compensatory changes of money demand specifications (Bamol-Tobin theory) with interest rate and money volume variables and using Markov method, self-regression switching is extracted from the demand function of money and in the second step, the welfare cost of inflation is calculated with the demand function derived from the consumer surplus. The data used in this study are based on the frequency of seasonal data for the period 1998-2020. OxMetrics software is used to estimate model patterns.

4. Discussion

Based on the results, the elasticity of money demand for both logarithmic and semi-logarithmic models was not statistically significant. Although estimating the elasticity of money demand for all models is not statistically significant, the results are consistent with Ireland (2009) and Dai and Serlitz (2019). Since the characteristics of the money demand function are very important in calculating the welfare cost of inflation. Another important point implies one of most famous monetary policy optimal rule Friedman (1969), I mean keeping nominal interest rates at zero levels for risk-free assets. According to this rule, social optimization is where the ultimate social benefit of keeping the last currency is equal to the ultimate cost of money from the community's point of view. Because the cost of generating the last currency for society is zero, so the ultimate social benefit of holding money or nominal interest rates should be zero. In such a political system, the inflation rate will be equal to the negative real interest rate, because the nominal interest rate is equal to the sum of the real interest rate and the inflation rate.

In fact, the optimal inflation rate is negative from Friedman's rule to reflect the increase in economic productivity, the lack of increase in economic productivity is similar to the GDP reduction, which indicates the increase in welfare expenditure.

5. Conclusion

In this study, we tried to calculate the welfare cost of inflation for Iran's economy during the period q1 1367 -q1 1399 with Markov switching approach. The calculations indicate that the welfare loss of rising inflation and moving away from optimal rule Friedman (1969) with the disregard of monetary policymakers leads to an increase in the welfare cost of inflation. Double-digit inflation rates themselves are evidence of this claim. The results show that in the interest rate of 10% of the welfare cost of inflation for logarithmic model in the regime of 0.75% of GDP in the regime two is 0.67% GDP and in the regime three is 0.78% GDP. Therefore, as the money increases, the welfare cost of inflation increases increasingly. At the interest rate of 10% with semi-logarithmic characteristics in the regime, one is equal to 0.039% OF GDP in the 0.036% GDP regime and 0.031% OF GDP in the three-point regime.

In our country, inflation is 36.9% of the welfare expenditure of the regime is 2.46% GDP and regime two is 2.21% GDP and the regime is 3.56% 2.56% of GDP in full logarithm. If inflation rises from 36% to 38%, the amount of 7524.3 billion Rials of GDP will be reduced. In other scenarios of this study, two other regimes of full logarithm, due to the decrease in the relationship between the growth of money volume and nominal interest rate, and its lack of deterrence, the reduction of GDP will be much greater and consequently the welfare cost of inflation will increase further. This decrease in GDP is considered as an increase in the welfare cost of inflation and as a tax loss of cash holding. That's why people are trying to take cash away from themselves. Hence, inflation targeting can be a solution.