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Contents

I. Introduction

Both the academic literature and practical policy experience have fostered a broad consensus on the desirable framework for monetary policy. It is widely believed that a high level of central bank independence (CBI) coupled with some explicit mandate for the bank to restrain inflation are important institutional devices to assure price stability. The evidence in support of this view generally consists of cross-country regressions using proxies for CBI which are generally based on the statutes of the central bank (see Eijffinger and De Haan 1996 and Berger et al. 2001 for surveys). Popular as the view referred to above may be, the empirical literature on the effects of central bank independence recently came under attack.

Firstly, the relevance of independence measures which are based on central bank laws is disputed if it comes to testing whether CBI is conducive to lower inflation (see e.g. Forder 1996). Indeed, legal indices of central bank independence are often incomplete and noisy indicators of actual independence as laws cannot specify explicitly the limits of authority between central banks and the political authorities under all contingencies. And even when the laws are quite explicit, actual practice may deviate from them. Cukierman (1992) argues that legal independence measures may be a better proxy for actual independence in industrial countries than in developing countries. As an alternative, Cukierman (1992) and

* A previous version of this paper was published as CESifo Working paper No. 511. We thank the participants at the CESifo Conference on Macro, Money and International Finance (11-12 May, 2001) for their comments and suggestions. We like to express our severe thanks to the referee who pointed out that the data appendix of the previous version of this paper contained serious errors due to a programming mistake.

Cukierman et al. (1992) therefore developed a yardstick for central bank autonomy, which is not based on central bank laws but on the actual average term of office of the central bank governor. This indicator is based on the presumption that, at least above some threshold, a higher turnover of central bank governors indicates a lower level of independence. Unfortunately, this indicator is also less than perfect, as it suffers from the limitation that central bank governors can last a long time in their positions simply by being subservient to political leaders.[1] Still, quite a few studies have used this turnover rate of central bank governors (TOR) as indicator for CBI and conclude that there is a clear relationship between the TOR and the inflation performance of developing countries: a higher turnover rate of central bank governors (i.e. a less independent central bank) comes with more inflation. One drawback of this literature is that almost all studies are based on the data provided by Cukierman (1992) and Cukierman et al. (1992) as this was – until recently – the only data set available.[2]

Secondly, various authors have questioned whether CBI really matters, once other variables that may influence inflation are taken into account. For instance, using data for developing countries Campillo and Miron (1997) conclude that CBI plays no role in determining inflation outcomes, once other factors are held constant. They find that instead openness, political instability and proxies for government policy distortions are robustly related to inflation.[3] This conclusion may be criticized, as Campillo and Miron (1997) employ a legal indicator for CBI, which most previous studies have found to be unreliable for developing countries.

Thirdly, a few studies have sounded a warning that conclusions on the relationship between CBI and inflation are highly sensitive to influential observations. For instance, Temple (1998) finds that if high inflation countries are added to his sample of OECD and developing countries, the effect of CBI (proxied by Cukierman's (1992) legal index) on inflation disappears.

In this paper we employ a new data set for the turnover rate of central bank governors, which covers almost twice as many countries as the Cukierman data set and – in contrast to Cukierman's data set – also covers the 1990s.[4] We use bivariate and multivariate cross-country models for inflation. The aim of the paper is to analyze whether the relationship between CBI and inflation as reported in the literature holds in general, or is driven by exclusion of control variables and/or a few influential observations. We find that once various control variables are included,

[1] See section IV for a further discussion of this issue.

[2] Furthermore, the *Cukierman* data refer to a small sample of countries only.

[3] Their results on openness confirm earlier findings of *Romer* (1993), who argues that monetary surprises cause the real exchange rate to depreciate, and since real depreciations has the most harmful effects in more open economies, the benefits of unexpected inflation are a decreasing function of the degree of openness. In the absence of binding precommitments, monetary authorities in more open economies are therefore expected to expand less on average.

[4] Part of the data was also used in *De Haan* and *Kooi* (2000). The present paper extends the analysis of *De Haan* and *Kooi* (2000) in a number of ways. First, the present analysis does not only refer to the 1980s. We have expanded the TOR data set so that we can also take the 1990s into account. To the best of our knowledge, this has never been done before. Second, we employ recursive regressions to analyze the relationship between inflation and our CBI proxy more systematically.

the CBI proxy is often not significant. Following the approach suggested by Temple (1998), we also conclude that in those regressions in which the CBI proxy is significant, the coefficient of the TOR becomes significant only after high inflation countries are added to the sample.

The remainder of the paper is organized as follows. Section II presents the model and our data. Section III offers our results. The final section contains some concluding comments.

II. The Model and the Data

Following Cukierman et al. (1992) we have used the transformed inflation rate *D* as dependent variable in order to reduce heteroscedasticity of the error in the regressions. *D* is defined as the inflation rate (*p*) divided by one plus the inflation rate:

$$D = p/(1+p) \tag{1}$$

So the transformed inflation rate (if positive) takes a value from 0 to 1. When inflation is 100% ($p = 1$), *D* is 0.5. *D* has been calculated for each year, and subsequently the averages for the various estimation periods have been calculated as the simple means of these annual observations. The inflation rate (based on CPI) is taken from the World Bank's *2000 World Development Indicators* CD-rom.

One serious drawback of many studies on the relationship between inflation and CBI is that control variables are often lacking. Following Campillo and Miron (1997), we therefore also estimate multivariate models. We include apart from indicators for CBI and openness (export and import as share of GDP), also political instability (proxied by the number of government transfers), the log of GDP per capita, a dummy for the exchange rate regime (one in case of a more or less fixed exchange rate) and the debt-to-GDP ratio as control variables.

Our indicator for openness (OPEN, defined as sum of export and import in relation to GDP) over the period under consideration and the log of the level of GDP per capita (GDPCAP) at the beginning of the period are from the World Bank's *2000 World Development Indicators* CD-rom. Our proxy for political instability (PI, defined as the total number of government transfers over the period under consideration) is from the new World Bank data set of political indicators.[5] An exchange rate dummy – which is one if the country had a more or less fixed exchange rate regime during the period under consideration – is used to examine the impact of the exchange rate regime. This variable is denoted as XRATE. It is constructed using information reported in the IMF's Annual Report. The ex-

[5] See *Beck* et al. (1999). The variable we use is labeled STABNS2 that is defined as the percent of veto players who drop from the government in any given year. Veto players are the president, the largest government party, and the largest party in the Senate; for parliamentary systems, veto players are defined as the Prime Minister and the biggest three coalition members. If there is no legislature, an un-elected legislature, only 1 candidate, or 1 party to choose from during elections, this index is based only on changes in the chief executive.

ternal debt-to-GDP ratio (average over the estimation period, DEBT) is also from the World Bank. So the estimated cross-section model is:[6]

$$D = c_0 + c_1 CBI + c_2 OPEN + c_3 GDPCAP + c_4 PI + c_5 XRATE + c_6 DEBT \quad (2)$$

We use indicators for central bank independence based on the turnover rate of central bank governors. Apart from the TOR as provided by Cukierman et al. (1992), we employ a new data set. Based on information gathered from central banks and the IMF's *International Financial Statistics* (IFS) we have constructed the turnover rate of the central bank governors in more than 80 developing countries for various sample periods. To enable comparison with the data of Cukierman (1992), we calculated the turnover rates for two periods: 1980-1989 and 1990-1998.[7] For the first period Cukierman (1992) also provides turnover rates, albeit for a substantially smaller sample of countries. Detailed information is shown in the Appendix.

III. Central Bank Independence and Inflation in Developing Countries

We focus on the relationship between CBI and inflation in developing countries for two periods: 1980-1989 and 1990-1998. The first period is chosen on the basis of the availability of the data of Cukierman (1992). We not only estimate simple bivariate regressions, but following Campillo and Miron (1997) also estimate models that include various control variables (see Section II). Unfortunately, this reduces the number of observations.

Let's first follow most of the literature and assume that the causality runs from our CBI proxy to inflation, although, in principle, the causality could be in the other direction (see Cukierman, 1992; see also section IV). For our purpose, this does not make any difference, because the aim of the paper is to analyze whether the relationship between CBI and inflation as reported in the literature holds in general or is driven by exclusion of control variables and/or a few influential observations. We start with the simple bivariate model using our new data set for the TOR. Row 1 of table 1 shows the OLS estimation results for the period 1980-89. The coefficient of the TOR is highly significant. The same results show up when we employ Cukierman's TOR (row 2 of table 1). Also for the period 1990-98 the coefficient of our CBI proxy differs significantly from zero. These results are very much in line with almost all previous studies in which simple bivariate regressions were run.

We checked whether the relationship between (transformed) inflation and CBI is linear using the RESET (Regression Error Specification Test). This test means regressing the in-sample residuals on the same regressors as in the original linear regression and on powers of the in-sample forecasts and testing for the joint signifi-

[6] Given the limited variation over time in the TOR variable, a panel data approach is not helpful in the present context.

[7] The underlying data (on an annual basis) are available upon request.

cance of the coefficients performing an F-test (see e.g. Granger and Terasvita 1993).[8] We were unable to reject the hypothesis that the relationship is linear.[9]

Table 1

OLS Regressions for the Relationship Between CBI and Inflation

Period and CBI proxy:	CBI coefficient	t-statistic	R^2 (adj.)	No. obs.
Bivariate models				
(1) 1980-89; new TOR	26.58	2.22 **	0.13	76
(2) 1980-89; Cukierman TOR	41.28	3.02 ***	0.22	46
(3) 1990-98; new TOR	32.53	4.31 ***	0.27	76
Multivariate models				
(4) 1980-89; new TOR	8.72	0.83	0.44	54
(5) 1980-89; Cukierman TOR	24.04	1.70 *	0.53	29
(6) 1990-98; new TOR	23.71	2.32 **	0.43	62

Note: heteroscedasticity-consistent t-ratios (White, 1980). In the regressions for the multivariate model political instability, openness, the log of GDP per capita, a dummy for the exchange rate regime and the debt-to-GDP ratio are included as control variables. See table A2 for further details. *,**,*** denote 10%, 5%, and 1% significance levels, respectively.

Next, we checked for the influence of high inflation countries. A very simple way to visualize the role of these countries – as suggested by Temple (1998) – is to order the countries according to their level of inflation and then add countries one by one to the sample. Figure 1 shows the estimated coefficients and the band of plus and minus two times the standard error for the regressions reported in rows 1-3 of table 1. The figures clearly show that for the 1980s only after (a very limited number of) high inflation countries are included in the sample, the coefficient of the TOR index becomes significant. In other words, the conclusion that CBI matters for inflation is driven by a limited number of observations and is not robust across the sample. For the 1990s the coefficient of the TOR is not significant for countries with below average inflation.

The significance of the TOR coefficient in previous studies may be caused by the omission of control variables. Therefore, we now turn to the multivariate models. The lower part of table 1 presents the regressions. As we are mainly interested in the effect of CBI on inflation, we only report the estimated coefficients for the TOR.[10] It follows that in the regression for the period 1980-89 the coefficient of our

[8] Due to the possibly large degree of multicollinearity in these powers, *Lin*, *White* and *Granger* (1993) suggest using reconstructed powers on principal components, excluding the first and largest one.

[9] The test statistic for row 1 in table 1 is e.g. 1.947 (significance level: 0.15).

[10] See table A2 in the Appendix for further details.

proxy for CBI is not significantly different from zero (row 4 of table 1). When we use Cukierman's TOR instead, its coefficient is significantly different from zero, although only at the 10 per cent level (row 5). For the 1990s we do find a significant effect of our TOR on inflation for the multivariate model (row 6). The variables that turn out to be significant in all regressions are openness, the exchange rate regime (except in the regression with Cukierman's TOR) and the debt ratio (see table A2 in the Appendix, where we also provide the results for some alternative specifications).

Figure 1

Recursive Regressions for the Bivariate Relationship Between CBI and Inflation, Data Ordered by Inflation Rate

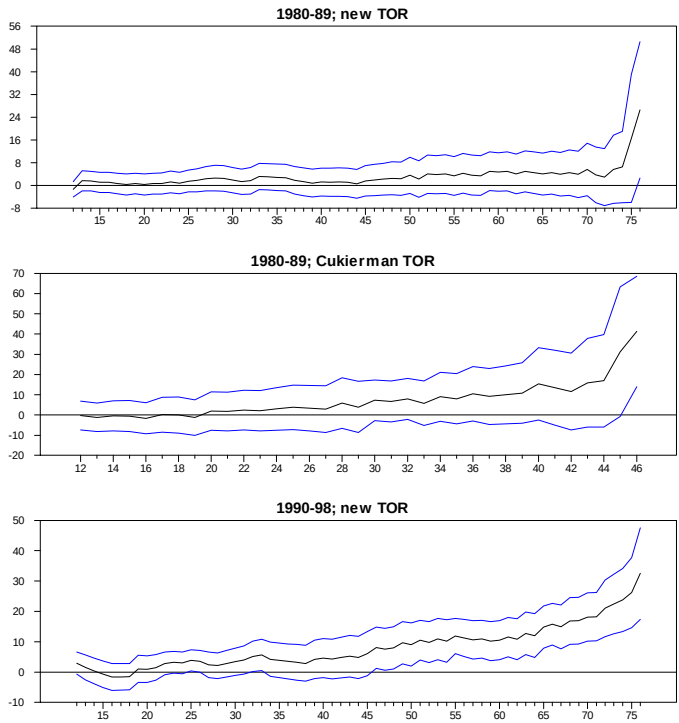
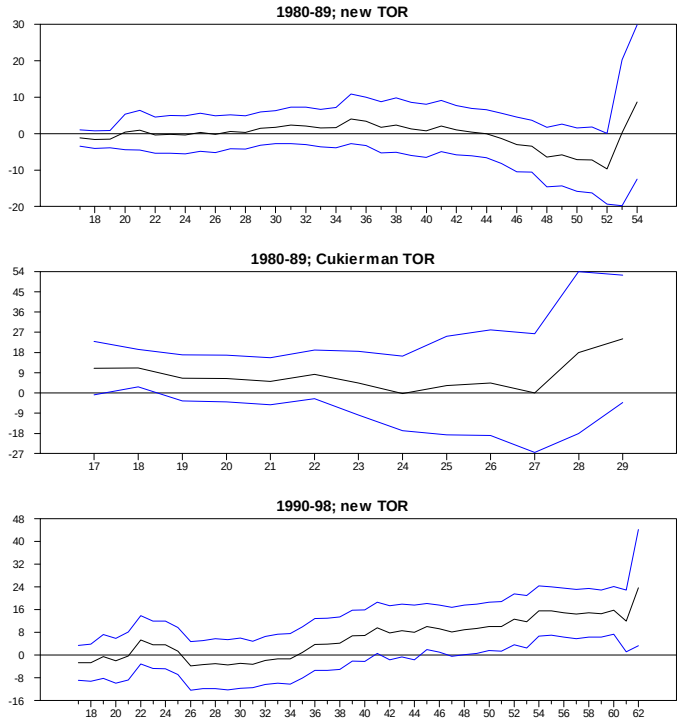


Figure 2 shows the estimated coefficients and the band of plus and minus two times the standard error for the regressions reported in rows 4-6 of table 1. Again, Cukierman's TOR only becomes (marginally) significant at the end of the sample. In fact, the addition of the final observation is crucial for the TOR coefficient to become (marginally) significant. For the 1990s our CBI proxy is not significant in countries with relatively low levels of inflation.

Figure 2

Recursive Regressions for the Multivariate Relationship Between CBI and Inflation, Data Ordered by Inflation Rate



Finally, we have ordered the countries according to their turnover rate and redid the recursive regressions. The results are reported in figures 3 and 4, respectively. The results confirm our conclusion. The results are not very stable across the various samples. Either at low or at high levels of the TOR, the coefficient of TOR becomes significant (if at all). This pattern is especially apparent for the 1990s.

Figure 3

Recursive Regressions for the Bivariate Relationship Between CBI and Inflation, Data Ordered by Turnover Rate

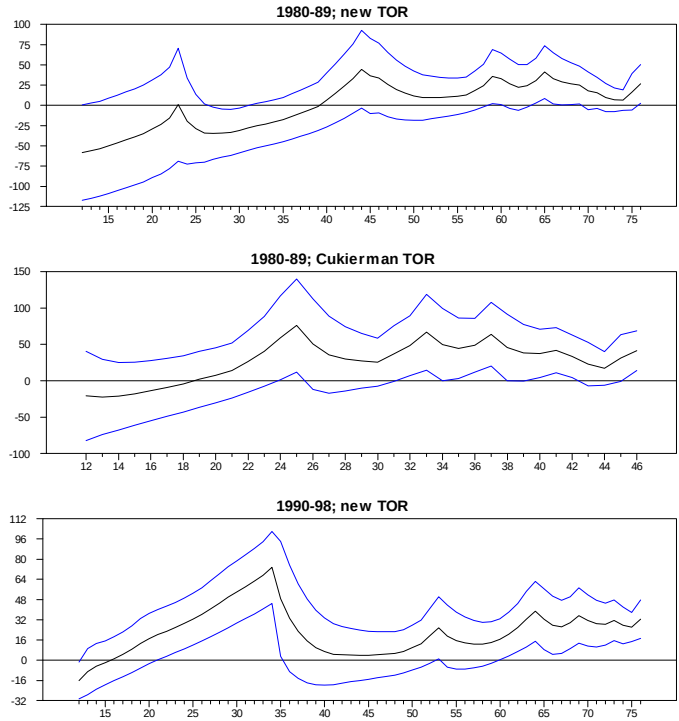
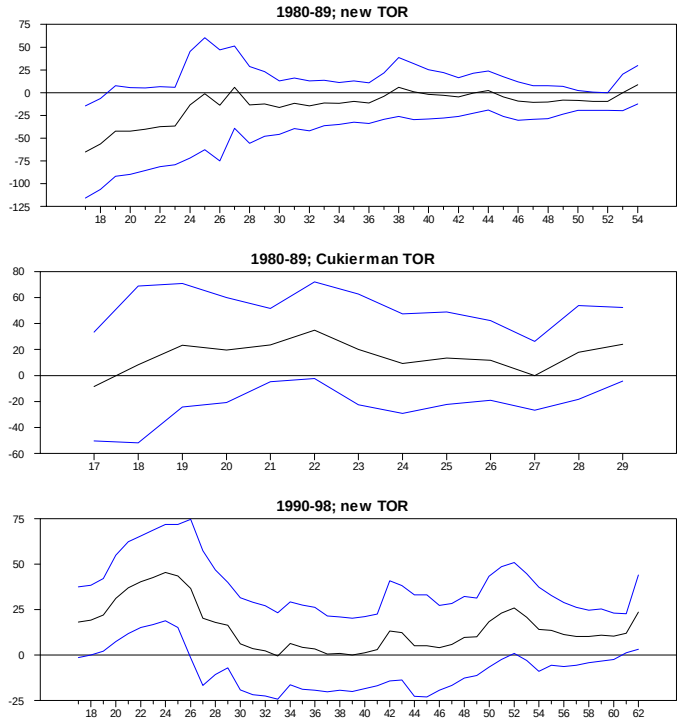


Figure 4

Recursive Regressions for the Multivariate Relationship Between CBI and Inflation, Data Ordered by Turnover Rate



IV. Concluding comments

In this paper we have re-examined the relationship between central bank independence and inflation in developing countries. We extend the existing literature in three ways. Firstly, we present a new data set for the turnover rate of central bank governors in a very large sample of countries, which also covers the 1990s. Secondly, we employ turnover rates in a multivariate model. Previous studies which used control variables (notably Campillo and Miron 1997 and Temple, 1998) employed legal indicators for CBI, which are widely believed to be less relevant for developing countries. Third, we examined the role of high inflation countries, following the approach suggested by Temple (1998). Our re-

sults are in sharp contrast to most previous studies as we find that once various control variables are included, the CBI proxy is often not significant. We also conclude that in those regressions in which the CBI proxy is significant, the coefficient of the TOR often becomes significant only after high inflation countries are added to the sample.

In another paper we offer a more formal analysis of the role of influential observations in the relationship between CBI and inflation in developing countries (Sturm and De Haan 2001). Following the approach suggested by Rousseeuw and Van Zomeren (1990), we apply a robust estimation technique to distinguish these outlying observations from the bulk of the data. As we use a different sample and different data sources, care has to be taken in comparing these two papers. Nevertheless, in Sturm and De Haan (2001) we also conclude that in particular high-inflation countries do not follow the general pattern as depicted by the bulk of the data. Without these few influential observations the relationship between CBI (proxied by TOR) and inflation disappears.

All these findings suggest that the results of most previous studies in which the TOR was used as a proxy for CBI in developing countries should be reconsidered. The fact that the relationship between the TOR and inflation often only becomes significant once high inflation countries are taken up, suggests that the causality between the TOR and inflation may be in the other direction. It may be true that once inflation becomes extremely high, the central bank governor is replaced, e.g. as part of a stabilization program. Indeed, some case studies of countries experiencing high inflation rates are in line with this interpretation (see e.g. Bruno 1993).

Summary

We analyze whether central bank independence (CBI) affects inflation in developing countries. For this purpose we have constructed a new data set for the turnover rate (TOR) of central bank governors for a very large sample of countries, which also covers the 1990s. We find that once various control variables are included, the CBI proxy is not always significant. We also conclude that in those regressions in which the CBI proxy is significant, the coefficient of the TOR often becomes significant only after high inflation countries are added to the sample.

References

Beck, *T.*, *G. Clarke*, *A. Groff*, *P. Keefer* and *P. Wa*lsh (1999), New tools and new tests in comparative political economy: The Database of Political Institutions, July.

Berger, *H.*, *J. de Haan* and *S.C.W. Eijffinger* (2001), Central Bank Independence: An Update of Theory and Evidence, Journal of Economic Surveys 15, 3–40.

Bruno, *M*. (1993), Crisis, Stabilization and Economic Reform, Oxford: Oxford University Press.

Campillo, *M*. and *J.A. Miron* (1997), 'Why does inflation differ across countries?, in: *C.D. Romer* and *D.H. Romer* (Eds.), Reducing Inflation: Motivation and Strategy, Chicago: University of Chicago Press.

Cukierman, *A*. (1992), Central bank strategy, credibility, and independence, Cambridge: MIT Press.

Cukierman, *A.*, *S.B. Webb* and *B. Neyapti* (1992), Measuring the independence of central banks and its effects on policy outcomes, The World Bank Economic Review 6, 353–398.

Eijffinger, *S.C.W*. and *J. de Haan* (1996), The political economy of central-bank independence, Princeton Special Papers in International Economics, No. 19.

Forder, *J*. (1996), On the assessment and implementation of 'institutional' remedies', Oxford Economic Papers 48, 39–51.

Granger, *C.W.J*. and *T. Terasvirta* (1993), Modelling Non-linear Economic Relationships, Oxford: Oxford University Press.

Haan, *J. de* and *W. Kooi* (2000), Does central bank independence really matter? New evidence for developing countries using a new indicator, Journal of Banking and Finance 24, 643–664.

Lee, *T.H.*, *H. White*, and *C.W.J. Granger* (1993), Testing for Neglected Non-linearities in Time Series Models, Journal of Econometrics 56, 269–290.

Romer, *D*. (1993), Openness and inflation: Theory and evidence, Quarterly Journal of Economics 108, 869–904.

Rousseeuw, *P.J*. and *B.C. van Zomeren* (1990), Unmasking multivariate outliers and leverage points, Journal of the American Statistical Association 85, 633–639.

Temple, *J.* (1998), Central bank independence and inflation: good news and bad news, Economics Letters 61, 215–219.

Sturm, *J-E*. and *J. de Haan* (2001), Central bank independence and inflation in developing countries: The role of influential observations, mimeo.

White, *H*. (1980), A heteroscedasticity-consistent covariance matrix estimator and a direct test for heteroscedasticity, Econometrica 48, 817–838.

Appendix

Our main data source for our TOR is information we got from central banks. Some central banks provide information on their past governors on their homepage. For many other central banks we got the information directly by writing emails and letters. A second source is Morgan Stanley Dean Witter's Central Bank Directory (MSDW). Finally, for a relatively small number of countries we used information on the governor (or his alternate) to the IMF as provided in the monthly issues of the IFS. A problem here is that either the governor or the alternate generally (but not always) is the central bank governor. By using the information from MSDW's Central bank Directory, we were generally able to find one or two names of the CB governor. Using this information we could then discover whether the IMF governor or the alternate (or neither) was the CB governor. For those countries for which we already had lists of CB governors and the

dates at which they resigned, we also used the information form the IMF to check how reliable this method is. Generally, the results that the IMF data yielded were almost the same as the data we got from the central banks directly, indicating that the method is quite reliable. Table A1 summarizes our data. The complete data set can be downloaded at:
http://www.lrz-muenchen.de/~ces/sturm.

Table A1

Turnover Rates of Central Bank Governors, 1980-89 and 1990-98

Country	Cukierman 1980-89	New 1980-89	New 1990-98
Algeria	NA	0.40	0.11
Argentina	1.00	1.10	0.56
Bahamas	0.20	0.20	0.11
Bahrain	NA	0.10	0.00
Bangladesh	NA	0.10	0.22
Barbados	0.10	0.10	0.22
Belize	NA	0.25	0.22
Botswana	0.40	0.30	0.11
Brazil	0.80	0.80	0.89
Burundi	NA	0.10	0.11
Cape Verde	NA	0.10	0.11
Chile	0.80	0.80	0.22
Colombia	0.20	0.20	0.11
Costa Rica	0.40	0.30	0.56
Cyprus	NA	0.10	0.00
Djibouti	NA	0.10	0.11
Dom Rep.	NA	0.70	0.33
Ecuador	NA	0.40	0.89
Egypt	0.30	0.30	0.11
El Salvador	NA	0.50	0.11
Ethiopia	0.10	0.10	0.33
Fiji	NA	0.30	0.00
Gambia	NA	0.30	0.11
Ghana	0.20	0.20	0.11
Greece	0.20	0.20	0.33
Guatemala	NA	0.80	0.56
Guinea	NA	0.30	0.11
Guinea Bissau	NA	0.10	0.33

Haiti	NA	0.80	0.78
Honduras	0.10	0.10	0.33
India	0.30	0.30	0.33
Indonesia	0.20	0.20	0.22
Iran	NA	0.30	0.11
Jamaica	NA	0.50	0.33
Jordan	NA	0.20	0.11
Kenya	0.20	0.20	0.11
Korea South	0.50	0.50	0.44
Kuwait	NA	0.20	0.00
Lebanon	0.10	0.10	0.11
Lesotho	NA	0.25	0.11
Libya	NA	0.30	0.22
Madagascar	NA	0.20	0.22
Malawi	NA	0.30	0.22
Malaysia	NA	0.20	0.22
Maldives	0.20	0.00	0.00
Malta	0.20	0.20	0.22
Mauritius	NA	0.10	0.11
Mexico	0.30	0.20	0.11
Morocco	0.20	0.20	0.00
Mozambique	NA	0.20	0.11
Nepal	0.10	0.10	0.22
Nicaragua	0.40	0.40	0.56
Nigeria	0.10	0.10	0.11
Pakistan	0.30	0.30	0.22
Paraguay	NA	0.10	0.44
Peru	0.30	0.30	0.33
Philippines	0.20	0.20	0.22
Qatar	0.00	0.10	0.00
Saudi Arabia	NA	0.10	0.00
Seychelles	NA	0.00	0.22
Singapore	0.60	0.60	0.11
Solomon Islands	NA	0.00	0.11
South Africa	0.20	0.20	0.00
Sri Lanka	NA	0.10	0.22
Sudan	NA	NA	0.44
Surinam	NA	0.20	0.22
Swaziland	NA	0.10	0.22
Syria	NA	0.20	0.11

Tanzania	0.10	0.10	0.22
Thailand	0.10	0.10	0.44
Trin & Tobago	NA	0.20	0.22
Tunisia	NA	0.40	0.11
Turkey	0.40	0.30	0.33
Uganda	0.10	0.20	0.11
Uruguay	0.20	0.30	0.44
Vanuatu	NA	0.30	0.33
Venezuela	0.50	0.50	0.22
Western Samoa	0.56	0.33	0.00
Zaire	0.20	0.20	NA
Zambia	0.50	0.40	0.33
Zimbabwe	0.10	0.10	0.11

Note: The table only shows the countries in our data set. Cukierman (1992) also provides data for a number of other countries.

Table A2

Multivariate Cross-country Models of Inflation in Developing Countries

Variable:	1980-89; new TOR	1980-89; Cukierman TOR	1990-98; new TOR
Constant	-14.12 (-1.41)	-15.15 (-1.02)	8.20 (1.03)
CBI	8.72 (0.82)	24.04 (1.70)	23.71 (2.32)
OPEN	-0.15 (-2.83)	-0.40 (-3.91)	-0.08 (-2.86)
GDPCAP	4.13 (2.41)	5.40 (2.17)	0.87 (0.68)
PI	19.49 (1.41)	6.04 (0.21)	-14.42 (-1.18)
XRATE	-5.60 (-2.13)	-1.08 (-0.23)	-3.74 (-1.93)
DEBT	0.16 (5.66)	0.16 (3.97)	0.04 (4.63)
No. obs.	54	29	62
R^2 (adj.)	0.44	0.53	0.43

Table A2 shows the detailed estimation results of the model inspired by Campillo and Miron (1997). As the referee pointed out, there may be reversed causality problems with some of the control variables. Table A3 therefore shows the results if we either employ the value of the variables at the beginning of the period (GDPCAP, XRATE, DEBT, OPEN), or the lagged value (PI). The significance of the CBI index of Cukierman (1992) improves somewhat, but the general conclusions concerning the effect of CBI on inflation do not change. If we drop the XRATE and DEBT variable in this specification, as also suggested by the referee, the CBI indicators are all significant and close to the results for the simple bivariate models. However, dropping these variables does not affect our conclusions concerning the stability of the estimation results over the sample of countries and the role of high-inflation countries in this respect.

Table A3

Multivariate Cross-country Models of Inflation in Developing Countries

Variable:	1980-89; new TOR	1980-89; Cukierman TOR	1990-98; new TOR
Constant	-0.04 (-0.00)	-3.22 (-0.22)	13.21 (1.70)
CBI	12.94 (1.29)	29.91 (2.29)	17.35 (1.99)
$OPEN_{t=0}$	-0.11 (-2.02)	-0.26 (-2.75)	-0.09 (-3.37)
GDPCAP	2.90 (1.92)	3.63 (1.39)	0.42 (0.35)
PI_{-1}	-4.37 (-0.49)	4.52 (0.47)	2.93 (0.21)
$XRATE_{t=0}$	-9.72 (-2.29)	-4.07 (-0.79)	-3.15 (-1.38)
$DEBT_{t=0}$	0.21 (2.77)	0.08 (0.72)	0.02 (3.77)
No. obs.	54	29	62
R^2 (adj.)	0.36	0.45	0.34