Inflation Tax and Economic Growth in Iran

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ABSTRACT

In public finance governments may finance their budget deficits through borrowing from central banks. This method of financing called seigniorage consists of two parts. One part is change in money necessary for economic growth .This part is occurred even when inflation is zero. However, the second part called inflation tax is money creation through Inflation which reduces the real money balances .It acts like a tax by reducing the purchasing power of the money income. The purpose of this paper is to analyze the effect of inflation tax on economic growth in Iran during 1971-2006. Our findings based on estimated regression models indicate that there is a negative and significance relationship between Inflation tax and economic growth in Iran. Therefore, it is suggested that government to concentrate on non-inflationary methods of financing government expenditures through tax reforms or public borrowing.

INTRODUCTION

Central banks ' exclusive right to issue currency gives them privileged access to seiogniorage , effectively making them unregulated monopolies . In the past, the siphoning off of seigniorage to governments (through quasi-fiscal expenditures, profit transfers, subsidized financing) raised familiar issues of fiscal dominance and inflationary finance. In recent years , substantial efforts have been made to weed out these linkages and enhance central banks ' independence , ensuring in particular that they are well capitalized , remain financially strong , and are well protected from pressures to appropriate their resources to no core uses , including for fiscal (or quasi-fiscal) purposes . Central banks ' charters have been reformed, direct financing to governments prohibited and quasi-fiscal expenditures eliminated especially in developed countries. However, keeping seigniorage inside central banks and the reliance of government on central bank makes seigniorage an easy money (cake if you like) in most developing countries experiencing a very low degree of independency.

The purpose of this article is to investigate the impact of inflation tax on economic growth of Iran as an example of a developing country. The paper organized as follows. Section II describes the model specification. Sections III uses different definition for inflation tax and estimate the regression models under different scenarios. Finally Section IV summarizes our findings and concluding remarks.

II. . Model Specification

Economic growth is one of the substantial problems in the developing countries. There are many models to analyze the impact or factors determining economic growth. As demonstrated by Leamer (1983); Barro (1991) and Levine& Renelt (1992), there is no public model to economic growth. Levine& Renelt proposed the following model which have been used later in many studies. (see for example, Hoover and etall 2004; Sala-i-Martin 1997).

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$$Y = B_i I + B_m M + B_z Z + U$$

Where Y stand for the rate of growth of gross domestic product, and I is the set of variables always included in the regression, M is the variable of interest ,and Z is a subset of important independent variables that used in past studies .Based on above discussion in this study we use the following model:

$$GD\dot{P}_t = \beta_0 + \beta_1 \dot{L}_t + \beta_2 \dot{X}_t + \beta_3 GY + \beta_4 IY + \beta_5 IT_t$$

Where $GD\dot{P}_t$ is the rate of growth of gross domestic product , $\dot{L}_t$ is the rate of growth of labor , $\dot{X}_t$ is the rate of growth of export , GY is the ratio of government expenditures to gross domestic product , IY is the ratio of the aggregate investment to GDP , and IT is our interest variable namely, inflation tax .

III. Model Estimation under different scenarios

$$GD\dot{P}_t = \beta_0 + \beta_1 \dot{L}_t + \beta_2 \dot{X}_t + \beta_3 GY + \beta_4 IY + \beta_5 ITOF_t \quad 1)$$

In the above model ITOF is inflation tax based on Friedman definition that is:

$$R_t = \mu \cdot (\frac{M_1}{P})_t$$

Where μ rate of growth of money, P is is prices public level, M_1 is amount of nominal money. The estimated regression model under above scenario is: (figures in parenthesis are t-statistics).

$$G\dot{D}P = -0.078484 + 1.366563 \dot{L} + 0.178079 \dot{X} + 0.055358 GY + 0.228941 IY \, ٧.٦٣ - E\_05 \, ITOF$$

(-0.878386)   (0.618858)   (4.636576)   (0.714123)   (1.544262)   (-0.410522)

$R^2 = 0.505140$ $\overline{R}^2 = 0.413499$ $D.W = 1.210013$ $F = 5.512179$

As seen from the estimated regression there is a negative but insignificance relationship between inflation tax and economic growth.

$$GD\dot{P}_t = \beta_0 + \beta_1 \dot{L}_t + \beta_2 \dot{X}_t + \beta_3 GY + \beta_4 IY + \beta_5 ITOFI_t \quad 2)$$

In the above model ITOF is inflation tax based on Fischer definition that is:

$$R = \frac{\Delta H}{GNP}$$

Where ΔH changes of base money are, GNP is gross national product. The estimated regression model under above scenario is:

$$G\dot{D}P = 0.049034 - 0.434505 \dot{L} + 0.154493 \dot{X} - 0.055005 GY + 0.196427 IY - 1.616818 \, ITOFI$$

(0.782502)   (-0.284117)   (5.489142)   (-0.920348)   (1.756175)   (-4.209092)

$R^2 = 0.724292$ $\overline{R}^2 = 0.669151$ $D.W = 1.898570$ $F = 13.13514$

(Figures in parenthesis are t-statistics). As seen from the estimated regression there is negative and significance relationship between inflation tax and economic growth.

$$GD\dot{P}_t = \beta_0 + \beta_1 \dot{L}_t + \beta_2 \dot{X}_t + \beta_3 GY + \beta_4 IY + \beta_5 ITOB_1 \quad 3)$$

In the above model $ITOB_1$ is inflation tax based on first International bank definition that is:

$$R = \frac{\overline{H} \cdot (\pi/1+\pi)}{GNP}$$

Where $\overline{H}$ average of monetary base is, GNP is gross national product and π is rate of inflation. The estimated regression model under above scenario is:

$$GD\dot{P} = 0.048591 - 0.357662\dot{L} + 0.172733\dot{X} - 0.001073GY + 0.098546IY - 0.433913ITOIB1$$

$$(0.609061) \quad (-0.204083) \quad (5.534221) \quad (-0.017092) \quad (0.710820) \quad (-2.760993)$$

$$R^2 = 0.636270 \quad \overline{R}^2 = 0.566322 \quad D.W = 1.597452 \quad F = 9.096323$$

(Figures in parenthesis are t-statistics). As seen from the estimated regression there is negative and significance relationship between inflation tax and economic growth.

$$GD\dot{P}_t = \beta_0 + \beta_1 \dot{L}_t + \beta_2 \dot{X}_t + \beta_3 GY + \beta_4 IY + \beta_5 ITOIB_2 \quad 4)$$

In the above model $ITOB_2$ is inflation tax based on second International monetary Fund definition that is:

$$R = \frac{R\overline{B}(\pi/1+\pi)}{GNP}$$

Where $R\overline{B}$ average of bank reserve on central bank is, GNP is gross national product and π is rate of inflation. The estimated regression model under above scenario is:

$$GD\dot{P} = 0.054568 + 0.144625\dot{L} + 0.184483\dot{X} + 0.006223GY + 0.029229IY - 0.701810ITOB2$$

$$(0.639967) \quad (0.077903) \quad (5.543751) \quad (0.098848) \quad (0.191504) \quad (-2.663949)$$

$$R^2 = 0.605691 \quad \overline{R}^2 = 0.532670 \quad D.W = 1.581732 \quad F = 8.294834$$

(Figures in parenthesis are t-statistics). As seen from the estimated regression there is negative and significance relationship between inflation tax and economic growth.

$$GD\dot{P}_t = \beta_0 + \beta_1 \dot{L}_t + \beta_2 \dot{X}_t + \beta_3 GY + \beta_4 IY + \beta_5 ITOIM_3 \quad 5)$$

In the above model $ITOIMF_3$ is inflation tax based on third International monetary fund definition that is:

$$R = \frac{\pi \cdot H}{GNP}$$

Where π is rate of inflation, H is money base and GNP is gross national domestic . The estimated regression model under above scenario is:

$$GD\dot{P} = 0.041268 - 0.154671\dot{L} + 0.176465\dot{X} - 0.000748GY + 0.098219IY - 0.934711ITOIMF3$$

$$(0.523342) \quad (-0.088920) \quad (5.635091) \quad (-0.011855) \quad (0.703006) \quad (-2.707865)$$

$$R^2 = 0.633100 \quad \overline{R}^2 = 0.562542 \quad D.W = 1.586920 \quad F = 8.972782$$

(Figures in parenthesis are t-statistics). As seen from the estimated regression there is negative and significance relationship between inflation tax and economic growth.

$$GD\dot{P}_t = \beta_0 + \beta_1\dot{L}_t + \beta_2\dot{X}_t + \beta_3 GY + \beta_4 IY + \beta_5 ITOIMF_4 \quad 6)$$

In the above model $ITOIMF_4$ is inflation tax based on fourth International monetary fund definition that is:

$$R = \frac{\pi \cdot H}{E}$$

Where π rate of inflation is, H is money base and E is government expenditures. The estimated regression model under above scenario is:

$\dot{GDP} = 0.020265 + 0.215629\dot{L} + 0.186236\dot{X} + 0.019373 GY + 0.087523 IY - 0.152551 ITOIMF4$

(0.237612)   (0.118981)   (5.612244)   (0.298242)   (0.555887)   (-2.067934)

$R^2 = 0.596064$ $\overline{R}^2 = 0.518384$ $D.W = 1.498289$ $F = 7.673313$

(Figures in parenthesis are t-statistics). As seen from the estimated regression there is negative and significance relationship between inflation tax and economic growth.

Figure (1) Inflation tax in Iran under different scenarios
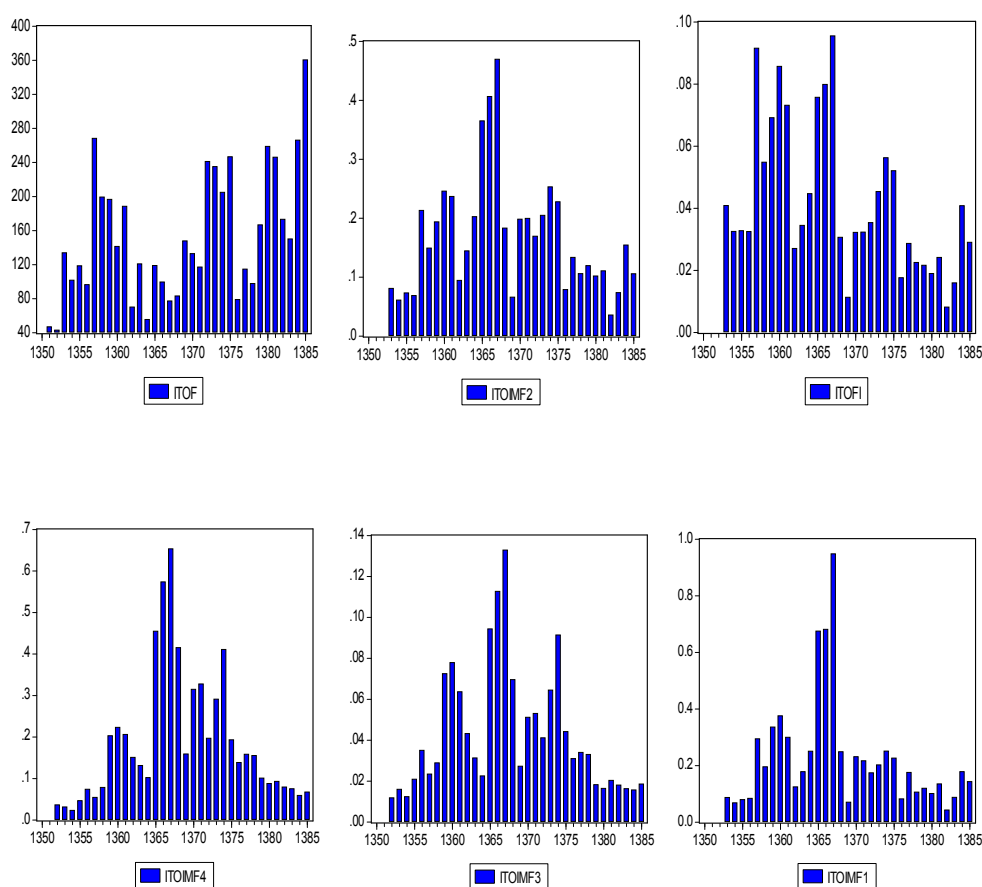
Source: Central bank of Iran and authors calculations.

IV. Findings and Concluding Remarks

The purpose of this paper was to investigate the relationship between inflation tax and economic growth in Iran as an example of developing countries with a low degree of central bank independence. As seen from previous section our findings based on different definitions and scenarios to measure inflation tax all support the detrimental impact of inflation tax on economic growth in Iran. Therefore, it is suggested that government to concentrate on non-inflationary methods of financing government expenditures through tax reforms or public borrowing. The introduction of the last year value added tax in the country and its development with a broad and relatively higher rate than the currently 3 percent can be considered as sound policy in this regard.

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