European Online Journal of Natural and Social Sciences 2015; www.european-science.com
Vol.4, No.1 Special Issue on New Dimensions in Economics, Accounting and Management
ISSN 1805-3602

The Impact of Inflation Volatility on Growth of Economic Sections of Iran

Seyyed Kamal Hosseinian[1], Seyyed Abdolmajid Jalaei[2], Valiollah Shahbazkhani[3]
[1]M.A. Student, Department of Economics, Kerman Branch, Islamic Azad University, Kerman, Iran; [2]Professor, Department of Economics, Shahid Bahonar University of Kerman, Kerman Branch, Islamic Azad University, Kerman, Iran; [3]Department of Economic, Kerman Branch, Islamic Azad University, Kerman, Iran

Abstract

Inflation volatility is recognized as one of the most important issues concerning Iran's economy which due to the lack of stability has contributed to an output decline in recent years. The present research surveys the impact of inflation volatility on growth of economic sections of Iran from 1973 to 2013. This research was benefited from Solow–Swan exogenous growth model, ARCH and GARCH. The data was analyzed and estimated by computer software Microfit via ARDL method. The results indicated that inflation volatility has had a negative impact on growth of Iran's economic sections' (agriculture, industry and services) value added, i.e. it leads to declined growth in these sections.

Keywords: inflation volatility, output volatility, economic sections' value added

Introduction

Attaining an adequate level of price growth that simultaneously aids with the economic growth and brings about economic stability is one of the purposes of all economic policy makers. Nowadays, it is of high significance to monitor inflation and prevent its indiscriminate increase. In macro terms, inflation as one of the main variables has a considerable role in countries' economic functions where it produces undesirable effects. Prior to anywhere else, inflation influences money function. It irritates the exchange functions of the money and causes ineffectiveness of value saving function of it. On the other hand, changes to this variable in economy trigger uncertainty toward future prices and consequently disturb economic functions. This uncertainty can be transmitted to all economic sections and leads to increased inflation and the succeeding uncertainty (Mohammadi and Taleblou, 2011).

Iran's economy has experienced the phenomenon of inflation through several recent decades. Inflation has long been considered as an economic problem and resolutions have been introduced to control it. Continuous high rate of inflation is a harmful economic phenomenon which imposes a lot of social and economic costs on societies. Basically, inflation is "an increase in the general level of prices during a specific period of time". Output is one of the ways to curb inflation. Augmented output brings about reduced inflation. Inflation affects producers and sellers because when prices are high, more products are stocked in order to be sold in the future. Inflation volatility causes deviation of decisions by savers and investors that causes instability in output. Changeable and high rates increase exchange costs and decrease investment in productive activities which eventually lead to reduced growth. If prices fluctuate rapidly through a period to the extent that these price change is accompanied by volatility of variables, this trend is called extensive volatility; and if prices have few changes and as a result of it variable values fluctuate a little, this trend is called little volatility (Haghighat et al, 2011).

Value added produced by all the economic factors and sectors of a country for a period (one year for instance) states the country's GDP. In fact, GDP is defined as the value of total products

produced and final services given by an economic system all over the world during a specific year. Therefore, according to the above statements, the present research seeks to specify the relationship between volatilities of value added and inflation in Iran's economic sections.

A review of the studies on inflation volatility

There have been plenty of studies conducted on inflation and output volatility worldwide, some of them are brought next. Ebrahimi and Larti (2012) carried out a research entitled the impact of financial and commercial liberation on output volatility in Iran by using the autoregressive model with distributive lags (ARDL) from 1960 to 2007. Results indicate that in the oil model, commercial liberation has a positive and significant impact and financial liberation has a negative and insignificant impact on output volatility. In the non-oil model though, the variables have a positive and significant impact on output volatility. The long run relationship between variables is also confirmed.

Haghighat et al (2011) surveyed the relationship between output and inflation volatility in Iran and proposed resolutions to curb inflation as a recognized typical economic problem. Output is one of the ways to control inflation. Results of this study show that growth rate of output and inflation rate comply with autoregressive heteroscedastic conditionally. Likewise, output and inflation volatility lead to increased inflation rate and output volatility (ARCH) leads to increased output growth.

Mehrara and Mojab (2010) did a survey entitled the relationship between inflation, inflation uncertainty, output and output uncertainty in Iran's economy by using conditional variance modeling and Granger causality test. They studied the factors influencing the nominal (inflation) and real (output) uncertainty and their impact on the uncertainty of Iran's economic growth from 1959 to 2006. Results indicate that increased inflation and decreased oil income can be the causes of increased inflation uncertainty and the main origin of output uncertainty in Iran's economy is oil section's value added.

Noha (2012) in the article entitled "Inflation Volatility, Institutions, and Economic Growth" investigated the analysis of the effects of inflation rate on growth with varied degrees of institutionalized development and regressive features of non-linear growth were estimated by using GMM system method on a sample of 37 countries from 1989 to 2006. They found out that policies, especially inflation volatility, do not act as a proxy for the institutions. Institution's development has a positive significant impact on growth which helps by decreasing negative effects of inflation volatility.

Bruno and Geoff (2012) conducted a research entitled "Foreign direct investment and output growth volatility: A worldwide analysis" on 85 countries which are aligned with the theory that direct foreign investment has a stabilizing impact on output in long run. These findings state the stoppage of output instability during these decades with the international net wealth diversity and the corresponding decline in the financial accelerating power.

Florence (2010) did a research under the title of "Main and Interaction Effects of Inflation Level and Volatility on Economic Growth" and surveyed the relationship between inflation level, volatility and economic growth for 92 countries from 1982 to 2007 by using GMM system to estimate dynamic linear panel models. Results reveal that with fixed level of inflation and inflation volatility, economic growth is negative.

Methodology

In terms of method, this research is correlational and in terms of purpose, it is an applied experimental study. Background of studies is collected from books, magazines and websites. Comparing regressive analyses are carried out by using limited accounting data and R2

determination coefficient, F and T tests. Determination coefficient is used for comparing the extent to which the dependent variable is expressed by the independent one. Total significance of the regression model and model coefficients are checked by F and T tests successively. ARDL method is used to check the long run relationship between variables. The main advantage of ARDL method among all cointegration methods is that this method is applicable without considering whether model variables are I(1) or I(0). In other words, it is not necessary to divide the variables into correlated variables with zero and one degree. On the other hand, economic analyses can be done in long or short run in this method.

Model specification (Solow growth model)

The Solow neo-classic growth model (1956) is a model based on analyzing the economic growth which analyzes the process of economic growth in a way that there is very little capital in a weak economy for labor, therefore, return on investment is high. Unlike Harward and Dumar's that were based on Keynesian assumptions, Solow model is concentrated on neo-classic foundations. Robert Solow presented a model in his article in 1956 entitled "A participation in the economic growth theory" which triggered economy growth discussions' emergence and development and became ubiquitous to some extent.

Solow model's assumptions included homogeneous goods in the economy, fixed return on fixed scale, fixed technology (technological advancement), endogenous rate of population growth, etc. The simplest presentation of this model would illustrate such an output function:

$$Y = F(K, L) \tag{1}$$

The output function is often selected from the specific type of Cobb-Douglas function:

$$Q = AK^{\alpha}L^{(1-\alpha)} \tag{2}$$

Since income per capita is used to measure welfare of countries and comparing their growth trend, here output per capita is measured. Dividing the output function by the labor force, output per capita (of labor force), function per capita (of labor force) will be extracted:

$$\frac{Q}{L} = A\left(\frac{K}{L}\right)^{(1-\alpha)}\left(\frac{L}{L}\right)^{\alpha} \tag{3}$$

$$q = f(k) \tag{4}$$

Capital accumulation equation in Solow growth model is:

$$\Delta K = I^{g} - \delta K \tag{5}$$

Where K is total Capital accumulation, δ is depreciation rate of capital investment and I^{g} is GDP per course. Since from Solow's point of view the amount of output saved in each course will be spent on investment, we have:

$$I^{g} = sY \tag{6}$$

The two above equations result in:

$$\Delta K = sF(K, L) - \delta K = sY - \delta K \tag{7}$$

By dividing the above equation by K we will have:

$$\frac{\Delta K}{K} = \frac{sY}{K} - \delta \tag{8}$$

Division of Y by L gives output per capita (y) and division of K by L gives labor per capita (k). If the logarithm of $k = \frac{K}{L}$ is taken and then it is differentiated then written as:

$$\ln k = lnK - lnL \tag{9}$$

$$\frac{\Delta k}{k} = \frac{\Delta K}{K} - \frac{\Delta L}{L} \tag{10}$$

$\frac{\Delta L}{L}$ is the labor growth rate which equals to the population growth (n). After the replacement we have:

$$\frac{\Delta k}{k} = \frac{sy}{k} - \delta - n \quad (11)$$

as a result we have:

$$\Delta k = sy - (\delta + n) \quad (12)$$

This equation is known as the main equation of Solow model and shows that changes to Capital accumulation per capita for each worker are the deficit between economy's investment per capita and the amount of investment per capita which is required to keep K value fixed. If the economy has a standard state of K concentration of capital and there is no other investment, concentration of capital decreases because of population growth and depreciation.

The Solow states that an economy with little initial concentration of capital (K), N population growth and a standard depreciation rate δ more importantly a standard rate of investment is automatically modified toward a steady balance.

As stated above, in a steady status, each worker's output level and as a result per capita output is constant and its growth is zero. While, for a short time the mentioned income has some growth out of this situation, in long run though, it is not the same in a steady status.

Additionally, when Solow exposed his total production function ($Y = K^{\alpha}L^{1-\alpha}$) to experimental tests and estimated it, it was shown that the unexplained part of the factors influencing Y which is reflected in the subject regression model's hysteresis is not naturally random and explains the ignorance of a regular influential factor in the mentioned function. He interprets this unexplained part in the estimated relationship which is famous as Solow residual as technical and efficiency development:

$$\ln Y = \hat{\alpha} lnK + \widehat{(1-\alpha)} lnL + \hat{e} \quad (13)$$

where $\hat{e}$ is the remaining part of the subject regression. Thus, he introduces his total production function as below to merge the technical development in it:

$$Y = AK^{\alpha}L^{(1-\alpha)} \quad (14)$$

Where A is the technical development factor, and is inserted into the production function generally unexplained. If the subject production function is written per worker, we have:

$$\frac{Y}{L} = A(\frac{K}{L})^{\alpha} \quad \text{or} \quad y = Ak^{\alpha} \quad (15)$$

The logarithmic form of the equation which is differentiated would be:

$$\dot{y} = \dot{A} + \alpha\dot{k} \quad \text{or} \quad \dot{A} = \dot{y} - \alpha\dot{k} \quad (16)$$

It means that the part of output per capita growth for each worker which is not explained by stock per capita is equal to the technical development growth. In this equation, α is the output capital traction which is equal to product share of the total capital. Hence, if output per capita growth rate, capital per capita and product share are accessible, technical development or efficiency can be easily derived from the above equation. In addition to economic growth issues, Solow paid enough attention to natural resources economy as well. In his opinion, in addition to factors such as capital, labor force and technology which influence growth, natural resource limitations impact on growth continuation. He is of the belief that assumptions of substitution elasticity between capital and natural resources are important.

Solow model can be considered as one of the models that stress capital's role. In other words, capital in this model is drive force of economy.

Mankiw, Rome and Weil (1992) suggested that placing human resource in Solow model makes it more compatible with empirical evidence. Human resource in their view was education, teaching and different skills. According to this suggestion, output with fixed scale human resource composition with Cobb-Douglas function in the economy is presented as below:

$$Y = K^{\alpha}(EH)^{\alpha} \quad (17)$$

Where K is the physical capital, E is the technical development labor increasing force and H is the skilled labor force. In this model, individuals in the economy acquire human resources by spending time on learning new skills instead of working. Skilled human resource or labor force is defined as below:

$$H = e^{\Phi u} L \tag{18}$$

Where U is a subtraction of time available to individuals which is spent on learning skills, L is the normal labor force which is used in the economy. It is assumed that skilled worker is the Kansas cable worker by learning a skills for u units up time and Φ is a fixed positive digit. Therefore, if U=0 then H=L. But as U increases, a unit of unskilled labor force is upgraded to be effective labor force H which is calculated as below:

$$\frac{d\, lnH}{du} = \Phi \tag{19}$$

As a result:

$$\frac{dH}{du} = \Phi H \tag{20}$$

It means that if = 0.2Φ and U is increased for one unit, then H increases for almost 20%. The Capital accumulation equation is like equation 7-3. In order to solve this growth model equation, the output function is explained based on output per capita for each worker like before. To do so, both sides of output function15-3 are divided by unskilled labor force L:

$$y = \frac{Y}{L} = \frac{K^{\alpha}}{L^{\alpha}} \left(\frac{EH}{L}\right)^{1-\alpha} = k^{\alpha} EH^{1-\alpha} \tag{21}$$

Where $e^{\Phi u} = h = \frac{H}{L} = \frac{e^{\Phi u}.L}{L}$. Like the saving case, in which people are sent to save a fixed portion of their income, it is assumed that people spend fixed ratio of their time on learning skills (u is fixed). Supposing u as fixed will provide the per capita function for each worker as simple as before. Output per capita level and capital accumulation for each worker grow proportionately and equally with technical development growth, λ. In the previous model, the status variable was $\tilde{y} = \frac{y}{E}$ which was constant in a steady situation though in this model, since h is fixed, the status variable of the model is $\hat{y} = \frac{y}{\mathrm{Eh}}$ .As a result:

$$\hat{y} = \frac{y}{\mathrm{Eh}} = k^{\alpha} \frac{(\mathrm{Eh})^{1-\alpha}}{\mathrm{Eh}} = \left(\frac{\mathrm{k}}{\mathrm{Eh}}\right)^{\alpha} = \hat{\mathrm{k}}^{\alpha} \tag{22}$$

Where $\hat{y}$ and $\hat{k}$ are successively the value of output per capita for each efficient skilled worker and per capita of each efficient skilled worker. Thus, Capital accumulation equation growth equation can be derived from Capital accumulation equation:

$$\frac{\Delta K}{\mathrm{K}} = \mathrm{K}^{\cdot} = \mathrm{s}\frac{\mathrm{Y}}{\mathrm{K}} - \delta = \mathrm{s}\frac{\frac{\mathrm{Y}}{\mathrm{EH}}}{\frac{\mathrm{K}}{\mathrm{EH}}} - \delta = \mathrm{s}\frac{\hat{y}}{\hat{\mathrm{k}}} - \delta = \frac{\mathrm{sf}(\hat{\mathrm{k}})}{\hat{\mathrm{k}}} - \delta \tag{23}$$

Since $\frac{K}{Y}$ is supposed fixed, K and Y grow equally and it can be concluded that $\hat{y}$ and $\hat{k}$ growth is also the same:

$$\hat{\mathrm{k}} = \frac{\Delta K}{\mathrm{K}} = \left(\frac{\mathrm{K}^{\cdot}}{\mathrm{EH}}\right) = \mathrm{K}^{\cdot} - E^{\cdot} - n \tag{24}$$

Since H represents the fixed $e^{\Phi u}$, then:

$$\hat{\mathrm{k}} = \frac{\Delta K}{\mathrm{K}} = \hat{\mathrm{K}} - \lambda - 0 - \mathrm{n} = \frac{\mathrm{sf}(\hat{\mathrm{k}})}{\hat{\mathrm{k}}} - \delta - \lambda - \mathrm{n} \tag{25}$$

Multiplying sides of the equation by $\hat{k}$, the result would be:

$$\Delta\, \hat{\mathrm{k}} = \mathrm{sf}(\hat{\mathrm{k}}) - (\delta + \lambda + \mathrm{n})\hat{\mathrm{k}} \tag{26}$$

This equation states that each efficient and skilled worker's Capital accumulation is equal to the actual skilled efficient worker's capital per capita minus the amount of above investment which is necessary for keeping $\hat{k}$. According to these two-equation economic model, it converges toward a

steady status in which $\hat{k}$ does not change any more and remains fix. Therefore, to obtain a steady $\hat{k}^*$ status, it is required that $\Delta\hat{k}=0$:

$$\Delta\hat{k} = 0 = sf(\hat{k}^*) - (\delta + n + \lambda)\hat{k}^* \quad (27)$$

As a result:

$$sf(\hat{k}^*) = (\delta + n + \lambda)\hat{k}^* \quad (28)$$

Therefore, $\hat{y}^*$ is calculated as below:

$$\hat{y}^* = \hat{k}^{*\alpha} = \left(\frac{s}{\delta+n+\lambda}\right)^{\frac{\alpha}{1-\alpha}} \quad (29)$$

Since $y^* = Eh\hat{y}^*$, then:

$$y^* = E(t)h\left(\frac{s}{\delta+n+\lambda}\right)^{\frac{\alpha}{1-\alpha}} \quad (30)$$

Equation (28) states that the capital per capita for each worker depends on the investment rate in physical capital, rate of population growth, technical development and skills developed in the economy. According to this model, countries with higher rates of physical Capital accumulation and save will benefit from larger output per capital.

Since λ, n, δ and s are all fixed values, if logarithm of equation (28-3) is taken and then its derivative with respect to time is also taken, the result would be:

$$y^* = E(t) = \lambda \quad (31)$$

It means that in a steady status, each worker's output per capita grows as equal as technical development (λ). We can use the following relationship in order to estimate the relative per capita income of countries and explain their difference in per capita income.

$$\bar{y} = \frac{y_I^*}{y^*USA} \quad (32)$$

as a result:

$$\bar{y} = \frac{E(t)_I h_I\left(\frac{s}{\delta_I+n_I+\lambda_I}\right)^{\frac{\alpha}{1-\alpha}}}{E(t)_{USA} h_{USA}\left(\frac{s}{\delta_{USA}+n_{USA}+\lambda_{USA}}\right)^{\frac{\alpha}{1-\alpha}}} \quad (33)$$

Consequently, Solow growth analytical framework is considerably successful at explaining broad changes in nations' wealth (Branson, 2010).

Model estimation and interpretation of results

Y = β1 + β2 L + β3 K + β4 P

Y: value added of sections

P: inflation volatility

K: capital stock

Active population

Table 1: ARDL model of value added in agriculture section (short run)

Variable	Coefficient	St. deviation	t statistic
previous period's value added in agriculture section	0.50282	0.12007	4.1877 (0.000)
Active population	6.2354	1.4498	4.3010(0.000)
Capital stock	-0.047145	0.070184	-0.67173(0.506)
Inflation volatility	446.1875	157.5717	2.8316(0.08)
Intercept	11720.6	4751.2	(0.019)2.4669

R2 =0/96972 D.W =1/8378

Value added in agriculture section in the previous period has a positive and significant impact on value added in agriculture section within the present period.

Active population has a positive and significant impact on value added in agriculture section in short run (significant at 95% level).

Capital stock has a negative and insignificant impact on value added in agriculture section in short run (not significant at 95% level).

Inflation volatility has a negative and insignificant impact on value added in agriculture section in short run (not significant at 95% level).

Table 2: ARDL model of value added in agriculture section (long run)

Variable	Coefficient	St. deviation	t statistic
Active population	12.5417	1.7801	7.0457[.000]
Capital stock	-.094826	0.14698	-.64518[.523]
Inflation volatility	897.4448	310.1595	2.8935[.007]
Intercept	23574.4	9580.4	2.4607[.019]

Active population has a positive and significant impact on value added in agriculture section in long run (significant at 95% level).

Capital stock has a negative and insignificant impact on value added in agriculture section in long run (not significant at 95% level).

Inflation volatility has a positive and insignificant impact on value added in agriculture section in long run (not significant at 95% level).

Table 3: Ecm model of value added in agriculture section

Variable	Coefficient	St. deviation	t statistic
dL	6.2354	1.4498	4.3010[.000]
dK	-.047145	0.70184	-.67173[.506]
dP	446.1875	157.5717	2.8316[.008]
dC	11720.6	4751.2	2.4669[.019]
Ecm	-.49718	0.12007	-4.1406[.000]

Ecm (-1) is approximately -.49718 which means that -.49718 of agriculture section's value added imbalances are resolved.

Table 4: ARDL model of value added in industry section (short run)

Variable	Coefficient	St. deviation	t statistic
previous period's value added in industry section	0.40795	0.12074	3.3787[.002]
Active population	1.5707	0.61904	2.5373[.017]
previous period's active population	5.3084	0.91785	5.7835[.000]
Capital stock	0.18735	0.064797	2.8914[.007]
previous period's Capital stock	-.19922	0.065180	-3.0565[.005]
Inflation volatility	588.5115	474.0733	1.2414[.224]
previous periods' Inflation volatility	728.7288	332.9922	2.1884[.037]
Intercept	13831.7	4872.9	2.8385[.008]

R2 =0/99757 D.W =1/8944

Value added in industry section in the previous period has a positive and significant impact on value added in industry section within the present period.

Active population has a positive and insignificant impact on value added in industry section in short run (not significant at 95% level).

Previous period's active population has a positive and significant impact on value added in industry section in short run (significant at 95% level).

Capital stock has a positive and insignificant impact on value added in industry section in short run (not significant at 95% level).

Previous period's capital stock has a negative and insignificant impact on value added in industry section in short run (significant at 95% level).

Inflation volatility has a positive and insignificant impact on value added in industry section in short run (not significant at 95% level).

Previous period's inflation volatility has a positive and significant impact on value added in industry section in short run (significant at 95% level).

Table 5: ARDL model of value added in industry section (long run)

Variable	Coefficient	St. deviation	t statistic
Active population	11.6191	1.0575	10.9872[.000]
Capital stock	-.020045	0.038628	-.51891[.608]
Inflation volatility	2224.9	196.3569	11.3307[.000]
Intercept	23362.2	6997.1	3.3389[.002]

Active population has a positive and significant impact on value added in industry section in long run (significant at 95% level).

Capital stock has a negative and insignificant impact on value added in industry section in long run (insignificant at 95% level).

Inflation volatility has a positive and significant impact on value added in industry section in long run (significant at 95% level).

Table 6: Ecm model of value added in industry section

Variable	Coefficient	St. deviation	t statistic
dL	1.5707	0.61904	2.5373[.016]
dK	0.18735	0.064797	2.8914[.007]
dP	588.5115	474.0733	1.2414[.223]
dC	13831.7	4872.9	2.8385[.008]
Ecm (-1)	-.59205	0.12074	-4.9035[.000]

Ecm (-1) is approximately -.59205 which means that -.59205 of industry section's value added imbalances are resolved.

Table 7: ARDL model of value added in services section (short run)

Variable	Coefficient	St. deviation	t statistic
previous period's value added in services section	1.0429	0.14727	7.0818[.000]
The two previous period's value added in services section	-.32260	0.14204	-2.2711[.031]
Active population	4.1073	4.5752	.89774[.377]
Capital stock	0.54076	0.16206	3.3367[.002]
previous period's Capital stock	-.49133	0.14791	-3.3219[.002]
Inflation volatility	-1615.3	1360.6	-1.1873[.245]
previous period's Inflation volatility	-1897.4	2049.6	-.92576[.362]
The two previous periods' Inflation volatility	6320.5	2678.5	2.3597[.025]
Intercept	58726.1	41771.4	1.4059[.170]

R2 =0/99 D.W =2/23

Value added in services section in the previous period has a positive and significant impact on value added in services section within the present period but a negative and significant impact on value added of the present period within the 2 previous periods.

Active population has a positive and insignificant impact on value added in services section in short run (not significant at 95% level).

Capital stock has a positive and significant effect on value added in services section in short run (significant at 95% level).

Previous period's capital stock has a negative and significant effect on value added in industry section in short run (significant at 95% level).

Inflation volatility has a negative and insignificant impact on value added in industry section in short run (not significant at 95% level).

Previous period's inflation volatility has a negative and insignificant effect on value added in industry section in short run (not significant at 95% level).

The two previous periods' inflation volatility has a positive and significant effect on value added in industry section in short run.

Table 8: ARDL model of value added in services section (long run)

Variable	Coefficient	St. deviation	t statistic
Active population	14.6867	15.1305	.97067[.340]
Capital stock	0.17675	0.20773	.85087[.402]
Inflation volatility	10039.6	3475.1	2.8890[.007]
Intercept	209988.8	115446.6	1.8189[.079]

Active population has a positive and insignificant impact on value added in services section in long run (not significant at 95% level).

Capital stock has a positive and insignificant impact on value added in services section in long run (insignificant at 95% level).

Inflation volatility has a positive and insignificant effect on value added in services section in long run (insignificant at 95% level).

Table 9: Ecm model of value added in services section

Variable	Coefficient	St. deviation	t statistic
dY	0.32260	0.14204	2.2711[.030]
dL	4.1073	4.5752	.89774[.376]
dK	0.54076	0.16206	3.3367[.002]
dP	-1615.3	1360.6	-1.1873[.244]
dP1	-6320.5	2678.5	-2.3597[.025]
dC	58726.1	41771.4	1.4059[.170]
Ecm (-1)	-.27966	-3.3894[.002]	0.082512

Ecm (-1) is approximately -.27966 which means that -.27966 of services section's value added imbalances are resolved.

R2 in the model for agriculture, industry and services sections is successively 0.96, 0.99 and 0.99. It states that 96%, 99% and 99% of the changes in agriculture, industry and services sections are explained by explanatory variables.

References

Barugahara, F. (2010). Main and Interaction Effects of Inflation Level and Volatility on Economic Growth, JEL classification: O40, E00, E31, 1-23.

Ćorić, B., & Geoff, P. (2012)."Foreign direct investment and output growth volatility: A worldwide analysis, Journal of International Review of Economics and Finance, 25, 27-260.

Ebrahimi, M., & Larty, H.R. (2012). The impact of financial liberalization and trade on the volatility of output in Iran, Journal of Economic Research (Iranian-Islamic approach), 46, 1-26.

Emara, N. (2012). Inflation Volatility, Institutions, and Economic Growth, Global Journal of Emerging Market Economies, Forthcoming, JEL classification: O16; O43; E30, 1-41.

Ghavam Masoudi, Z., & Tashkini, A. (2005). The empirical analysis of inflation in the Iran's economy, Journal of Business Research, 36, 75-105.

Haghighat, A., Pirayi, K., & Daneshnia, M. (2011). The relationship between output and inflation volatility in Iran, Journal of Monetary Economics, Finance (former development and knowledge), 1, 17-36.

Mehrara M., & Mojab, R. (2010). The relationship between inflation and inflation uncertainty, and uncertainty of production in the economy.

Nasr Esfahani, R., & Yavari, K. (2003). Nominal and real factors affecting inflation in Iran- VAR autoregressive approach, Journal of Economic Research, 16, 69-99.

Sarabadadi, Gh. (2006). Inflation, factors and ways to deal with it in Iran", Islamic economy, 6th Edition.