



Shahid Chamran  
University of Ahvaz

## Quarterly Journal of Quantitative Economics

Journal Homepage:


[www.jqe.scu.ac.ir](http://www.jqe.scu.ac.ir)

Print ISSN: 2008-5850

Online ISSN: 2717-4271



## The Effect of Liquidity Volume on Inflation in Iran with Time varying Parameter Model Approach

Seyed Ghorban Alizadeh Kolagar \*  Abolqasem Esnaashari Amiri\*\*, Mohammad Reza Pourghorban\*\*\*, Mohammad Hossein Ehsanfar\*\*\*\*

\* Assistant Professor of Economics, Department of Economics, Faculty of Management and Economics, Payame Noor University, Tehran, Iran. (Corresponding Author)

**Email:** [mgalizadehkolagar@pnu.ac.ir](mailto:mgalizadehkolagar@pnu.ac.ir)

**Postal address:** Department of Economics, Faculty of Management and Economic, Payame Noor University, 17 Khodadad Alley, Keshvari Square, Babol, Iran, Postal Code: 4716654849.



[0000-0003-3171-5108](https://orcid.org/0000-0003-3171-5108)

\*\* Associate Professor of Economics, Department of Economics, Payame Noor University, Tehran, Iran.

**Email:** [a.esnaashari@pnu.ac.ir](mailto:a.esnaashari@pnu.ac.ir)

\*\*\* Assistant Professor of Economics, Department of Economics, Payame Noor University, Tehran, Iran.

**Email:** [poorghorban@pnu.ac.ir](mailto:poorghorban@pnu.ac.ir)

\*\*\*\* Assistant Professor of Economics, Department of Economics, Payame Noor University, Tehran, Iran.

**Email:** [m.ehsanfar@pnu.ac.ir](mailto:m.ehsanfar@pnu.ac.ir)

---

### ARTICLE HISTORY

*Received: 28 November 2020*

*Revision: 8 March 2021*

*Acceptance: 19 March 2021*

### JEL

### CLASSIFICATION

*E51 .E31 .C22*

### KEYWORDS

*Liquidity volume,  
Inflation, Variable time  
regression*

---

**Acknowledgments:** Acknowledgments may be made to individuals or institutions that have made an important contribution.

**Conflict of Interest:** The authors declare no conflict of interest.

**Funding:** The authors received no financial support for the research, authorship, and publication of this article.

**How to Cite:**

Alizadeh Kolagar, Seyed Ghorban., Esnaashari Amiri, Abolqasem., Pourghorban, Mohammad Reza & Ehsanfar, Mohammad Hossein. (2024). The Effect of Liquidity Volume on Inflation in Iran with Time varying Parameter Model Approach. *Quantitative Economics(JQE)*, 20(4), 87-110.

 [10.22055/jqe.2021.35882.2297](https://doi.org/10.22055/jqe.2021.35882.2297)



© 2024 Shahid Chamran University of Ahvaz, Ahvaz, Iran. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0 license) (<http://creativecommons.org/licenses/by-nc/4.0/>)

## EXTENDED ABSTRACT

### INTRODUCTION

In the field of the impact of monetary policy on inflation, much research has been done, in most of which structural failure has not been studied and the regression method with a fixed parameter has been used and reached different results. Lucas (1976) argues that any change in policy regime can lead to structural failures in inflation dynamics, and that any policy analysis that does not take these failures into account will naturally have little validity. Therefore, it is important to examine whether the volume of liquidity has a different effect on inflation over time and using new regression model methods with variable time parameters can lead to more accurate policy analysis and thus more accurate economic decisions.

### METHODOLOGY

Given the importance of the relationship between liquidity and inflation in monetary policy, it is important to examine whether the volume of liquidity has a different effect on inflation over time and using new regression model methods with variable time parameters can lead to more accurate policy analysis and thus more accurate economic decisions.

Using a regression model with time varying parameter (TVP) and the Kalman filter approach the present study examines the reaction of the inflation rate over time to the influential variables such as the inflation rate of the previous period, the expected inflation rate, the imported inflation rate, the production gap and especially the volume of liquidity in the period under study in which

the application of time-varying parametric technique is considered as an innovation of this research and gives us more accurate results.

## FINDINGS

Examining the changes in the growth rate of liquidity, inflation rate and GDP growth rate shows that in most years, the growth rate of liquidity has a positive effect on the inflation rate of the next period. But in some years, despite the increase in the growth rate of liquidity, the inflation rate of the next period has decreased. Also, in some other years, despite the decrease in the growth rate of liquidity, the inflation rate of the next period has increased. It can be said that in short term, inflation in Iran is not just a monetary phenomenon. Also, due to the fact that in some years the inflation rate was relatively high, but in the next period, the growth rate of liquidity increased or in some other years, the GDP growth rate was relatively low, but in the next period, the liquidity growth rate decreased. It can be said that the changes in the growth rate of liquidity in Iran were not commensurate with the changes in inflation rates and economic growth rates and this shows that monetary policy has been wrong.

## CONCLUSION

In present study, the results of estimating the regression model as a variable time parameter and examining the trend of coefficients of explanatory variables over time in this study show that these coefficients have not been constant during the period under study and have changed over time due to external shocks such as revolution, war, oil price shocks, applied economic policies, structural changes, international political stances and economic sanctions. That is, in addition to the volume of liquidity, other variables such as delayed inflation rate, expected inflation rate, imported inflation rate and GDP gap also have a variable effect on inflation rate over time.

## Reference

- balaghi inalo, Y., & Jalaee Esfandabadi, S. A. (2023). Simulation of Nordhaus Model (1975) in the Economy of Iran: Optimal Control Approach. *Quarterly Journal of Quantitative Economics (JQE)*, 19(4), 147-176 (In Persian).  
doi: 10.22055/jqe.2021.34975.2276
- Bai, J., & Perron, P. (2003). Computation and Analysis of Multiple Structural Change Models. *Journal of Applied Econometrics*, 18, 1-22.

- Berger, T., Everaert, G., & Vierke, H. (2016). Testing for time variation in an unobserved components model for the US economy. *Journal of Economic Dynamics and Control*, 69, 179-208.
- Bhattacharya, R., Chakravarti, P., & Mundle, S. (2019). Forecasting India's Economic Growth: a Time-Varying Parameter Regression Approach. *Macroeconomics and Finance in Emerging Market Economies*, 238, 1-24.
- Friedman, M. (1956). The quantity theory of money: a restatement. *Studies in the quantity theory of money*, 5, 3-31.
- Friedman, M. (1970). The Counter-Revolution in Monetary Theory: First Wincott Memorial Lecture, Delivered at the Senate House, University of London, 16 September. *Institute of Economic Affairs: Occasional Paper*, 33.
- Hanisch, M. (2017). The effectiveness of conventional and unconventional monetary policy: Evidence from a structural dynamic factor model for Japan. *Journal of International Money and Finance*, 70, 110-134.
- Keynes, J. M. (1936). The General Theory of Employment, Interest and Money. *Ed: Macmillan London*.
- Khezri, M., Sahabi, B., Yavari, K., & Heidari, H. (2015). Time-varying Effects of Inflation Determinants: State-space Models. *Economical Modeling*, 30, 25-46 (In Persian).
- Kim, C. J., & Nelson, C. R. (1999). State-Space Models with Regime Switching: classical Gibbs-sampling approaches with applications. *MIT Press Books*, 1, Cambridge/ London.
- Komijani, A., & Naghdi, Y. (2009). An Analysis of the Inter-relationship between Production and Inflation in Iran (Emphasizing on Sectoral Production). *Iranian Economic Journal: Macroeconomics*, 9(32), 99-124 (In Persian).
- Liu, O., & Adedeji, M. O. (2000). *Determinants of inflation in the Islamic republic of Iran-A Macroeconomic Analysis* (No. 0-127). International Monetary Fund.
- Lucas, R. E. (1973). Some international evidence on output-inflation tradeoffs. *The American Economic Review*, 326-334
- Lucas, R. E. Jr. (1976). Econometric Policy Evaluation: A Critique. *Carnegie- Rochester Conference Series on Public Policy*, 1, 19-46.
- Maadelat, K. (2012). Study and Analysis of Non-linear Relationship between Production and Inflation in Iran. *Economic Strategy*, 1(2), 127-157 (In Persian). Available at:  
[https://econrahbord.csr.ir/article\\_103216.html?lang=en](https://econrahbord.csr.ir/article_103216.html?lang=en)

- Mc Connell, C., S. Brue, and T. Barbiero (1996), *Macroeconomics*, seventh Canadian edition, McGraw-Hill Ryerson printed and bound in Canada.
- Mehrara, M. & Behzadi Soufiani, M. (2016). The Threshold and Nonlinear Effect of Real and Nominal Variables on Inflation: the TAR Approach. *Journal of Economics and Modelling* 7(27), 25-54 (In Persian).
- Mehrara, M., & Ghobadzadeh, r. (2016). The Determinants of Inflation in Iran Based on : Bayesian Model Averaging(BA) and Weighted-Average Least Squares (WALS). *Planning and Budgeting*, 21(1), 57-82. Retrieved from <http://jpbud.ir/article-1-993-en.html>
- Nakajima, J., Kasuya, M., & Watanabe, T. (2011). Bayesian analysis of time-varying parameter vector autoregressive model for the Japanese economy and monetary policy. *Journal of the Japanese and International Economies*, 25(3), 225-245.
- Omidi, V., & Shahabadi, A. (2022). The Impact of Monetary Policy on the GDP of Iran through Innovation Channel. *Quarterly Journal of Quantitative Economics (JQE)*, 18(4), 37-65. doi: 10.22055/jqe.2021.30903.2139 [In Persian]
- Primiceri, G. E. (2005). Time varying structural vector autoregressions and monetary policy. *The Review of Economic Studies*, 72(3), 821-852.
- Sargent, T. J., & Wallace, N. (1976). Rational expectations and the theory of economic policy. *Journal of Monetary economics*, 2(2), 169-183.
- Shakeri, Abbas (2008), *Theory and Policies of Macroeconomics*, 2, Pars Nevisa Publications (In Persian).
- Sirikanchanarak, D., Yamaka, W., Khiewgamdee, C., & Sriboonchitta, S. (2018). Time-varying threshold regression model using the Kalman filter method. *Thai Journal of Mathematics*, 74, 133-148.
- Sohaili, Kiyomarth, Almasi, Mojtabi, & Saghaei, Maryam. (2012). Evaluating the effect of expected inflation, liquidity growth, imported inflation, production gap and exchange rate on the inflation rate in Iran. *Macroeconomics Research Letter*, 7(13), 39-60.
- Tafazzoli, Fereydoun, (2009), *History of Economic Thoughts*, Tehran, Ney Publishing, ninth edition (In Persian).