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Determination of the sacrifice rate in Turkey, Brazil and Italy: A comparison among countries

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The ongoing research on output and inflation tradeoff contradiction is what most nations' central banks are facing currently. After a long inflationary period, which started in 2001, Turkey has also become successful in overcoming and curbing down the inflation rate with fiscal and monetary policy measures. Although the general acceptance of output sacrifice for inflationary improvements is a common knowledge of today, the "Neo Classical School" of thought argues that market actors will not delay its expectations. The fundamental purpose of this study at hand is to comprehend the existence of output losses during the anti-inflationary periods between1990 and 2008 of Turkey. In this study, time periods considered will be divided into intervals for testing the existence of output losses in the measure of sacrifice ratios. This study will be very exploratory, especially for the lived experience in the post 2001 period. Estimation of the study relies on the basic Phillips Curve hypothesis. Variables used in the research at hand are: inflation rate, output gap and public sector borrowing rate (PSBR). With the output gap, the intention is to measure the potential output loss. Sacrifice ratio will be measured as output loss, which is considered as a part of inflationary decline. Similar ratios will be calculated and compared for alternative countries. Relatively, a small sacrifice ratio for the post 2001 period of Turkey can be interpreted as successful central bank implementations. Italy's findings when compared to Turkey's results have the following parallel findings: if the sacrifice ratio for the disinflation period is positive, then the sacrifice ratio for the post disinflation periods is negative for both countries. Findings show that disinflation periods cause a restraint on the production of Brazil. Persistence coefficient for Brazil is much more on a lower level as compared to Turkey and Italy.

Key words: Disinflation, sacrifice rate, monetary policy, output gap.

INTRODUCTION

For a long period of time, Turkish economy had the principal agenda of never dropping inflation rate, high inflation rate, policies that should or have been adopted to lower the inflation rate and the impact of these adopted policies on the economy itself. By using disinflationist policies for reducing inflation, it can result to creation of internal output gap increase. In other terms, while reducing inflation, the national output is reduced and due to this reason, the output is sacrificed. The sacrifice rate in laments term is the amount of total output that is lost to reduce the inflation rate (Çetinkaya and Yavuz, 2002).

When the world economy was looked at from a summarizing point of view, it can be stated that inflations have negative effect on nations, and due to this effect, attempts were made to reduce inflation through the disinflation programs that were frequently adopted. Many economists in that sense state that low inflation will increase earnings in the long term. Taylor (1983) and Sargent (1983) state the importance of disinflation periods in a supporting manner while they also discuss the recovery speed of disinflation period from different perspectives (Taylor, 1983; Sargent, 1983). Taylor in this sense states the position of "slow disinflation pace will reduce costs", while Sargent states the position of "fast disinflation being less costly" meaning that it will cost less output gap. Jordan, within the same topic, discusses that

on disinflation periods, with increasing output gap periods being high, the contrary situations convey no situation with symmetric gap reduction (Jordan, 1997). This in meaning conveys a finding that states the opposite of sacrifice rates do not generate utility rate environment. Conclusively, at these points, one can infer that it is a difficult task to reduce inflation and its effects on the economy.

In this study, the 1990 to 2008 periods sacrifice rate for Turkish economy was evaluated. It should be known that as a result of the 2001 year (May period) adopted disinflation oriented monetary policies, fractional drops in the inflation was experienced within the Turkish economy. Due to this reason, the research has adopted the view of this time period with pre and post economic situations. To give a summary of the Turkish economy, the inflation rate increase on average for the year 1999, 2000 and 2001 was 68.8, 39.9 and 68.5%, respectively. After the execution of disinflation purposed monetary policies, the obtained data from Turkish Statistical Institute (TUIK) dropped within the inflation rate. To give quantifiable evidence to such drop, the inflation rate was 31.7, 16.65, 8.49, 8.63, 9.61, 9.17 and 8.62% for the year 2003, 2004, 2005, 2006, 2007, 2008 and 2009, respectively.

The aim of this study is to analyze the 2001 year set IMF supported policies of "Shift to Strong Structural Economic Plan" adopted by the Republic of Turkey. In this way, by a yearly period, the country's sacrifice ratio and "persistence or hysteria coefficient" could be calculated. This study does not only focus on Turkey and its performances, but on Italy and Brazil for comparative purposes of these experience analysis. When studying Turkey, which is the EU accession process, Italy was chosen for comparison being an EU country. Brazil was chosen because Turkey and Brazil have similar stories on their economy as regard inflation and crisis.

LITERATURE REVIEW

Looking at the related literature, almost all studies confirm the existence of sacrifice ratio from an economist perspective. On the other hand, the concept of cost and speed of disinflation have different approaches. The meaning of cost in this study is based on the rate of reduction of output while attempting to reduce inflation over reducing inflation rate. If the inflation reduces due to shrinking policies, the output gap increases more drastically; meaning that the inflation cost is more than what was anticipated. Also, if an attempt is made to reduce inflation rate with a short term policy, disinflation speed with an alternative approach is reduced with a long term policy. In this situation, disinflation pace should be defined in a slower manner. Taylor (1983) states that disinflation may take a slow pace and thus, create a lower medium for cost. According to his studies, while inflation is reduced, the sacrificed income drop is higher than the

inflation rate. Sargent (1983) in this sense states "fast pace disinflation have less costs". Ball on the subject matter states that disinflation cost on average inflation rate is far more sensitive and affected (Ball, 1994). Ball in his study examined the sacrifice ratio factors, which were a result of disinflation. In the study, sacrifice ratio was defined as the ratio of loss output over the reducing trend inflation rate. Defining sacrifice ratio by developing a method for calculating single disinflation period is implemented for 65 periods of midlevel inflation holding OECD countries (Ball, 1994). As such, Ball's results reflect that the sacrifice ratio was reducing as in the pace of disinflation. In this study, slowly reducing the inflation has raised the sacrifice ratio, but sudden policies of inflation reduced sacrifice ratios. At the same time, ratio also reduced with the wage setting institutions flexibility. Wage rigidity is found to be also increasing the sacrifice ratio. Openness of economy did not affect the ratio. Ball's results also show that disinflation policy at the beginning and income policies have no certain relation with the ratio.

Zhang (2001), in his study, looked at the sacrifice ratio in terms of its long term and empirical effects. His study reflects the term also called hysteric effect, which is a strong persistence. The empirical study focused on the 1960 to 1990 unemployment data quarterly and also on G-7 countries. As a result of Zhang's study, the calculated long term sacrifice ratio is greater than the non-calculated long term sacrifice ratio. Sacrifice ratio and the beginning of inflation rate have been found to be in a negative relationship. However, long term sacrifice ratio and wage profitability have no relation between each other.

Jordan (1997) looked at situations of disinflation and rapid inflation increase, and investigated them both. The article was about the central bank's independence rate in terms of explaining sacrifice and benefice ratio fluctuations. Ball (1994) also used the output gain approach for 19 industrialized countries time periods between 1960 and 1992. The purpose of the research was to look at how central bank independence ratio would define sacrifice and benefice ratio fluctuations. Possible flow pace, inflation rate change, nominal wage profitability and early period inflation rates were considered within the study. As a result, central banks with the higher independence rate had higher sacrifice ratios, but inflations increased rate periods and benefice rate that were not high were observed. Daniels on his research with a similar research to Jordan's 1997 study, looked at openness of an economy and relationship of sacrifice ratio based on central bank independence (Daniels et al., 2005). In this study, Daniels found a positive relation between sacrifice ratio and openness of economy. As openness increases, the central bank's positive effect on sacrifice ratio reduces.

The study of Yay (2001) was one of the first studies that based their discussion on Turkey. This study first looked at the disinflationist policy costs theoretically and

then investigated the different counties heterodox disinflation policies. It was observed that Argentina (1979 to 1981 and 1985 to 1986), Brazil (1985 to 1986 and 1994), Chile (1978 to 1982), Mexico (1987 to 1994), Uruguay (1978 to 1982 and 1990) and Israel (1982 to 1983 and 1985) were enriching countries in terms of results of the study. Lastly, the study looked at the 1999 and onward period with its IMF originating stability program.

Another study whose discussion was based on Turkey was done by Çetinkaya and Yavuz (2002). The study contained sacrifice ratio and output gap measurements with alternative measurement. Based on 3 different periods (3 × 3 matrix), two positive sacrifice ratios were obtained in this study. In the study, output loss could not be obtained through grand disinflation, whereas in this study, the relationship proposed to be obtained with the current framework literature is the relationship between dropping disinflation period, reducing outputs and reducing inflation rate. The relationship between the potential income used and the actual income difference between the year's inflation rate series is the relation coefficient, which is actually the sacrifice ratio. These coefficients' calculation is composed of two different methods. The first method includes a regression equation, which will provide a ratio. This method does not include between period changes, but includes a single constant change coefficient; thus, the method is heavily criticized. Other approaches include an approach where a different ratio can be calculated for each year individually as a series. In this study, both methods will be adopted and individually calculated. After evaluating sacrifice ratio, within the disinflation periods, disinflation periods monetary policy affects sustainability and will be measured with "hysteria coefficient".

METHODOLOGY

Model

The evaluation of sacrifice ratio for the sake of reducing inflation is the main purpose of this paper; however, while producing the model to evaluate the sacrifice ratio for the Turkish economy between the 1990 and 2008 periods, sacrifice ratio was first defined based on the well-known Phillips curve. The Gross Domestic Product (GDP) or the Gross National Product relationship with output was basically defined as (Okun, 1978; Gordon and King, 1982):

$$yt - yt* = \alpha\,(\pi t - \pi t - 1) + ut \; ; \alpha > 0 \quad (1)$$

In Equation (1), y is the actual output level, $yt*$ is the potential output level, πt is the actual inflation rate at period t, $(\pi_t - \pi_{t-1})$ is the first difference of π_t and ut represents the error term. Within the equation, the sacrifice ratio is defined by α, while the conducted regression analysis result can be accepted as a stable value. The sacrifice ratio is expected to be positive. The meaning of this expectation is that disinflationist periods in-between inflation rate increase $(\pi_t - \pi_{t-1})$, and it is the increasing difference that is observed between the actual and potential difference $(y_t - y_t*)$. To elaborate more, if the in-between two periods inflation rate dropped

as a result of the disinflation policies caused by actual shrinkage experienced within the economy and actual output dropping, the gap between potential and actual inflation will increase; as such, this is defined as the output gap. As a result, the defined rate of sacrifice is the output reduction of the inflation rate of one score. The higher the in-between periods inflation rate, the higher the output gap.

However, the equality in finding sacrifice ratio based on its fundamentals vary in nature in the second model based on Ball's work (Ball, 1994). While inflation is rising or demand is in sudden fluctuations, the constant assumption is not found appropriate, which demands us to adopt the second approach shown as:

$$SR = \sum(yt - yt*)/(\pi t - \pi t - 1) \quad (2)$$

From Equation (2), the output gap and the same period's actual inflation rates' drop is defined as disinflation period $(\pi_t - \pi_{t-1})$. By so doing, the sacrifice ratio is turned into a series, which allows us to view the general trend. This method was adopted from Ball's approach by Jordan (1997), Bernanke et al. (1999) and Boschen and Weise (2001).

Although the recommended equality will change annually, and based on the annual change i (Ball, 1994), this ratio will change from year to year f it is stable or not. Also, it will follow a similar structure at the same time (Zhang, 2001). The important issue for this method employed is not only the sacrifice ratio, but also the effect impact originating from the change. Due to this reason, the mentioned shortcomings and problems were considered and the following equation was adopted.

$$(yt - yt*) = \alpha\,(\pi t - \pi t - 1) + \beta\,(yt - 1 - yt - 1*) + ut \; ; \alpha > 0, 0 < \beta < 1 \quad (3)$$

Here, β coefficient represents the persistence effects' impact. When β is close to 1, the coefficients' persistence level will increase as well. Zhang assumed β coefficient as: $0 < \beta < 1$. In the study of Blinder (1987), like Zhang (2001), the results showed long term effects could be obtained in places where monetary shock originating disinflations were obtained (Çetinkaya and Yavuz, 2002).

Ball (1994) and Zhang (2001) both looked at highly persistent effect also known as hysteric effect. Hysteric effect will be happening if constricting monetary policies affect the output, meaning that if there is disinflation, an ongoing effect will occur (Zhang, 2001).

EMPIRICAL ANALYSES

As mentioned earlier, the purpose of this study is to investigate if there are any output losses during anti-inflationist monetary policy adoption in Turkey during the 1990 to 2008 year periods and comparing analysis results with countries like Italy and Brazil in terms of economics. Due to this reason, the data used for analysis will be introduced, and the countries mentioned will be evaluated and calculated based on sacrifice ratios individually to draw a general comparison of the environment.

Data

For this study, Gross Domestic Product (GDP) data were obtained from OECD for Italy and Brazil, apart from Turkey

Table 1. Disinflation periods in Republic of Turkey.

Disinflation periods in the Republic of Turkey		
Period	Beginning	Ending
I	January 1992	December 1992
II	October 1994	December 1996
III	January 1998	January 2001
IV	February 2001	
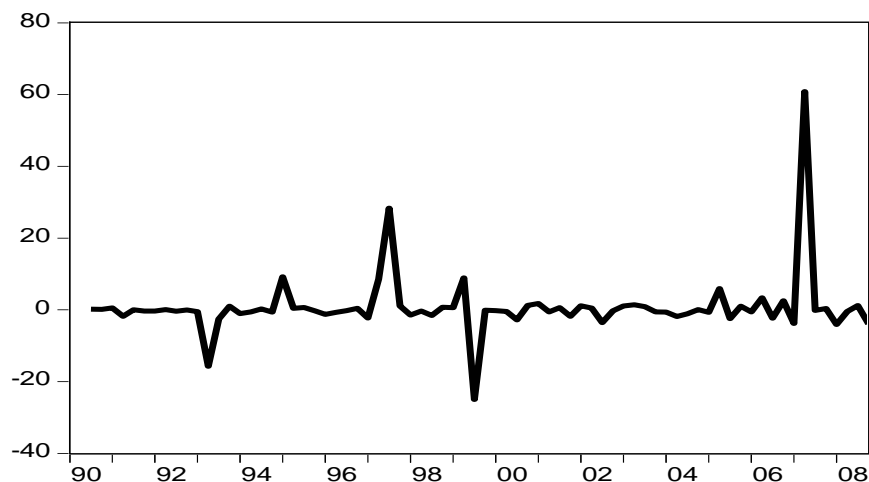
Figure 1. Turkey's 1990-2008 sacrifice ratio graph.

Turkey. The reason for such an approach is to lower the variance between the series and standardization. Consumer Price Index (CPI) was obtained for all three countries (2005=100). The GNP series for Italy was in her national currency with millions on current prices quarterly and were removed from seasonality, while Brazil's GNP series was in billions and in her national currency as well. Turkey's GNP series was obtained from Turkish Central Bank's electronic data distribution center. To obtain the GNP series' potential and actual values difference, firstly, the data's natural algorithm was taken following a Hodrick Prescott Filter. The obtained Hodrick Prescott Filter trend values and natural algorithm values difference allows us to obtain the gap. CPI inflation series was obtained by executing natural algorithm, followed by taking the first level difference of the variables.

Sacrifice ratio for Turkey

Within the 1990 to 2008 periods, Turkish economy frequently experienced disinflation policies. When Table 1 was observed, the executed monetary policies can be seen until the fourth period. Following these periods, the Fourth period, February 2001 economic crisis demanded

another disinflationist policy. After the adopted "Introduction to 1q inflation rate experienced a significant decline. Due to the pre-2001 February dis-inflation periods, the analysis, in a short period timeline, will be looked at individually at the pre and post 2001 periods.

The GDP data series, obtained for Turkey, originated from the Republic of Turkey Central Bank's (TCMB) website, while CPI inflation rate for Brazil and Italy data series with the mentioned categories were obtained from the Organization for Economic Co-operation and Development's (OECD) website. However, all data series used within the research are composed of quarterly data series.

For the primary calculation of the sacrifice ratio of Turkey, Ball's method was adopted as in Equation 2 (Ball, 1994). This calculation allows the observation of each individual year sacrifice ratios, individually.

$$SR = \sum (yt - yt*)/(\pi t - \pi t - 1) \qquad (2)$$

For the secondary equation, the denominator was formed by the output gap and the nominator was formed by the difference of the quarterly period's inflation difference. The progression of the obtained sacrifice ratios over the years for Turkey can be observed in Figure 1. As can be

Table 2. Regression analysis results among Turkey.

Dependent variable		α Coefficient	β Coefficient		
	TRYGAP	**TRDINF**	**TRYGAP1**	**LM TEST**	**ARCH**
1990:3-2008:4	MODEL I	-0.075 (-1.18)			0.022
	MODEL II	-0.214(-0.308)	0.655 (7.65)		0.242
	TRYGAP	**TRDINF**	**TRYGAP1**	**LM TEST**	**ARCH**
1990:3-2001:4	MODEL I	-0.077(-0.988)			0.074
	MODEL II	0.036(1.32)	0.837(10.46)		0.31
	TRYGAP	**TRDINF**	**TRYGAP1**	**LM TEST**	**ARCH**
2002:1-2008:3	MODEL I	0.406(1.87)			0.67
	MODEL II	0.21(1.62)	0.77(5.22)		0.059

The coefficients parentheses are Z statistics from the GARCH analysis.

seen from the graphic, over the years sacrifice ratio generally seemed stable, while on some periods, certain peaks were observed. In the year 1993 and 1999, the sacrifice ratio seemed to drop, while in 1995, 1997 and 2007, high peaks were experienced.

The analysis conducted for Turkey in the second section, as regards the country's interests, contains the output gaps between two periods of inflation difference (TRDINF), the cited model that defined the regression difference between two periods of the inflation's variable and the output gaps lag series regressions (Table 2). The conducted two regressions adopted the sum of ordinary least squares method. For the first model, the α coefficient represents the sacrifice ratio, while for the second model the β coefficient represents the persistency coefficient.

The conducted regression also contains disinflation periods referenced and are adopted for the entire variable sets. Following this procedure, the entire data set was divided into 2001:1 and 2001:2 periods and the models were conducted for these two set periods. In this way, the drops effect of the May 2001 "Introduction to Strong Economy" programs inflation rate on sacrifice ratio can be defined. The sacrifice ratio findings show that contrary to the literature, the effect is negative and is found with no-relation.

Due to the changing variance and autocorrelation problems with the conducted least sum of squares method, models were preferably analyzed with GARCH (1, 1) method. This way, variance problem was handled. With the conducted regression analysis covering all years with sacrifice ratio represented by α coefficient, it was concluded contrary to the literature findings that the study reflected negative and non-consistent results. Persistence coefficient which was represented by β coefficient, as expected is between the values of zero and one. As such, the results reflect a positive and statistically significant outcome.

As persistence coefficient is closer to the other, one can say that there is a high level of persistency. The years between 1990 and 2008 periods have significant coefficients of 0.65, meaning that disinflation has an ongoing effect. The years between 1990 and 2001 periods show that the regression model reflects no relation on the first model, but models one lag output gap series and in addition provides positive results (0.036) that are coherent with the related literature. While z statistic has a value of 1.32 and p value is 0.18, persistence coefficient β with the value of 0.837 is statistically significant. The last regression run for Turkey is for the 2002 to 2008 year periods. The calculated sacrifice ratio value for the periods is 0.406. Z statistic stands out to be 1.87 and the error value as 0.06. As a consequence, this is significant. Between the mentioned years, Turkey was within a sacrifice of 0.406% due to the inflation. The periods mentioned showed that β coefficient is 0.77, which is also significant. The β coefficient for each 3 analysis is significant and on average varies between 0.65 and 0.83, which is on a persistent level. This result in terms of the analysis signifies disinflations existence for all the years considered.

Sacrifice ratio for Italy

The calculated sacrifice ratio using Ball's (1994) approach can be seen in Figure 2. With the formula used as: $SR = \sum(yt - yt*)/(\pi t - \pi t - 1)$, the reflected ratio results as compared to Turkey's inflation cost is more constant for Italy.

For Italy, in the years 1993 and 1995, there have been drastic increases on the sacrifice ratio. This finding as compared to Turkey's sacrifice ratio is shown in Figure 1. The regression analysis executed for Turkey is also a-dopted for Italy without any changes or alterations. Here,
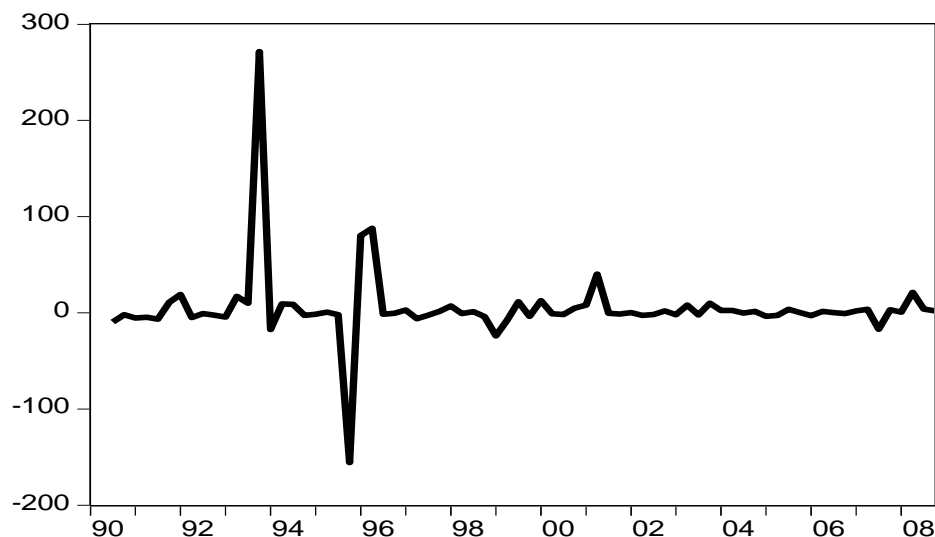
Figure 2. Italy's 1990-2008 year periods sacrifice ratio.

Here, Italy's output gap is calculated and Italy's 1990:1 to 2008:3 periods' inflation and difference series with one lag regression models are generated. As in Turkey analysis, the first model independently included inflation series as a variable; while in the second model, both variables were included. All data obtained on Italy from the OECD database are in quarterly form. Due to Italy's 1996 disinflationist monetary policies, the conducted analysis first included all years within the frame time before analyzing the pre-1996 time period. Looking at the sacrifice graphic post, the 1996 period seems to be constant.

For Italy, the entire data sets included regression analysis results showing the two models amid negative relation with regards to sacrifice ratio. For the second model, the persistency coefficient was included. This model also reflected negative results which were opposite to the literature findings. Persistence coefficient with 0.747 values in the findings was parallel to that of the literature findings. For Italy, 1990:3 to 1995:4 periods in the first model reflected negative and non-significant results, though the persistency ratio was significant with 0.806 value. Nonetheless, the last period results were different from the two periods. This implies that the sacrifice ratios of Italy between 1996:1 and 2008:4 periods, parallel to the literature, are positive and statistically significant. Here, the persistency rate is 0.62 in value and is significant. The persistency rate is also known as the hysteric effect. Hysteric effect in summary is the return to equilibrium after a shock in the economy is experienced. At this point, a suitable question that arises is "If the long term trend is formed by short term balances, will the long term economic shocks be persis-tent?" If the short term experienced effects influence the long term balance, then we can speak of hysteria effects' existence. From this standpoint, this research signifies long term continuation

of money policies as hysteric effect.

In practice, if the persistency coefficient grows bigger, the persistence intensity grows stronger. For an actual output to reach a potential output, more time is required than anticipated. If the coefficient is zero, we can not be talking about persistency effect (Zhang, 2001). Italy's findings as compared to Turkey's results have the following parallel findings: if the sacrifice ratio for the disinflation period is positive, then the sacrifice ratio for the post disinflation periods is negative for both countries. Persistency ratio in Italy, as well as in Turkey, is 0.75 on average, which can be categorized as high on a neutral level.

Sacrifice rate for Brazil

For Brazil, which parted ways with the IMF on the year 2005, same method was adopted in calculating the sacrifice ratio. The conducted regression results can be seen in Table 4. The inner parentheses (Garch modeling Z values) coefficients are the t statistics of the model, while the values under LM and GARCH headlines are the significance levels.

The first model was evaluated through GARCH (1, 1) method in Table 3, while Brazil's data set was obtained from OECD's database. Quarterly data series were obtained at the beginning of the year 1995. Ball's approach for sacrifice ratio can be seen in Figure 3 (Ball, 1994). The sacrifice ratio holding white noise properties have fluctuating values between 1997 and 2000 periods and intensified values after 2006.

Brazil's data series unlike Turkey and Italy does not start from the year 1990. Therefore, Brazil's analyses were not divided into periods but were rather analyzed in

Table 3. Regression analysis results among Italy.

Dependent variable		α Coefficient	β Coefficient		
	ITYGAP	ITDINF	ITYGAP1	LMTESTI	ARCH
1990:3-2008:4	MODEL I	-0.11 (-0.57)			0.075 (0.78)
	MODEL II	-0.825 (-2.96)	0.747 (10.81)	4.92 (0.085)	0.11 (0.085)
	ITYGAP	**ITDINF**	**ITYGAP1**	**LMTESTI**	**ARCH**
1990:3-1995:4	MODEL I	-1.112 (-1.24)			1.17 (0.27)
	MODEL II	-1.27 (-2.38)	0.806 (7.9)	4.14 (0.12)	0.27 (0.60)
	ITYGAP	**ITDINF**	**ITYGAP1**	**LMTESTI**	**ARCH**
1996:1-2008:4	MODEL I	0.311 (0.27)			0.31 (0.57)
	MODEL II	-0.496 (-1.55)	0.62 (5.84)	2.39 (0.30)	0.017 (0.89)

The coefficients parentheses are Z statistics from the GARCH analysis values under the LM and ARCH tests are p values. First models for each 3 terms estimated with GARCH (1,1).

Table 4. Regression analysis results among Brazil.

Dependent variable	BYGAP	BDINF	BYGAP1	LMTESTİ	ARCH
1996:3-2008:4	I. MODEL	0.110(0.85)			0.267(0.60)
	II. MODEL	0.057(0.394)	0.437(3.53)	2.17(0.33)	5.14(0.16)
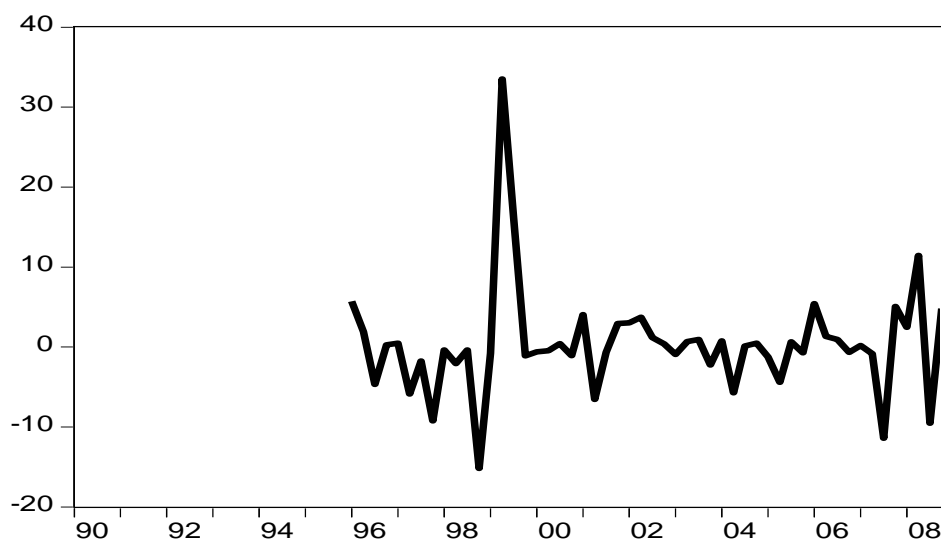
Figure 3. Brazil 1996 – 2008 sacrifice ratio.

a general fashion. The regression analysis conducted for Brazil reflected positive results in terms of sacrifice ratio, although it was insignificant. The findings showed that the disinflation periods caused a restraint on the production of Brazil. The second model also supported these findings, in that the persistence coefficient was positive and significant. As such, the persistence coefficient for Brazil is much more on a lower level as compared to Turkey and Italy.

Conclusion

Attempts to reduce inflation can result from the consequences of increasing costs which can be discussed. These costs are generally calculated with achieving a measure for calculating the output costs. With this research for Turkey, a trial was made to explore the Italy and Brazil's 1990 and 2008 year periods, which reflected the disinflationist monetary policies effect on

output. Consequently, the expected sign of the sacrifice ratios was positive. The approach here is to assume that the increase of periods among inflation periods, positively influence the output gap as well.

Considering all three countries, especially the 1990 to 2008 and 1990 to 2001 year periods for Turkey, the analysis showed that the sacrifice ratio was insignificant in result and negative in relation. The implemented disinflation program "Phase to Strong Economy" policy period results with positive sacrifice ratio between the 2002 and 2007 year periods. Sacrifice ratio for the three periods have the same sign. Pre-2001 period on average is 0.055, while post-2001 periods have positive sign and an increase in rate around 40%. This result also provides us with the different approaches adopted between the pre and post 2001 year. The other adapted coefficient as a means to detect the disinflation polices intensity is the (β) coefficient. β coefficient reflects the persistency power, while β, close to 1, represents the high level of persistency. Coefficients' expected value is assumed to be $0 < \beta < 1$. For Turkey, the persistence coefficient for the given years of analysis is within 0.77 level. This reflects the finding that disinflation policy effects last extendedly, that is, the policies narrowing effect last longer and there is a medium encouraging output gap process.

The analysis done for Italy concludes with statistically significant results and the expected results of the sacrifice ratio is parallel to Turkey with regard to disinflation policy for the given years. Italy on average has sacrifice ratios between 0.31 and 0.49. Thus, persistence ratio is between 0.62 and 0.806, which is statistically significant. When compared to Turkey, these values are very high. With these findings, one can say that the disinflation policies impact takes a long term effect on Italy as well.

Brazil's sacrifice ratio is positive but found to be non-significant. Thus, the persistence ratio value of 0.43 can be accepted as significant for Brazil, but comparing the persistence coefficient to Turkey and Italy, one can say that Brazils persistence ratio is rather low. This result also shows us that the executed disinflation policies of Brazil had rather shorter term impact on the economy when comparing it to countries like Turkey and Italy.Brazil, in July 1st 1999, planned to shift to an inflation targeting plan. The Central Bank obligated targeting was reported quarterly and targeting was decided once in two years. Targeting adoption was not stable, in that they can be in a changing manner. The IMF themed program, adapted by Turkey on the other hand, rely on cutting down government expenditures, while supporting strict monetary policies. When the results were compared, flexible inflation targeting showed more successful and promising results. For countries like Turkey and Italy with high persistence rate, strict monetary policies should be reconsidered, based on disinflation policies and a much more flexible targeting policy in terms of inflation targeting

being adopted. Due to strict monetary policies being composed of narrowing policies, future market expectations are also narrowed. This in result creates an environment where persistence and sacrifice ratios are in an augmenting manner.

REFERENCES

Ball L (1994). "What determines the sacrifice ratio?" in N G Mankiw (ed.) Monetary Policy University of Chicago Press, pp. 155-82.
Bank   Independence," http://www.springerlink.com/content/v01qh310145r0475/fulltext.pdf
Bernanke B, Thomas L, Frederic SM, Adam SP (1999). "Inflation Targeting: Lessons from the International Experience. Princeton, NJ: Princeton Univ. Press.
Blinder AS (1987). Hard Head, Soft Heart: Tough-Minded Economics for a Just Society. Reading, Massachusetts: Addison-Wesley.
Boschen J, Charles W (1999). "The Ex Ante Credibility of Disinflation Policy and the Cost of Reducing Inflation." J. Macroecon., Summer 2001, 23(3): 323-347.
Çetinkaya A, Arzu DY (2002). "Calculation Of Output-Inflation Sacrifice Ratio: The Case Of Turkey." Research Department Working Paper No: 11, November, October 2002
Daniels, Joseph PN, Farrokh VD (2005). "Openness, Central Bank Independence and the Sacrifice Ratio." J. Money Credit Bank,. 37(2): 371-379.
Gordon RJ, Stephen K (1982). "The Output Cost of Disinflation in Traditional and Vector Autoregressive Models. " Brookings Pap. Econ. Activity, 1: 205-242.
Jordan TJ (1997). "Disinflation Costs, Accelerating Inflation Gains, and Central   Bank   Independence," http://www.springerlink.com/content/v01qh310145r0475/ fulltext.pdf
Kandiller R (2001). "Güçlü Ekonomiye Geçiş Programı ve Ötesi", Dış Ticaret Dergisi, Yıl: 6, Sayı: 22: 55-56.
Okun AM (1978). "Efficient Disinflation Policies." Am. Econ. Rev. 68: 348-352.
Sargent TJ (1983). "The Ends of Four Big Inflations" in: Inflation: Causes and Effects, ed. by Robert E. Hall, University of Chicago Press, for the NBER http://www.nber.org/books/hall82-1, 41–97.
Taylor JB (1983). Union Wage Settlements During a Disinflation. Am. Econ. Rev., 73(5): 981-993 .
Yay GG (2001). "Enflasyonu Düşürme Politikalarının Maliyetleri: Teori, Uygulama Ve Türkiye", İktisat İşletme ve Finans, 2001 Temmuz, 16(184): 66-83.
Zhang LH (2001). "Sacrifice Ratios with Long-Lived Effects",Econ Papers,   2001:04, http://econpapers.repec.org/scripts/redir.pf?u=http%3A%2F%2Fwww.econ.jhu.edu%2Fpdf%2Fpapers%2Fall4202001.pdf;h=repec:jhu:papers:446