

UDC 338.57.055.4:352.073.53(497.7)

IMPACT OF FISCAL DECENTRALIZATION ON PRICE STABILITY IN THE EUROPEAN COUNTRIES

Makreshanska Suzana, M.Sc.

Ss Cyril & Methodius University, Republic of Macedonia
suzana.makreshanska@eccf.ukim.edu.mk

Jovanovski Kiril, Ph.D.

Ss Cyril & Methodius University, Republic of Macedonia
kiril.jovanovski@eccf.ukim.edu.mk

Abstract

In this paper we examine the current state of knowledge in fiscal federalism literature on the relationship between fiscal decentralization and inflation and we conduct empirical research of the impact on decentralization on inflation rate in European countries. We estimate linear equation model using a panel data-set of 28 European countries over the period of 1972-2013. We also divide the whole sample in two subsamples: (1) Eurozone members until 2008: Austria, Belgium, Germany, Spain, Finland, France, Greece, Ireland, Italy, Luxembourg, Portugal, Netherland, over the period 1979-2013; and (2) SEE countries non-euro zone members: Bulgaria, Czech Republic, Croatia, Hungary, Lithuania, Poland, Romania, over the period of 1996-2012. Additionally we have examined the influence of government revenues, budget deficits, economic development and openness of the country on price stability. In this paper, we find evidence that the fiscal decentralization has significant negative impact on inflation rate in European countries. For SEE countries we show that when decentralization is increasing from relatively low to medium level, it has positive impact on price stability, but after reaching the certain „optimal“ degree of fiscal decentralization, further increasing of decentralization starts to have negative impact on price stability.

Keywords: optimal degree of fiscal decentralization, inflation, panel data, euro and non-euro zone countries.

1. Introduction

In recent fiscal federalism theory, more attention is paid to the advantages and benefits of fiscal decentralization, than to its economic and political costs. The relationship between fiscal decentralization and price stability is relatively new issue of research in empirical studies in the last two decades. Most economists and scientists agree that inflation is a monetary phenomenon, caused by excessive money supply. High inflation

policy is politically unpopular and causes high economic costs for countries. The policy makers should be aware of the relationship of fiscal decentralization on inflation and overall macroeconomic stability of the countries, when implementing fiscal decentralization policy. Is high inflation one of the economic costs of fiscal decentralization process or does decentralization contribute to sustain greater price stability in the European countries?

This paper is organized as follows: first, we address to different theoretical concepts of expected influence of fiscal decentralization on price stability; second, we briefly review the previous empirical studies on relationship between decentralization and inflation; and third, using the international panel data set, we estimate the impact of decentralization on price stability in the European countries.

Decentralization and price stability: Commitment, collective action and continuity

There are three different theory approaches, relating expected influence of decentralization on price stability: the commitment theory; theory of collective action and theory of continuity (Treisman, 2000). According to the theory of commitment, inflation is primarily a consequence of the lack of commitment of political parties to fulfill promises of maintaining macroeconomic stability and low inflation. If markets expect low inflation rate, then increased monetary supply will have a greater positive effect, and if the markets have high expectations for inflation, it is easier and less expensive in the short term to make the adjustment of high inflation than to turn the trend in the opposite direction. According to the theory of commitment, governments often prefer higher public expenditure and higher inflation, regardless of the costs, for the sole reason that high inflation policies are their „dominant” strategy (Barro and Gordon, 1983a). Decentralization through the proliferation of political parties, which decide on public spending at many levels of government, actually violates the “comfortable” position of the central government to engage in excessive public spending and to deviate from the given promises of maintaining price stability (Qian and Roland, 1998).

Another channel through which decentralization is expected to adversely affect inflation is through the degree of independence of central banks. In decentralized political systems, there is stricter regulation and clear rules of relations between fiscal authorities and the central bank, increasing its independence and contributing to greater price stability (Shah, 2005). According to Lohman (1998), decentralization is one of the factors which contributed to the maintenance of low inflation in Germany after the Second World War. German Bundesbank retained the high degree of independence, because of its role in the federal structure of the country. The majority of the Bundesbank’s council members were appointed by the Land governments. In addition, political parties dominating the local and state governments, often differ. The state government has representatives in Parliament (Bundesrat), who can also veto the decisions of the central bank legislation. It creates difficulties for the central government to interfere with the central bank’s independence or to inflate the economy in order to gain popularity before the next election.

In collective action concept, inflation is treated as a problem that rises from the joint action of several subjects. According to this concept, stable price level is a public good, which is characterized by non-excludability and non-competition. If the number of actors who must agree to participate in price stability is larger, than stable price level as public good, will tend to be underprovided. In addition, larger the number of decision-makers for fiscal or monetary policy, lower their incentives to maintain price stability and therefore the higher level of inflation will be expected. Namely, local authorities compared with the central government, have less interest to maintain price stability. Due to the limited jurisdiction of the local authorities, the costs of inflation may be transferred outside of their borders and distributed in all regions, while the benefits of their excessive public spending is limited to their territory. Thus, decentralization process by giving more importance to local authorities, that have more inflation preferences than central governments, can lead to increased levels of inflation. The two concepts differ in terms of the actors who cause the inflation. According to the theory of commitment, the central government is more responsible for inflation. Central governments tend to inflate the economy, by excessive public spending and pressure on the central bank to monetize public deficits. On the other hand, according to the theory of collective action, the local authorities have more ben-

efits from inflationary public policy than the central government, because the costs of their excessive spending are distributed throughout the country. Thus decentralization actually has different effects on inflation, depending on which of the two assumptions are valid.

The theory of continuity states that decentralization does not cause any direct increase or decrease in inflation, but rather “locks” the inflation rates for a longer period at a steady level, whether the level is high or low. In decentralized systems, the number of entities, which are responsible for fiscal and monetary policy is larger than in more centralized systems. It makes the existing policy in decentralized countries, no matter whether it is inflationary or deflationary, more resistant to changes. According to Treisman (2000), unitary states often change the policies dramatically, ranging from extremely high levels of inflation to extremely low levels, and vice versa, while in federal countries, changes in macroeconomic policy, harder occur in any direction.

The three different theoretical concepts regarding the impact of decentralization on macroeconomic stability are quite logical, although resulting in conflicting conclusions. When political power is distributed to multiple levels of government, the central government, on one hand, will be less able to deviate from the promises of maintaining price stability (commitment theory) and more resistant to monetary and fiscal policy changes (theory of continuity), but on the other hand, local authorities will be able to exert more inflationary pressure on the economy through excessive local spending (theory of collective action). There is no doubt, that decentralization may influence macroeconomic stability of the countries in different ways. Whether decentralization will lead to an increase or decrease in inflation rates will probably depend on other factors that also influence the level of macroeconomic stability. Such factors include: the level of economic development, the openness, the monetary and exchange rates regimes, the political factors, etc.

Brief review of the empirical literature on fiscal decentralization and price stability

There are relatively few empirical studies that provide different conclusions about the potential impact of fiscal decentralization on inflation rate and overall macroeconomic stability in developed and developing countries.

Treisman (2000) analyzes the impact of decentralization on the inflation rate in a panel data set of developed and developing countries in the 1970s and 1980s. He found that there is a significant difference in how decentralization affects inflation in the two groups of countries. In developed OECD countries, decentralization contributes to greater central bank independence and therefore leads to lower levels of inflation, while in less developed countries higher decentralization is correlated with higher levels of inflation. The reason is that, decentralization in less developed countries makes governments prone to excessive public spending and putting pressure on central banks to monetize deficits.

King and Ma (2001) in cross section study found that more centralized countries have higher inflation. They replicate the research of Campillo and Miron (1997) on the impact of central bank independence on inflation in 42 countries over 1972 - 1994, but additionally take into account the degree of decentralization of the country. According to them, the independence of the central bank has a stronger impact on price stability in countries with a higher degree of decentralization of public revenues. Namely, if the countries with very high inflation rate (higher than 20%) are excluded from the whole sample, the degree of tax centralization has a statistically significant positive impact on inflation rate.

Feltenstein and Iwata (2002), investigate the impact of fiscal decentralization on inflation and economic growth in the case of China, over 1952 - 1996 and conclude that decentralization has a positive impact on economic growth and negative impact on the inflation rate, especially in the mid - 70 ies of the last century.

Neyapti (2004) examines the relationship between the degree of revenues decentralization and the inflation rate, in panel study of 42 countries and conclude that, given the level of independence of central banks and autonomy of local authorities, decentralization has a statistically significant negative impact on the inflation. In low inflation countries, decentralization has negative impact on inflation even without additional factors (CBI index and local accountability).

According to Martinez-Vazquez and McNab (2006), decentralization has different effects on macroeconomic stability in developed and developing countries. They explore the impact of decentralization on macroeconomic stability in relatively large sample of 66 countries over the period 1972 – 2003. They state that, in developed countries, revenue decentralization contributes to greater price stability, while in developing countries this effect is not so obvious and clear. Namely, in developing countries, more likely, decentralization can lead to macroeconomic destabilization because local authorities tend to borrow over their fiscal capacity, and therefore increase the pressure on the central government's budgets and inflation rate.

Thornton (2007) examines the relationship between decentralization and inflation in OECD countries over the period 1980 –2000. In this paper the focus is on the degree of tax autonomy of local governments, and unlike the previous studies, here it is included the local tax revenues over which local governments have autonomy over tax rate or tax base, instead of total local tax revenues as measure of the decentralization. In addition, since the data on the tax autonomy of local authorities based on Stegarescu (2005) is available only for one year (1995), Thornton creates time series data for local tax revenues, assuming that the level of tax autonomy of local governments does not change over time. According to Thornton (2007), there is no statistically significant relationship between decentralization and inflation.

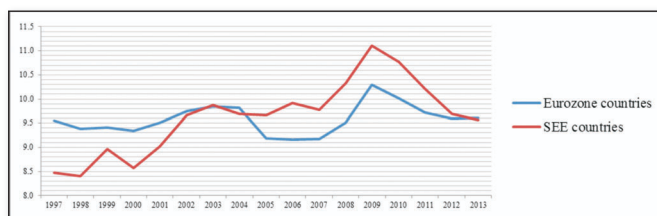
Baskaran (2011) investigates the impact of revenue decentralization on the inflation rate, in 23 OECD countries over the period 1980 - 2000. Here, like Thornton (2007), the decentralization rate is measured as a size of local tax revenues to total tax revenues. The difference can be seen through the level of tax autonomy of local authorities over time. According to Baskaran (2011), revenue decentralization has a statistically significant negative impact on the inflation rate.

Recent trends in fiscal decentralization and inflation in European countries

The level of decentralization, measured as percentage of local government expenditures of GDP, increased on average, from 8.5% in 1997 to 9.5% in 2013 for Southeast European countries, while the decentralization level of euro-zone countries remains relatively stable over the last two decades. The reason behind this is that Southeast European countries are post-communist countries that were engaged in dynamic process of decentralization of the public sector, as a part of their overall democratic and economic reform process in the last two decades. On the other hand, the Euro zone countries had already achieved higher average level of fiscal decentralization that remains relatively stable over time. As we can see from the figure 1, the decentralization process was interrupt by the financial crisis in 2008, when local government expenditures started to decline as percentage of GDP in both group of countries.

Figure 1:

Local government expenditures,
% of GDP

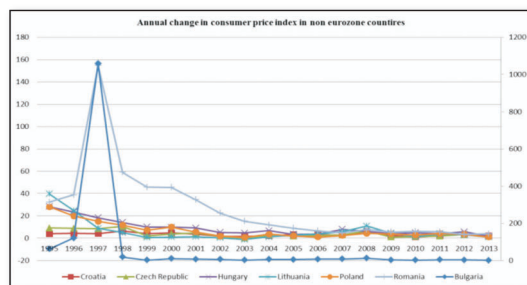


Source: Authors calculation based on EUROSTAT Database

The next figure shows the inflation rate movements in selected European countries. The left figure shows the annual change in consumer price index in selected Southeast European countries that are non-Eurozone members, while the right figure shows the same variable trend in selected Euro zone countries. Here in, until 2001 the non-Eurozone countries had three times the average inflation of Eurozone countries. Additionally, over the period 2002-2008, the inflation rate in Southeast European countries although stable, it's been higher than inflation rate in Euro zone countries.

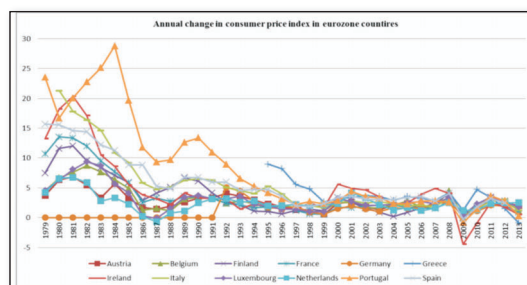
Figure 2:

Inflation, consumer price index,
annual change



Source:

Authors calculation based on EUROSTAT Database

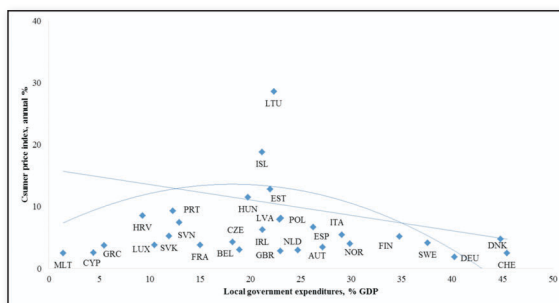


The next figure represents the correlation between fiscal decentralization and inflation rate in European countries. The figure shows that the polynomial trend may fit better the decentralization and inflation data, than the linear trend, meaning that countries with a medium average degree of fiscal decentralization had relatively higher average inflation rate than others.² The polynomial relationship was also tested in the regression model and the results are given in the last section of the paper.

Figure 3:

Correlation between decentralization
and inflation in European countries

Source: Authors calculation based on IMF World
Economic Outlook Database



Empirical analysis: data, model and methodology

In our empirical analysis of the relationship between fiscal decentralization and inflation, first we estimate linear equation model using a panel data-set consisting of 28 European countries and then we also divide the whole sample in two subsamples: (1) Eurozone members until 2008: Austria, Belgium, Germany, Spain, Finland, France, Greece, Ireland, Italy, Luxembourg, Portugal and Netherland, over the period 1979-2013; and (2) SEE countries (non-euro zone members): Bulgaria, Czech Republic, Croatia, Hungary, Lithuania, Poland and Romania, over the period 1996 - 2012. The time series differ upon the availability of the data for different countries on all the variables included in the model, and therefore, we divided the whole sample in

2) The data are calculated as average local government expenditures as % of GDP and average consumer price index annual change over the period 1979-2013, except for the SEE countries with shorter time series data: Bulgaria, Romania (1990-2013), Estonia, Lithuania (1991-2013), Slovenia (1992-2013), Czech Republic (1993-2013), Croatia, Latvia, Poland, (1994- 2013), Slovak Republic (1996-2013).

two subsamples, in order to gain more reliable results for the two different groups of countries. We have tested 7 regression models in total.

The dependent variable or inflation rate is defined as consumer prices index, measured as an annual percentage change. Furthermore, the annual change in consumer prices index determines the data set for all regressors. The level of fiscal decentralization is measured as percentage of total local government expenditures in general government expenditures. We use this measure of decentralization, upon the unavailability of data for better decentralization measures, such as: „own“ local government revenues, or local government expenditures over which local governments have full discretionary, etc. The data for inflation is taken by IMF World Economic Outlook Database, while the data for fiscal decentralization of countries are taken from OECD Fiscal Decentralization Database. We expect fiscal decentralization to have negative effect on inflation rate. Namely, higher fiscal decentralization of expenditures should be related to more effective usage of government revenues and lower inflation pressure on the price level.

In the specification of our regression model, we follow Martinez-Vasquez and McNab (2006) that inflation is determined, among other things, by the size of government revenues and the government balance, the level of economic development and the openness of the country. We expect that larger government deficit spending will increase inflation rate. In fact, there are numerous examples of excessive budget expenditures that can result in higher inflation in the end. Data for government revenues as percentage of GDP and government balance as percentage of GDP are taken from IMF World Economic Outlook Database.

We use log GDP per capita in constant prices (1990) as proxy for the level of economic development of the country. The data are extracted from World Bank Indicators Database. We expect the level of development to have positive impact on price stability, due to higher institutional capacity, government quality and overall political stability of the country, etc. We also introduce the openness of the country, measured as the sum of exports and imports to GDP (authors own calculation based on data from World Bank Indicators Database). There are two different views on the relationship between the inflation and the openness of the country. One argues that the more open the economy, the larger the weight of foreign goods in the CPI, and therefore larger the impact of the monetary expansion on both CPI inflation and domestic price inflation. Others show that the average inflation rate is lower in more open economies due to the inconsistency of optimal monetary policy (Barro and Gordon, 1983b; Romer, 1999; etc.).

Finally, following King and Ma (2000) and Neyapti (2006) we also introduce the CBI index or central bank independence in regression model of non-euro zone member's countries. We expect the countries with higher level of independence of central bank to have lower inflation rates.

Therefore, our estimated model has the following form:

$$\begin{aligned} inflation_{i,t} = & \alpha_i + \beta_1 decentralization_{i,t} + \beta_2 GG\ revenues_{i,t} + \beta_3 GG\ balance_{i,t} \\ & + \beta_4 openness_{i,t} + \beta_5 economic\ development_{i,t} \\ & + \beta_6 central\ bank\ independance_{i,t} + u_{i,t} \end{aligned}$$

The estimation technique is unbalanced panel with country fixed effects. The choice of the fixed effect model was based on Hausman specification test, which consistently favored fixed over random effects model for each regression equation. To correct for heteroskedasticity and serial correlation, we employed White cross section weights and first order autoregressive standard errors.

Regression results

Table 1 summarizes the results of the effect of fiscal decentralization on inflation. The results show that decentralization of government expenditures has statistical significant negative impact on inflation in 5 out of 7 regression models. However, the coefficients of decentralization are larger in subsample of Southeast European countries, meaning that in these countries, other thing being equal, fiscal decentralization has greater impact on reducing the inflation level than in Euro-zone member countries.

For SEE countries, polynomial relationship between decentralization and inflation also turned out to be statistical significant, which means that for SEE countries, unlike other European countries, decentralization may have different effect on inflation according to the actual degree of decentralization that the country has already achieved. The positive sign of the coefficient of quadratic term of decentralization in models (6) and (7) indicates that the functional form is convex (curve opens up) meaning that, when decentralization is increasing from relatively low to medium level, it has positive impact on price stability of the country, but after reaching a certain „optimal“ degree of decentralization, further increasing of decentralization starts to have negative impact on price stability.

The size of public sector measured as general government revenues as percentage of GDP, has significant negative impact on inflation only in the whole sample of all EU countries, but not in the two subsamples, probably because of the bigger number of observations in the whole sample. This means that, European countries with larger public sector, other things being equal, have lower inflation rates, although the coefficient is not very high (-0.17).

In SEE countries, in 2 out of 3 regression models, government deficits have significant positive effect on inflation, which is not the case in Euro zone countries. In other words, our results suggest that in SEE countries, the central banks are probably more exposed to government pressure to inflate economy by monetizing the government deficits. This finding is also related with the lower degree of central bank independence in these countries.

Openness of the country, measured as sum of exports and imports to GDP, turned out to be significant in 4 out of 7 regression models. Namely, the openness has significant positive effect on inflation in the whole sample of EU countries in Euro zone countries. This can be explained by the effects that the developments on the international markets influence the inflation in the countries. In fact, as the globalization takes its range, the countries that participate in the world trade are easily influenced by the price movements on those markets. In this framework, the more open is an economy, the larger portion of the international inflation costs can be passed to the domestic level of prices. Thus openness can be inflationary.

In the whole sample of 28 EU countries, we find also significant negative relationship between the levels of economic development and inflation. This finding is in line with literature. In fact, it should be expected that less developed countries have greater inflation volatility. This can be explained with lower institutional capacity, level of resource dependence, inherent instability, etc.

Along with the previous variables, in the regression model (7), we introduced the CBI index in order to test the relationship between the inflation and central bank independence. Although the theory suggests that lower independence of central banks leads to higher inflation rates, we interpret the results of the regression (7) with caution. In fact, although the negative sign of the coefficient is in line with our expectation and can be accepted, we must underline that, due to discontinuity of our time series for CBI index, we take the coefficient with reserve.

Table 1: Estimation results

Dependant variable: Inflation, consumer price index annual %							
Explanatory variables	Whole sample: EU members		Subsample 1: Eurozone members		Subsample 2: SEE countries		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Expenditures							
Decentralization	-0.005 ** 0.003	-0.024 0.048	-0.005 *** 0.001	0.001 0.030	-1.441 ** 0.614	-9.722 ** 3.984	-8.414 * 5.040
Expenditures							
Decentralization^2		0.000 0.000		0.000 0.000		0.206 ** 0.085	0.188 * 0.108
GG revenues % of GDP	-0.171 ** 0.071	-0.172 ** 0.069	0.029 0.049	0.030 0.049	-1.388 1.180	-0.743 0.828	-1.119 1.011
GG balance % of GDP	0.117 * 0.070	0.127 * 0.076	0.044 0.043	0.043 0.044	0.706 ** 0.348	0.800 ** 0.371	0.567 0.394
Openness to international trade	0.060 *** 0.017	0.056 *** 0.017	0.069 *** 0.015	0.069 *** 0.015	0.005 0.100	-0.092 0.068	-0.069 0.081
Log GDP p.c.	-10.493 *** 3.904	-10.130 *** 3.797	8.495 6.044	8.478 6.088	-25.989 ** 10.044	-10.421 7.911	-1.520 9.598
CBI index							-36.448 *** 7.688
Constant	112.033 *** 39.883	109.259 *** 38.790	-96.696 65.501	-96.666 65.783	332.451 *** 125.518	257.833 *** 97.417	202.454 138.146
AR(1)	0.603 *** 0.086	0.599 *** 0.087	0.916 *** 0.038	0.916 *** 0.038			
Effects Specification							
Cross-section fixed (dummi variables)							
R-squared	0.70	0.69	0.84	0.84	0.32	0.35	0.39
R-squared ?adjusted	0.68	0.67	0.83	0.83	0.25	0.27	0.31
F-statistic	40.64 ***	38.05 ***	96.51 ***	85.62 ***	4.30 ***	4.41 ***	4.85 ***
Durbin-Watson statistics	2.19	2.18	1.93	1.99	1.81	1.89	2.03
Inverted AR Roots	0.60	0.60	0.92	0.91	0.06		
Cross - section	28	28	12	12	7	7	7
Sample	1979-2013	1979-2013	1979-2012	1979-2012	1996-2012	1996-2012	1996-2012
Observations	614	614	331	315	112	112	104
Note: The White heteroskedasticity consistent standard errors are given below coefficients.							
* 10% level significance, ** 5% level significance, *** 1% level significance.							

Conclusion

There are several ways that fiscal decentralization may influence price stability in theory. On one hand, if central governments tend to inflate the economy, by excessive public spending and pressure on the central bank to monetize government deficits, decentralization will lead to macroeconomic stability and lower inflation (commitment theory). On the other hand, if the local authorities have more benefits from inflationary fiscal policies than the central government, then decentralization will lead to higher inflation and macroeconomic instability (theory of collective action). Thus decentralization actually may have different effects on inflation, depending on which of the two assumptions are valid.

In our paper we found evidence that commitment theory has stronger validation in European countries. The empirical results presented above, suggest that expenditure decentralization has significant negative impact on inflation rate, meaning that countries that have shifted a larger share of government expenditures from central to local government level, are probably able to pursue more discipline fiscal policies and retain higher macroeconomic stability.

In case of Southeast European countries, we also find evidence that the relationship between decentralization and inflation is not linear, but rather polynomial, meaning that when decentralization is increasing from relatively low to medium level, it has positive impact on price stability, but after reaching the certain „optimal“ degree of fiscal decentralization, further increasing of decentralization starts to have negative impact on price stability. We find this conclusion logical, regarding the fact that when the decentralization is very high, local governments have larger share in total government expenditures comparing to central government and therefore, they may undertake the role of the central government in promoting higher inflation by excessive public spending policy. This means that, in terms of macroeconomic stability the best policy is to avoid too low or to high decentralized government, but rather to set optimal „balanced“ government between central and local levels.

References:

- Barro J. R. and Gordon B. D. (1983a), „Rules, discretion and reputation in a model of monetary policy“, *Journal of Monetary Economics*, Vol. 12.
- Barro, R. J., and D. B. Gordon, (1983b), „A Positive Theory of Monetary Policy in a Natural Rate Model“, *Journal of Political Economy*, 91(4), 589–610.
- Baskaran, T., (2012), „Revenue decentralization and inflation: A re-evaluation“, *Economics Letters*, Elsevier, Vol. 116, No.3, pp. 298-300.
- Campillo, M. and Miron, J.A. (1997), „Why Does Inflation Differ across Countries?“, in Romer, C. D. and Romer D. H. (Eds.), *Reducing Inflation: Motivation and Strategy*, University of Chicago Press, pp. 335–362.
- Crowe, C. and Meade, E. E., (2008), „Central bank independence and transparency: Evolution and effectiveness“, *European Journal of Political Economy*, Vol. 24 No. 4, pp. 763-777.
- Cukierman, A. Webb, S. and Neyapti, B. (1992), „Measuring the independence of central banks and its effect on policy outcomes“, *World Bank Economic Review*, No. 6, pp. 353-398.
- Evans, R. W., (2012), „Is openness inflationary? Policy commitment and imperfect competition“, *Journal of Macroeconomics*, 34(4), 1095-1110.
- Feltenstein, A. and Iwata, S. (2005), „Decentralization and macroeconomic performance in China: regional autonomy has its costs“, *Journal of Development Economics*, Vol. 76 No.2, pp. 481-501.
- J. M. Vazquez and R. M. McNab, 2006, *Fiscal decentralization, macrostability and growth*, Hacienda Publica Espanola, Instituto de Estudios Fiscales, Vol. 179 (4).
- King, D. and Ma, Y. (2001), „Fiscal decentralization, central bank independence and inflation“, *Economics Letters*, Vol. 72, pp. 95-98.
- Kydland, Fin E., and Prescott, Edward C. 197. “Rules Rather than Discretion: The Inconsistency of Optimal Plans.” *Journal of Political Economy* 85 (June): 473-492.
- Lohmann, S., (1998), „Federalism and central bank independence: The politics of German monetary politics“, *World Politics*, Vol. 50 No. 4
- Neyapti, B. (2004), „Fiscal decentralization, central bank independence and inflation: a panel investigation“, *Economics Letters*, Vol. 82, pp. 227-230.
- Romer, D., (1991), „Openness and inflation: theory and evidence“, *National Bureau of Economic Research*, No. 3936.
- Shah, A., (2005), „A framework for evaluating alternate institutional arrangements for fiscal equalization transfers“, *World Bank Policy Research Working Paper*, No. 3785.
- Stegarescu, D. (2005), „Public sector decentralization: measurement concepts and recent international trends“, *Fiscal Studies*, Vol. 26 No. 3, pp. 301-333.
- Thornton, J. (2007), „Further evidence on revenue decentralization and inflation“, *Economics Letters*, Elsevier, Vol. 95, pp. 140-145.
- Treisman, D. (2000), „Decentralization and inflation: Commitment, collective action, or continuity“, *American Political Science Review*, Vol. 94, No.4, pp. 837-857.
- Qian Y. and Roland G., (1998), „Federalism and the Soft Budget Constraint“, *The American Economic Review*, Vol. 88 No. 5