

## Central Bank Autonomy: Lessons from Global Trends

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*This paper calculates indices of central bank autonomy (CBA) for 163 central banks as of end-2003, and comparable indices for a subgroup of 68 central banks as of the end of the 1980s. The results confirm strong improvements in both economic and political CBA over the past couple of decades, although more progress is needed to boost political autonomy of the central banks in emerging market and developing countries. Our analysis confirms that greater CBA has on average helped to maintain low inflation levels. The paper identifies four broad principles of CBA that have been shared by the majority of countries. Significant differences exist in the area of banking supervision where many central banks have retained a key role. Finally, we discuss the sequencing of reforms to separate the conduct of monetary and fiscal policies. [JEL E58, E52]*

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**A** large body of research has suggested that central bank autonomy (CBA) may have significant benefits for macroeconomic performance.<sup>1</sup>

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<sup>1</sup>The literature often uses terms "autonomy" and "independence" interchangeably. However, there is a difference between the two concepts as autonomy entails operational

CBA may help countries achieve lower average inflation, cushion the impact of political cycles on economic cycles, enhance financial system stability, and boost fiscal discipline without any real additional costs or sacrifices in terms of output volatility or reduced economic growth.<sup>2</sup>

Although several studies have documented recent trends in CBA for selected groups of countries, no analysis of worldwide trends has yet been carried out.<sup>3</sup> In an effort to fill this gap, we calculate indexes of *de jure* CBA for 163 central banks, representing 181 countries, as of end-2003.<sup>4</sup> We also construct comparable indexes of CBA for a subgroup of 68 central banks as of the end of the 1980s. The cross-country and time-series dimensions of this new data set enable us to draw several important lessons from global trends in CBA over the past couple of decades:

- Central banks in advanced economies continue to enjoy greater CBA than those in emerging markets and developing countries. However, at the end of 2003, all country groups exhibit a higher level of CBA than that reached by advanced economies in the late 1980s.
- A vast majority of central banks have been mandated to set price stability as one of the objectives of monetary policy. In addition, most central banks have autonomy with respect to setting the policy rate and are not required to extend direct credit to the government.
- There is divergence among central banks on the issue of financial supervision. Many central banks in emerging markets and developing countries have retained their key role in supervisory activities; in addition, central banks in a few large advanced countries have also retained some form of involvement in financial supervision. In fact, it is not infrequent for central bank laws to prescribe the soundness of the financial system as an objective that is subordinated to medium-term price stability.
- Participation in currency unions has helped to enhance the autonomy of central banks, both among advanced economies (as in the case of the European System of Central Banks—ESCB) and developing countries (Central Bank of West African States—BCEAO; the Bank of Central

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freedom, while independence indicates the lack of institutional constraints. This paper uses the term “autonomy,” but the indexes we calculate also include information on operational and institutional constraints.

<sup>2</sup>See Arnone, Laurens, and Segalotto (2006a) for an extensive survey of the literature.

<sup>3</sup>Lybek (1999) analyzes CBA in the Baltic states, Russia, and other countries of the former Soviet Union; Jácome (2001) and Jácome and Vázquez (2005) analyze CBA in Latin America and the Caribbean; and Arnone, Laurens, and Segalotto (2006b) analyze CBA in OECD countries and a sample of emerging markets and developing countries.

<sup>4</sup>There may be instances where *de jure* autonomy exaggerates the degree of *de facto* autonomy, especially in countries where the rule of law is limited. However, *de jure* autonomy may also underestimate *de facto* autonomy, for example in the case of several inflation-targeting central banks where the formal specification of the inflation-targeting framework plays an important role in terms of CBA (see Roger, 2006).

African States—BEAC; and the Eastern Caribbean Central Bank—ECCB) In the group of developing countries, this is because participation in a currency union has been beneficial for the development of financial markets, which in turn had been a prerequisite for the elimination of direct central bank credit to the government (or central bank participation in the primary market for government securities).

A number of emerging market and developing countries continue to strengthen their instrument autonomy. However, looking forward, the main challenge will be to further boost the political autonomy of central

**Box 1. Measures of Central Bank Autonomy by Grilli, Masciandaro, and Tabellini (1991) and Cukierman (1992)**

Grilli, Masciandaro, and Tabellini (1991) assessed political and economic autonomy of central banks for 18 countries in the Organization for Economic Cooperation and Development.

- *Political autonomy* is defined as the ability of central banks to select the final objectives of monetary policy, based on the following eight criteria: (1) governor is appointed without government involvement; (2) governor is appointed for more than five years; (3) board of directors is appointed without government involvement; (4) board is appointed for more than five years; (5) there is no mandatory participation of government representative(s) in the board; (6) no government approval is required for formulation of monetary policy; (7) central bank is legally obliged to pursue monetary stability as one of its primary objectives; and (8) there are legal provisions that strengthen the central bank's position in the event of a conflict with the government.
- *Economic autonomy* aims at assessing the central bank's operational autonomy on the basis of the following seven criteria: (1) there is no automatic procedure for the government to obtain direct credit from the central bank; (2) when available, direct credit facilities are extended to the government at market interest rates; (3) this credit is temporary; (4) and for a limited amount; (5) the central bank does not participate in the primary market for public debt; (6) the central bank is responsible for setting the policy rate; and (7) the central bank has no responsibility for overseeing the banking sector (two points) or shares responsibility (one point).

Cukierman (1992) proposed a measure of CBA for 50 countries based on the following 16 criteria:

- *Chief executive officer*: (1) length of governor's term; (2) entity delegated to appoint him/her; (3) provisions for dismissal; and (4) ability to hold another office in the government.
- *Policy formulation*: (5) whether the central bank is responsible for monetary policy formulation; (6) rules concerning resolution of conflicts between the central bank and government; and (7) the degree of central bank participation in the formulation of the government's budget.
- *Objectives of the central bank*: (8) monetary stability as one of the primary policy objectives.
- *Limitations on central bank lending to the government*: (9) advances and (10) securitized lending; (11) authority having control over the terms (maturity, interest rate, and amount) of lending; (12) width of circle of potential borrowers from the central bank; (13) types of limitations on loans, where limits exist; (14) maturity of possible loans; (15) limitations on interest rates applicable to lending; and (16) prohibitions on central bank participation in the primary market for government securities.

**Table 1. Matrix of Central Bank Samples and Indexes**

Sample (number of central banks)	Full Index	Narrow Index
All countries (163)	End-2003	—
Grilli, Masciandaro, and Tabellini sample (18)	End-1980s	—
Cukierman sample (50)	—	End-1980 and end-2003

banks, mainly by ensuring that central bank governing bodies are appointed without much political interference and for longer terms.

### I. Methodology for Assessing CBA

Our assessment of CBA and its evolution over time is based on the methodologies developed by Grilli, Masciandaro, and Tabellini (GMT) in a paper published in 1991, and the methodology used by Cukierman in a paper published a year later (see Box 1). GMT distinguished the political (that is, ability of the central bank to select the objectives of monetary policy) and economic (that is, ability of the central bank to select its instruments) dimensions of autonomy, but Cukierman looked at the provision in central bank legislation with regard to the central bank’s chief executive officer; policy formulation by the central bank and its objectives; and the limitations on central bank lending to the government.

The matrix presented in Table 1 summarizes the different samples and indexes that are used in this paper. Our assessment of CBA at the end of the 1980s is based on the GMT index for the 18 OECD countries analyzed in GMT (1991), thereafter referred to as the “full index;” and the Cukierman (1992) data converted into the GMT index for the remaining 50 countries assessed in that paper, thereafter referred to as the “narrow index.” Our assessment of CBA at the end of 2003 relies on the “full index.” To ensure comparability we standardize results by dividing the absolute values by the maximum potential score. Due to the method we use to transpose Cukierman’s data into the narrow index, some qualification is warranted regarding our assessment of CBA evolution over time.<sup>5</sup> This caveat is discussed in Section III, which presents a comparison across countries.

### II. Literature on the Benefits of CBA

A number of authors have used the indices developed by Cukierman and GMT in their work on CBA and its benefits. Arnone, Laurens, and Segalotto

<sup>5</sup>In technical terms, the narrow index is defined as a subset of 11 variables, with 10 of those in Cukierman matching the same subset of 10 variables contained in the full index, and the 11th one from Cukierman substituting one in GMT. See conversion table in Arnone and others (2007).

(2006a) provide a detailed overview of this work. Here, we summarize the main results on the benefits of CBA for inflation performance:

- Alesina and Summers (1993) define an index of CBA as the average of the GMT and Cukierman indexes. They use the index to test the correlation between CBA and average inflation and its variability, unemployment, and the level of real interest rates. They find a significant negative correlation between CBA and the level and variation of inflation.
- de Haan and Kooi (1997) use the indexes of CBA developed by GMT and Cukierman to distinguish the concepts of conservatism and autonomy. They assess the relationships between these two concepts and inflation performance and the variability of output. They find that CBA, especially central bank instrument autonomy, has considerable impact on inflation performance and little on output variability.
- Mangano (1998) ranks existing most widely used indicators, including GMT and Cukierman indexes, and regress them on inflation and output. He finds that GMT's CBA has a significant impact on inflation.
- Oatley (1999) investigates the robustness of the relationships found in previous research between CBA and macroeconomic performance by analyzing eight indicators of CBA, including those developed by GMT and Cukierman. He finds that CBA reduces inflation even when economic, political, or institutional aspects are accounted for.
- However, some researchers have found little or no evidence for the macroeconomic benefits of CBA—see Banaian, Burdekin, and Willett (1995); Posen (1995 and 1998); Campillo and Miron (1997); Fuhrer (1997); and Crosby (1998).

### III. CBA: Comparison across Countries and Evolution Over Time

Table A1 reports the summary indices of CBA, and detailed results can be found in Arnone and others (2007). The snapshot of CBA at the end of the 1980s is based on GMT and Cukierman data for 68 central banks, of which 25 are in advanced economies, 22 in emerging markets, and 21 in developing countries.<sup>6,7</sup> The CBA scores at the end of 2003 are based on our reading of legal documents for 163 central banks, of which 28 are in advanced economies, 32 in emerging markets, and 103 in developing countries. In total, the sample for end-2003 covers 181 countries.

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<sup>6</sup>The historical CBA scores of Bosnia, Croatia, Macedonia, Slovenia, and Serbia are those of Yugoslavia.

<sup>7</sup>The country classification dates to the end of 2003. Emerging markets include upper-middle-income countries; and some lower-middle-income countries classified as such by *The Economist*, as well as other countries with a sustained financial reform process. Developing countries include lower- and lower-middle-income countries, plus some countries with upper-middle- and high-income but with a degree of financial sector development that did not match, as of end of 2003, their income levels. Any such classification includes an unavoidable degree of subjectivity, especially in times of globalization and fast changes in financial markets.

Table 2 provides a broad overview of CBA scores for the main country groups. We present aggregate indexes for central banks in advanced economies, emerging markets, and developing countries; scores for monetary unions are also reported separately.

### **Assessment of CBA in the Late 1980s**

Our snapshot of CBA in the late 1980s is based on the results of GMT (1991) and Cukierman (1992) for central banks in advanced economies, and Cukierman (1992) for central banks in emerging markets and developing countries. For all country groups, overall autonomy was rather low (that is, below 0.50) at that time, with economic autonomy being generally greater than political autonomy (Figure 1). Advanced economies exhibited the highest scores of overall autonomy. However, countries in the euro area showed levels of political and economic autonomy significantly lower than those in the other advanced economies (Figure 2). Developing countries exhibited slightly higher scores of overall autonomy than emerging market economies. However, excluding economies in transition, levels of CBA in those two groups were comparable.

### **Assessment of CBA as of End-2003**

#### ***Comparison by income groups***

The indexes of CBA have sharply increased from their late 1980s levels, but with notable cross-country differences. On average, CBA averages across the main income groups now exceed 0.50, with central banks in advanced economies achieving greater autonomy than central banks in emerging markets and developing countries (Figure 3). That said, some advanced countries in the Asia and the Pacific region score low relative to their peers, especially due to their limited political autonomy.

Central banks of countries in transition have reached CBA scores that are comparable with, and sometimes even higher than, CBA in the advanced economies (Figure 4). Clearly, the countries in transition have taken advantage of changes in the political regime to adopt central bank legislations reflecting the best practices in the advanced economies. In the case of Baltic and Central European countries, the proximity of the European Union together with the process of establishing the euro zone with the highly independent European Central Bank (ECB) have strengthened incentives for introducing autonomous central banks.

Interestingly, central banks of the countries operating in a monetary union exhibit autonomy that is significantly greater than the average of their income group. The average reached by the central banks in the ESCB is close to the maximum level of autonomy (see Figure 4). In the group of developing countries, the three regional central banks (BCEAO, BEAC, and ECCB) also show CBA levels that are considerably higher in both dimensions of autonomy than those of their peers (Table A1).

Table 2. Scores of Central Bank Autonomy in the Late 1980s and 2003

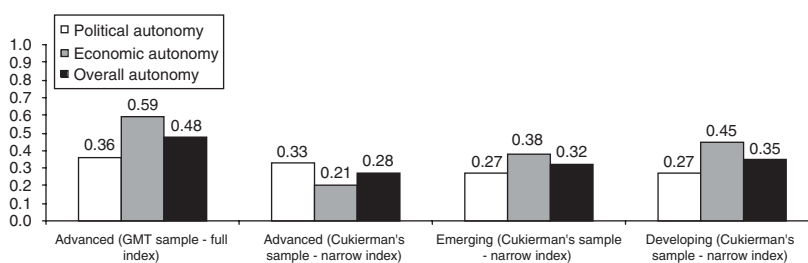
Central Banks (number)	Late 1980s (narrow index Cukierman sample) (full index GMT sample)			2003 (narrow index)			2003 (full index)		
	Political	Economic	Overall	Political	Economic	Overall	Political	Economic	Overall
<b>All income levels</b>									
All central banks (163)	...	...	...	...	...	...	0.49	0.68	0.59
GMT sample (18)	0.36	0.59	0.48	...	...	...	0.74	0.81	0.77
Cukierman sample (50)	0.28	0.39	0.33	0.52	0.82	0.66	0.42	0.73	0.57
<b>Advanced economies</b>									
All central banks (28)	...	...	...	...	...	...	0.70	0.81	0.75
GMT sample (18)	0.36	0.59	0.48	...	...	...	0.74	0.81	0.77
Cukierman sample (7)	0.33	0.21	0.28	0.67	0.89	0.77	0.64	0.86	0.75
ESCB (13) <sup>1</sup>	...	...	...	...	...	...	1.00	0.78	0.89
<b>Emerging markets</b>									
All central banks (32)	...	...	...	...	...	...	0.56	0.75	0.65
Cukierman sample (22)	0.27	0.38	0.32	0.56	0.87	0.70	0.47	0.75	0.61
<b>Developing countries</b>									
All central banks (103)	...	...	...	...	...	...	0.41	0.63	0.52
Cukierman sample (21)	0.27	0.45	0.35	0.42	0.75	0.57	0.29	0.67	0.48
Monetary unions (3) <sup>2</sup>	...	...	...	...	...	...	0.54	0.79	0.67

Source: Grilli, Masciandaro, and Tabellini (GMT) (1991); Cukierman (1992); and authors' calculations.

<sup>1</sup>The European System of Central Banks (ESCB) includes the European Central Bank and the 12 central banks of countries that were participating in the single currency in 2003.

<sup>2</sup>Includes the Central Bank of West African States (BCEAO), the Bank of Central African States (BEAC), and the Eastern Caribbean Central Bank (ECCB). Unlike in the ESCB, member countries do not have a national central bank.

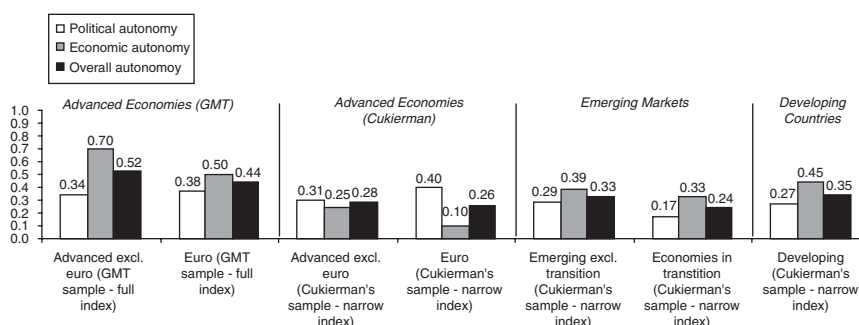
Figure 1. Autonomy by Income-Level Groups, Late 1980s



Sources: Grilli, Masciandaro, and Tabellini (GMT) (1991); Cukierman (1992); and authors' calculations.

Note: See Table 2 for sample sizes.

Figure 2. Autonomy by Income-Level Subgroups, Late 1980s



Sources: Grilli, Masciandaro, and Tabellini (GMT) (1991); Cukierman (1992); and authors' calculations.

Note: Sample sizes: advanced (excluding euro area) GMT: 8; euro GMT: 10; advanced (excluding euro area) Cukierman: 5; euro area Cukierman: 2; emerging (excluding transition) Cukierman: 19; transition economies Cukierman: 3.

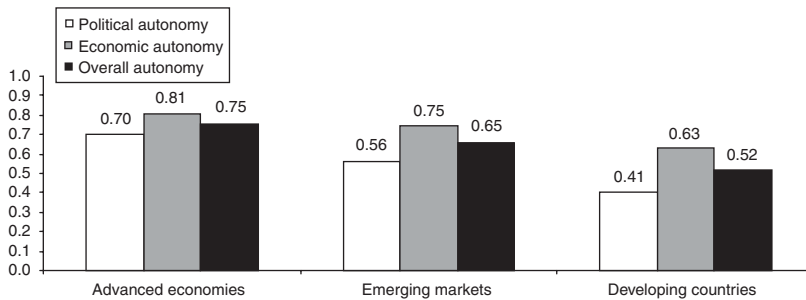
Noteworthy is also the dichotomy in the political autonomy scores across countries. As discussed above, advanced economies (especially in Europe) and economies in transition have, with some notable exceptions, politically autonomous central banks. By contrast, many developing countries continue to score much worse on the criteria underpinning the political index (see the next subsection). The cross-country dispersion of economic autonomy scores is considerably lower (Figures 5 and 6).

### *Detailed discussion of the CBA subcomponents*

What are the main reasons for cross-country differences in the CBA scores? Most of the differences in political autonomy are related to the legal provisions for appointing governing bodies of central banks (Table 3). In developing countries, governments often continue to be involved in the

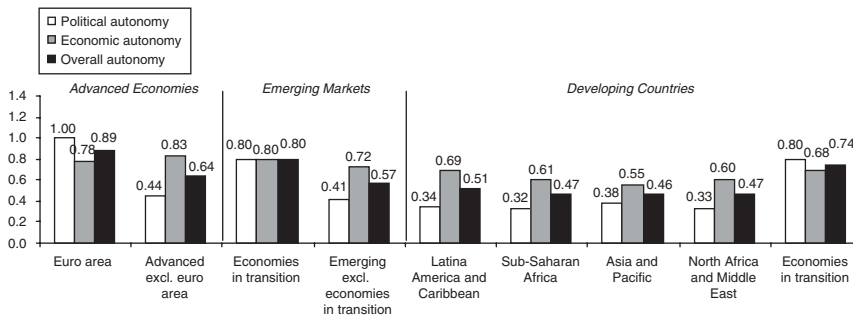


Figure 3. Autonomy by Income-Levels Groups, 2003



Source: Authors' calculations.  
 Note: See Table 1 for sample sizes.

Figure 4. Autonomy by Subgroups, 2003



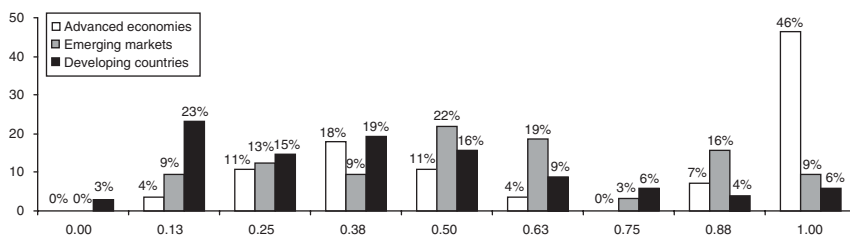
Source: Authors' calculations.  
 Note: Sample sizes are as follows: euro area: 13; advanced excluding euro area: 15; emerging transition: 12; emerging excluding transition: 20; Latin America and Caribbean: 27; sub-Saharan Africa: 29; Asia and Pacific: 17; North Africa and Middle East: 15; developing transition: 15.

selection of central bank boards and the tenures tend to be short (criteria 1–4); the government is generally represented on the board (criterion 5); and central banks have a limited legal protection in the event of a conflict with the government (criterion 8). Cross-country differences for the other subcomponents of political autonomy are smaller; interestingly, most central banks have adopted monetary stability as one of their primary objectives (criterion 7). However, in many countries, governments continue to be involved in the monetary policy implementation (criterion 6).

The key features of the central bank economic autonomy are as follows (Table 4):

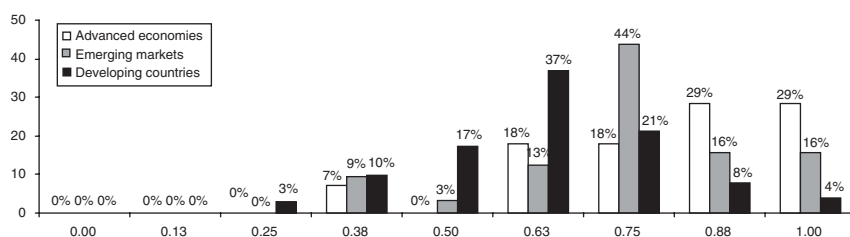
- Few governments, even in developing countries, have automatic access to the central bank credit (criterion 1); when this type of credit is available,

Figure 5. Relative Frequencies of Political Autonomy, 2003  
(In percent)



Source: Authors' calculations.

Figure 6. Relative Frequencies of Economic Autonomy, 2003  
(In percent)



Source: Authors' calculations.

the interest rate charged by the central bank is often close to the market rates but practices differ, especially in the developing countries (criterion 2).<sup>8</sup>

- Many central banks in developing countries are allowed to participate in the primary markets for government securities (criterion 5). This clearly represents an inflation risk but, as discussed below, this arrangement can merely reflect the insufficient development of financial markets in some countries.
- Most central banks set their policy rates freely (criterion 6).
- With the exception of advanced economies, the majority of central banks have retained their key role in banking supervision (criterion 7bis).

### Regional patterns

Looking across geographical regions, central banks in Europe have the highest CBA scores in terms of both economic and political autonomy, even

<sup>8</sup>For example, in the United Kingdom, the interest rate charged on government overdrafts is the central bank's bank rate plus a premium that is negotiated between the Debt Management Office and the Bank of England.

**Table 3. Performance on Subcomponents of the Political Autonomy Index, 2003**  
(In percent)

Country Group	Governor and Central Bank Board (CBB)				Relationship with the Government		Objectives	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Overall sample	34	40	31	38	47	54	95	50
Advanced economies	57	71	57	64	75	64	96	75
Emerging markets	41	44	44	50	47	63	97	63
Developing countries	26	30	20	27	40	49	94	39

Source: Authors' calculations.

Note: The table shows the percentage of central banks satisfying the criteria: the central bank governor appointed without government involvement (1); appointed for more than five years (2); CBB appointed without government involvement (3); for more than five years (4); no mandatory participation of government representatives in CBB (5); no government approval needed for monetary policy formulation (6); monetary stability is one of central bank's primary objectives (7); legal protection strengthens central bank position in event of conflict with government (8).

**Table 4. Performance on Subcomponents of the Economic Autonomy Index, 2003**  
(In percent)

Country Group	Monetary Financing of Government					Scope of Operations		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7bis)
All central banks	91	66	93	91	59	88	23	18
Advanced economies	93	89	93	93	89	100	18	57
Emerging markets	97	75	97	94	81	94	25	19
Developing countries	89	56	91	90	44	94	24	7

Source: Authors' calculations.

Note: The table shows the percentage of central banks satisfying the criteria: no automatic central bank credit to government (1); when available credit is at market rates (2); temporary (3); for limited amount (4); central bank does not bid in primary market for government securities (5); central bank sets policy rate (6); central bank shares supervisory responsibilities (one point) (7); or no responsibility (two points) (7bis).

after disaggregating the scores by income groups (Table 5, row EUR). In the group of emerging markets, overall CBA is the lowest in Middle East and Central Asia (MCD) and sub-Saharan Africa (AFR) regions. Among developing countries, the differences in CBA across geographical regions are not particularly large; however, the central banks in the Asia and Pacific (APD) and sub-Saharan Africa (AFR) regions rank the lowest on average.

Table 5. Regional Patterns in Central Bank Autonomy, End-2003

Region	Political Autonomy				Economic Autonomy				Overall Autonomy			
	All	Advanced	Emerging	Developing	All	Advanced	Emerging	Developing	All	Advanced	Emerging	Developing
AFR	0.33	—	0.25	0.33	0.60	—	0.63	0.61	0.46	—	0.44	0.47
APD	0.35	0.27	0.44	0.34	0.60	0.67	0.67	0.55	0.47	0.47	0.55	0.44
EUR	0.79	0.85	0.73	0.79	0.80	0.84	0.81	0.68	0.80	0.85	0.77	0.73
MCD	0.45	—	0.25	0.48	0.63	—	0.63	0.64	0.54	—	0.44	0.56
WHD	0.40	0.50	0.54	0.36	0.73	0.88	0.83	0.69	0.56	0.69	0.69	0.52
All	0.49	0.70	0.56	0.41	0.68	0.81	0.75	0.63	0.59	0.75	0.65	0.52

Source: Authors' calculations.

Note: The regional classification follows the organization of IMF area departments: AFR=African Department; APD=Asia and Pacific Department; EUR=European Department; MCD=Middle East and Central Asia Department; WHD=Western Hemisphere Department.

## Developments in CBA Over Time

### *Trends by income groups*

The main trends in the developments of CBA over time are as follows:

- Average CBA scores for our *global sample* of 163 central banks have increased significantly over the last couple of decades: overall CBA (political and economic autonomy) has about doubled. The economic element of autonomy continues to be significantly ahead of the political component.<sup>9</sup>
- *Advanced economies* started off from relatively high levels of autonomy in the late 1980s but continued to strengthen their CBA in the subsequent years. Since the economic autonomy was already quite high, most progress has been done—in absolute terms—on boosting the political autonomy. That said, the political component of autonomy still lags somewhat behind the scores for economic autonomy.<sup>10</sup>
- In the group of *emerging markets*, overall CBA has more than doubled over time and has surpassed CBA typical in the advanced countries in the late 1980s. The measures of economic and political autonomy show similar levels of improvement, with the economic autonomy remaining higher than the political autonomy.<sup>11</sup>
- The development of CBA in the group of *developing countries* is harder to assess given data limitations. Based on CBA scores from the Cukierman sample (which represents about 20 percent of developing countries), political autonomy of central banks in developing countries has improved only marginally and remains low. However, political autonomy increased to some extent according to the “narrow” definition of our CBA index (Table 2). On balance, our reading of the data is that political autonomy of central banks in developing countries is certainly much lower than in emerging markets and advanced economies, although it is not possible to quantify precisely the evolution of political independence over time. As for the economic autonomy of central banks in developing countries, the picture emerging from the data is much clearer: economic CBA has increased significantly over the past couple of decades.

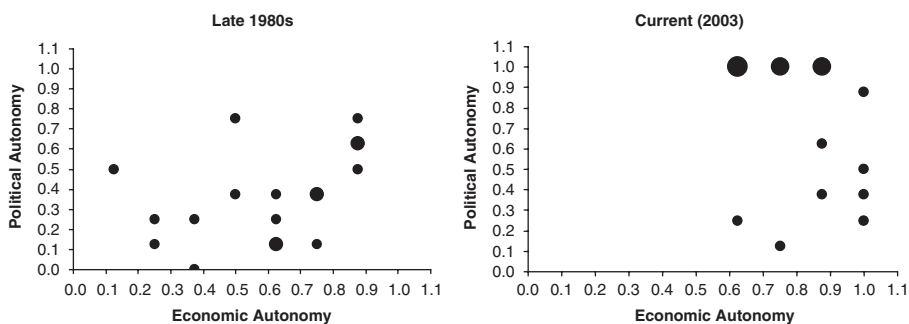
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<sup>9</sup>This assessment is based on the CBA scores for the Cukierman sample of 50 central banks in the late 1980s and the global sample of 163 central banks at the end of 2003. Since the scores for the Cukierman and global samples are very similar at the end of 2003 (Table 2), the Cukierman sample is likely to be a good proxy for the global CBA scores in the late 1980s.

<sup>10</sup>For the late 1980s, the average CBA score for advanced economies is approximated using the GMT sample of 18 central banks in the OECD area. Note that the scores based on the GMT sample at the end of 2003 are close to those obtained for the complete sample of 28 advanced economies (Table 2).

<sup>11</sup>Similarly as in the case of global CBA, we proxy the average CBA scores of emerging markets for the late 1980s using the Cukierman sample.

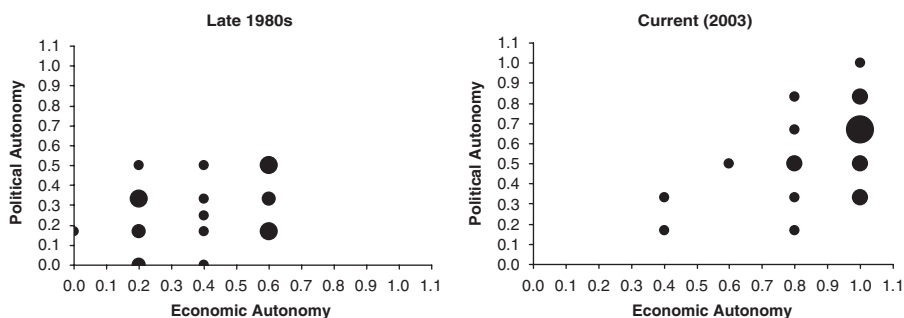
Figure 7. Trends in the Distribution of Central Bank Autonomy in 18 Countries in the Organization for Economic Cooperation and Development



Source: Authors' calculations.

Note: Grilli, Masciandaro, and Tabellini (1991) sample. The dot size represents the number of central banks with a given combination of central bank autonomy scores.

Figure 8. Trends in the Distribution of Central Bank Autonomy in Emerging Markets



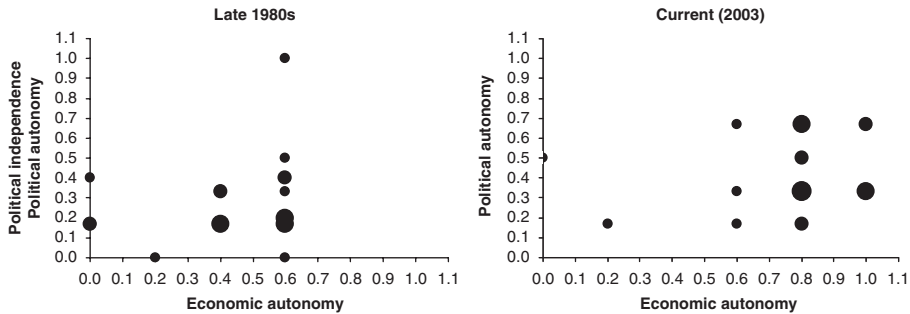
Source: Authors' calculations.

Note: Cukierman (1992) sample. The dot size represents the number of central banks with a given combination of central bank autonomy scores.

To get a broader sense of CBA evolution for a range of countries over time, it is useful to transform the CBA data into the four-quadrant framework of GMT (1991) (Figures 7–9). In each figure, the horizontal and vertical axes correspond to the economic and political components of CBA, respectively.

- For all country groups, one can observe a general shift of the plotted observations upward and to the right, which confirms the broad-based strengthening in both economic and political components of CBA. The shift is clearly more uniform in the case of advanced economies, as most observations have become crowded in the top-right quadrant (Figure 7).
- The data points for emerging market and developing countries also show an upward shift to the right (that is, CBA scores have been increasing), but the dispersion of observations is higher than that for advanced

Figure 9. Trends in the Distribution of Central Bank Autonomy in Developing Countries



Source: Authors' calculations.

Note: Cukierman (1992) sample. The dot size represents the number of central banks with a given combination of central bank autonomy scores.

economies. That said, it is interesting to note that scores for emerging market and developing countries at the end of 2003 are more concentrated and located to the right than was the case for advanced economies in the late 1980s. This is a corollary to the earlier finding that, at the end of 2003, developing and emerging market economies have achieved a degree of CBA which is higher than the level attained by the more advanced economies in the late 1980s.

- Moreover, the figures confirm that most of the cross-country differences in CBA scores are currently due to the differences in political autonomy.

### *Regional trends*

The increase in CBA is a worldwide phenomenon: central banks in all regions of the world have been granted increased political and economic autonomy (Table 6). But the increase in CBA has been uneven among regions. Central banks in Europe have gained greatly in terms of both economic and political autonomy. In the Western Hemisphere, much of the progress has been focused in the area of economic autonomy. By contrast, central banks in sub-Saharan Africa and the Middle East and Central Asia regions have seen relatively modest gains in their autonomy over the past couple of decades.

## IV. CBA and Inflation

In this section, we return to the old debate about the benefits of CBA for maintaining a low-inflation environment.<sup>12</sup> Of course, inflation outcomes

<sup>12</sup>The early research on this issue includes Alesina and Summers (1993); Cukierman (1992); Cukierman, Webb, and Neyapti (1992); and Grilli, Masciandaro, and Tabellini (1991). See Berger, de Haan, and Eijffinger (2000); Cukierman (2005); and Jácome and Vázquez (2005) for a recent treatment.

**Table 6. Regional Trends in Central Bank Autonomy, 1980s–2003**

Region	Political		Economic		Overall	
	1980s	2003	1980s	2003	1980s	2003
AFR	0.17	0.37	0.52	0.72	0.33	0.53
APD	0.21	0.54	0.41	0.73	0.30	0.63
EUR	0.32	0.79	0.27	0.98	0.30	0.88
MCD	0.25	0.40	0.36	0.68	0.30	0.53
WHD	0.36	0.50	0.36	0.88	0.36	0.67
All	0.28	0.56	0.38	0.84	0.32	0.68

Source: Authors' calculations.

Note: The average CBA scores are based on the Cukierman sample and the “narrow” CBA index. The regional classification follows the organization of IMF area departments: AFR=African Department; APD=Asia and Pacific Department; EUR=European Department; MCD=Middle East and Central Asia Department; WHD=Western Hemisphere Department.

reflect actual monetary and fiscal policies, the external environment, and the general attitudes of policymakers toward inflation, which may, or may not, be reflected in central bank laws. This section therefore examines to what extent the stronger legal frameworks for CBA may have contributed to the reduction in average inflation levels, after controlling for other determinants of inflation.<sup>13</sup>

Our analysis focuses on the group of emerging markets and developing economies because these are the countries where the volatility in inflation outcomes has been most significant (Figure 10). During the mid-1970s to the mid-1990s, recurring episodes of loose fiscal and monetary policies, combined with commodity price shocks, kept inflation high. By contrast, average inflation in emerging market economies has fallen dramatically since the early 1990s—in many cases from double- and triple-digit levels—to about 5 percent at the present time.<sup>14</sup>

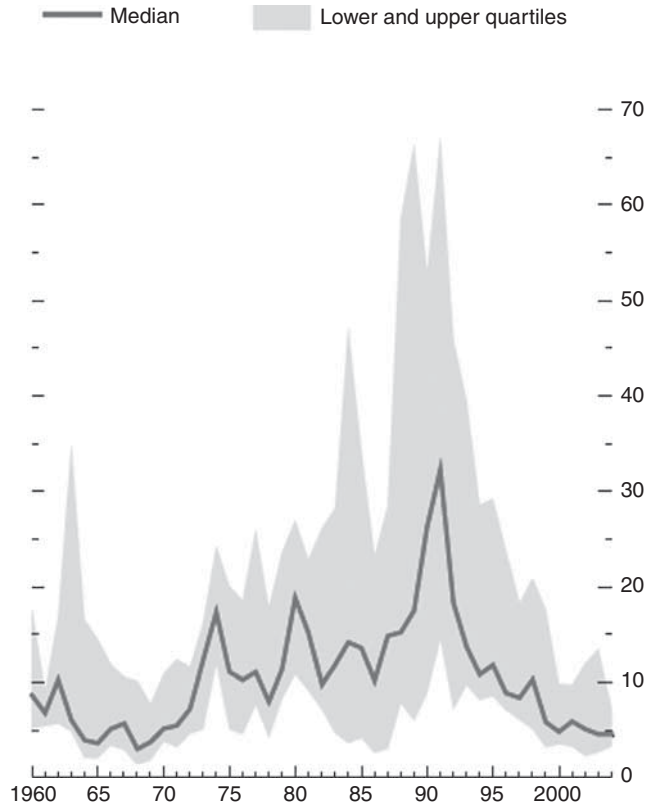
A number of factors have contributed to the reduction of inflation in emerging markets. As discussed in IMF (2006), the improving inflation performance has generally reflected policymakers' increasing preference for low and stable inflation. This policy shift in part resulted from the earlier experience with high and variable inflation in both emerging markets and advanced economies. In the early 1980s, the perceived costs of double-digit inflation increased, as high inflation coincided with low growth and rising

<sup>13</sup>De facto autonomy of central banks differs from de jure autonomy measured by our index. In any case, it is interesting to verify whether the de jure index has some predictive ability for inflation outcomes, even after controlling for a variety of other inflation determinants.

<sup>14</sup>In the Central and Eastern European countries, inflation spikes were associated with the initial stage of economic transformation.



Figure 10. Inflation in Emerging Markets  
(Annual percent change)



Source: IMF, *World Economic Outlook*.

unemployment. Governments in the advanced economies were the first to respond by strengthening institutional and policy frameworks to foster monetary stability—including by boosting CBA and transparency and—in some countries—adopting an explicit inflation target. The combination of falling external inflation, learning from successful policies elsewhere, and public dissatisfaction with inflation explains much of the subsequent shift to low-inflation policies in emerging market and developing countries. Moreover, the gradual deepening of domestic financial markets and greater CBA have made inflationary financing of fiscal deficits less common. Aside from these factors, globalization may also have strengthened policymakers' incentives to conduct prudent monetary policy (Rogoff, 2003). For instance, international capital markets may have had a disciplining effect on monetary policy, including through the risk of a reduction in foreign investment (Tytell and Wei, 2004).<sup>15</sup>

<sup>15</sup>For a detailed analysis, see IMF's April 2006 *World Economic Outlook*.

In sum, the low-inflation environment in emerging markets and developing countries has resulted from a variety of factors. But has greater CBA contributed to better inflation outcomes after controlling for all the other important explanations of low inflation? To provide a tentative answer to this question, we have estimated an econometric model that links the likelihood of good inflation performance—defined as annual inflation below 10 percent—to the various determinants of inflation discussed above.<sup>16</sup> Specifically, the model specification includes trade openness, inflation in advanced economies, the fiscal balance scaled by the depth of the domestic financial sector, the exchange rate regime, and two alternative measures of CBA.<sup>17</sup>

The estimation results (Table 7) suggest that CBA has indeed helped to keep inflation low. On average, a move from no autonomy to full autonomy increases the likelihood of maintaining low inflation by about 50 percent. In our sample, the average autonomy of central banks in emerging markets increased from 0.3 to about 0.7 over the past couple of decades, which implies an average increase in the likelihood of low inflation by about 20 percentage points. We also examine how the measure of CBA calculated in this paper performs compared with an alternative measure of autonomy, turnover of central bank governors (see Cukierman, Webb, and Neyapti, 1992), which has been traditionally used in panel regressions. Both autonomy measures are correlated so the horserace regression in specification (4) does not produce statistically conclusive results. However, it is worth noting that the coefficient on CBA is reduced only by one-third when turnover of central bank governors is included (see specifications (1) and (3)), but the coefficient on turnover of central bank governors falls by about two-thirds in the specification that also includes CBA (specifications (3) and (4)).<sup>18</sup>

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<sup>16</sup>The probit model is estimated for 24 emerging market economies over 1960–2004. The data are five-year averages. For the purposes of this section, the group of emerging markets includes Argentina, Brazil, Chile, China, Colombia, Czech Republic, Dominican Republic, Ecuador, Egypt, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, and Venezuela.

<sup>17</sup>See Catão and Terrones (2005) and the IMF’s May 2001 *World Economic Outlook* for an analysis of the relationship between fiscal deficits and inflation. Alesina and Summers (1993) document the broad correlation between measures of CBA and average inflation. Boschen and Weise (2003) find that U.S. inflation is a useful predictor of inflation spurts in the OECD countries. Ghosh and others (1997) provide evidence that the fixed exchange rate regime can help reduce inflation, although in the long term, the currency peg may incur large output and inflation costs if it is not supported by appropriate policies and breaks down (Mishkin, 1999).

<sup>18</sup>The time series data on central bank autonomy were constructed as follows. First, we identified years in which there was a significant change in the CBA-related legislation in each country. Subsequently, we took the simplifying assumption that CBA before the break-year was the same as autonomy as of the end of the 1980s; and CBA after the break-year equals actual autonomy as of 2003. This assumption introduces measurement error into our CBA variable, but the size of this measurement error is limited by the fact that most changes in CBA occurred over the past couple of decades (Cukierman, 2005) and our regressions use five-year data averages.

**Table 7. Inflation in Emerging Markets (Probit Estimates, Five-Year Averages)<sup>1</sup>**

Dependent Variable	Probability of Achieving Low Inflation			
	(1)	(2)	(3)	(4)
Central bank autonomy	0.57*	0.73**	...	0.37
Turnover of central bank governors <sup>2</sup>	...	...	-5.9	-2.2
Openness <sup>3</sup>	0.88***	0.61**	0.86***	0.95***
Fiscal balance/financial depth <sup>4</sup>	0.21	0.53* <sup>1</sup>	0.07	0.16
Inflation in advanced economies <sup>5</sup>	-7.29***	-6.1***	-9.44***	-9.27***
Pegged exchange rate regime <sup>6</sup>	57.4***	51.1***	53.8***	49.0**
Sample	1960–2004	1960–2004	1960–2004	1960–2004
Number of observations <sup>1</sup>	107	111	85	78

Sources: IMF, *International Financial Statistics*; Reinhart and Rogoff (2002); World Bank, *World Development Indicators*; IMF, *World Economic Outlook*; and authors' calculations.

<sup>1</sup>Low inflation is defined as annual inflation below 10 percent. The probability is scaled between 0 and 100. All data are five-year averages. Explanatory variables are lagged by one period (that is, by one five-year average), except in specification (2) where the fiscal balance/financial depth ratio is contemporaneous. \*\*\*denotes statistical significance at the 1 percent level, \*\*denotes significance at the 5 percent level, and \*denotes statistical significance at the 10 percent level.

<sup>2</sup>Turnover of the central bank governors. Higher turnover may be associated with lower central bank autonomy.

<sup>3</sup>Trade in percent of GDP.

<sup>4</sup>Central government balance relative to the depth of financial sector (measured by narrow money).

<sup>5</sup>Expressed as a percentage. The group of advanced economies consists of Australia, Canada, France, Germany, Italy, the United Kingdom, and the United States.

<sup>6</sup>The dummy takes value of 1 (peg) or 0 (otherwise) and is calculated from the Reinhart-Rogoff (2002) data set.

The model confirms the very important role of the inflation determinants other than CBA. Because average openness in the sample increased from approximately 30 to 60 percent over the past four decades, globalization has increased the probability of low inflation by about 20 percentage points in the whole group of emerging markets. The model also attributes a significant weight to the inflation performance in advanced economies. The disinflation that took place there in the early 1980s is estimated to have increased the likelihood of low inflation in emerging markets by 30 percentage points or more. Fiscal policy—a traditional source of inflation pressure—is also identified as an important determinant of inflation.<sup>19</sup> Finally, a fixed exchange rate regime can on an average improve chances of attaining low

<sup>19</sup>In some countries, fiscal deficits may have fallen after greater CBA constrained the ability of governments to monetize. In our empirical analysis, however, we assume that any changes to the fiscal deficit are exogenous. This assumption *reduces* the likelihood that we will indeed find a relationship between CBA and inflation.

inflation, although sustaining currency pegs in emerging markets has proven difficult in the long term.<sup>20</sup>

## V. Lessons Emerging from Global Trends

The analysis of disaggregated CBA scores has revealed that legal frameworks for most central banks in our sample share several common principles. We have identified four such broad principles that seem to represent the consensus view among policymakers, irrespective of the level of economic development of the countries in which they operate. All four principles discussed below are consistent with the academic views on how policymakers should achieve separation between monetary and fiscal policies, and more broadly limit the impact of political cycle on the conduct of monetary policy.<sup>21</sup>

### Consensus Views

#### *Principle 1: Set price stability as the primary objective of monetary policy*

Almost all central banks are legally obliged to pursue price stability as one of their primary objectives. Central banks in some countries have been assigned more than one objective, but price stability has often been given priority status. Typically, the central bank law formulate0s the objectives of the central bank in a manner that identifies price stability as the most effective way in which the central bank can contribute to economic growth.<sup>22</sup> This approach is in sharp contrast with policies of the 1970s in a number of countries, whereby central banks were expected to channel financial resources to priority sectors, thereby making them akin to development banks. The current approach to CBA acknowledges that governments may have several competing economic objectives, particularly in the short term. Accordingly, they may tend to ignore the medium-term inflationary effects of an expansionary monetary policy. This time-inconsistency causes a credibility problem. Therefore, entrusting price stability to an autonomous agency (that is, the central bank) helps strengthen credibility.

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<sup>20</sup>See the September 2004 issue of the IMF's *World Economic Outlook* for a discussion of recent developments in exchange rate regimes in emerging markets.

<sup>21</sup>See Lybek (2004) and Arnone, Laurens, and Segalotto (2006a).

<sup>22</sup>China is of particular interest as a country where the objective of monetary policy is to maintain the stability of the currency and thereby promote economic growth (see Laurens and Maino, forthcoming). The United States is another example of a country that does not have clearly ranked macroeconomic objectives at the statutory level. However, it is well understood that price stability is a precondition for achieving this mix of objectives.

***Principle 2: Curtail direct lending to governments***

Most central banks have provisions in place that limit their ability to provide unrestricted credit to the government. Today, almost all central bank laws stipulate that lending to the government, if allowed at all, cannot be automatic, and must be temporary and subject to quantitative limits. Furthermore, the ban on central bank participation in the primary market for public debt—a ban that was not applied on a wide scale in the late 1980s—has now spread to a large group of countries and is a distinctive characteristic of the most recent legislation. In addition, the provision that, when available, central bank credit to the government should be at market rates, has also become a widespread practice.

Therefore, a consensus view has emerged that strong monetary policy requires direct central bank lending to the government be limited in nature, that is, generally short term (or temporary) with restrictions on the amount. Setting the interest rate on such borrowing with reference to market interest rates strengthens the autonomy of the central bank. That said, direct central bank credit is intended to facilitate short-term cash management by the treasury in countries with shallow money markets or a weak public debt management framework (Laurens, 2005).

***Principle 3: Ensure full autonomy for setting the policy rate***

Most central banks have been granted full autonomy for setting their policy rate. At the most basic level, this condition is necessary for the central bank to pursue its goals. But from another angle, such a practice also suggests that most policymakers have accepted the view that a policy rate (typically a short-term interbank interest rate) is the appropriate operational target of monetary policy.<sup>23</sup> Therefore, the central bank should be granted full autonomy to set its policy rate. A corollary to that consensus view is the desire to ensure that the central bank has full autonomy for the design of its monetary policy instruments, that is, the tools to achieve the operational target of monetary policy.

***Principle 4: Ensure no government involvement in policy formulation***

That no government approval should be required for the formulation of monetary policy is a fourth principle that has been adopted by the majority of central banks around the world. A corollary to that principle is the existence of procedures to resolve conflicts between the central bank and the government, as is apparent from the high degree of correlation between the scores on these two criteria among countries. Furthermore, when such procedures for conflict resolution are in place, government representation in

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<sup>23</sup>The operational target can be defined as the variable that the central bank aims at controlling and indeed can control to a very large extent on a day-by-day basis through the use of its monetary policy instruments.

a policymaking board (that is, the central bank board) is not necessary. This observation is also supported by the high correlation of scores for this criterion with the two preceding ones (that is, no government approval for policy formulation and existence of conflict resolution procedures).

### Departure from the Literature: The Role of Central Banks in Bank Supervision

The analysis in Section III revealed that central banks in many emerging market and developing countries have retained their key role in the area of banking supervision. Although less pervasive, such practice is also observed in a few large advanced economies. This practice goes against the argument often made in the literature that implementation of monetary policy and banking supervision are two separate functions and that underlying structural problems in the financial sector should be addressed directly by a specialized agency.<sup>24</sup> This argument is based on the experience in some countries that relaxing monetary policy to mitigate financial sector problems, which the central bank may be more tempted to do if it is in charge of banking supervision, may aggravate the financial sector problems and undermine monetary policy.

However, practical considerations have led to a departure from these conceptual arguments.<sup>25</sup> In emerging markets and developing countries, the greater availability of skilled staff and resources at the central bank has often played a role in deciding whether supervisory functions should be retained at the central bank. There is also the view that, given the increased CBA, in particular in emerging markets and developing countries, locating financial supervisory functions in the central bank allows supervisors to “piggyback” and enjoy the same degree of autonomy. The considerations that have led a number of central banks to increase their focus on financial stability issues also support a departure from the conceptual arguments presented in the literature.<sup>26</sup>

In addition, recent empirical evidence by Arnone and Gambini (2007) shows that a higher degree of compliance with the Basel Core Principles is achieved by those countries implementing an integrated supervision of banks together with securities and/or insurance companies; they also find some statistically significant results in favor of placing both banking supervision and an integrated supervision inside the central bank.

Finally, price stability and financial sector soundness may be compatible, at least in the longer term.<sup>27</sup> Hence, entrusting monetary policy implemen-

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<sup>24</sup>See Arnone and Gambini (2007) for a review of the literature.

<sup>25</sup>See Arnone and Gambini (2007) for a review of the literature; and Quintyn and Taylor (2002) for an earlier discussion on the location of supervisory functions.

<sup>26</sup>Čihák (2006) discusses the surge in financial stability reports published by central banks.

<sup>27</sup>While inadequate monetary policies could lead to inflation and contribute to the unsoundness of the financial system, an unsound financial system could lead to a systemic financial crisis and impinge on monetary policy and, thereafter, on price stability.

tation and financial supervision to the central bank could be desirable, particularly if the central bank has a clear objective and enjoys a high degree of autonomy and accountability and, therefore, will not be tempted to use second-best instruments (in our case monetary policy) to achieve financial stability objectives.<sup>28</sup> Therefore, the argument presented in much of the literature that central banks should not be involved in supervisory functions is open to question, and it is not infrequent for central bank laws to prescribe the soundness of the financial system as an objective that is subordinated to medium-term price stability.

### Sequencing of Reforms

Historical trends suggest a possible sequencing of reforms to enhance CBA, which associates the two subcomponents of CBA (that is, economic and political) with structural changes in the economy and financial system. The process of improvement in CBA generally starts with establishing the political foundations of an autonomous central bank; this is followed by steps to strengthen operational autonomy; and the process ends in the political autonomy area in terms of increased autonomy for policy formulation and the appointment of senior management.

#### *Step 1: Clarify objectives and establish basic instrument autonomy*

Establishing clear objectives early on in the process of central bank modernization is critical for setting a legal framework for the central bank, which ensures a proper allocation of responsibilities between government agencies. Conceptual considerations as well as practice point to price stability as the most desirable primary objective for the central bank.

Concomitantly, a minimum level of economic autonomy is required. In this process, instrument autonomy (that is, the ability for the central bank to conduct liquidity management independently of budget financing considerations) is an important first step toward establishing an autonomous central bank. In particular, early on in the process, limits must be placed on the ability of the government to obtain central bank credit, or on the ability of commercial banks to have discretionary access to central bank credit, so that the central bank can control its balance sheet. Such measures are critical for enhancing the control of the central bank over the money supply.<sup>29</sup>

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<sup>28</sup>See, in particular, Bernanke (2007, p. 2) indicating that the “Fed’s ability to deal with diverse and hard-to-predict threats to financial stability depends critically on the information, expertise and powers that it holds by virtue of being both a bank supervisor and a central bank.”

<sup>29</sup>See Laurens (2005) for a review of country experiences in this area and Fry (1998) for the relationship between the central bank’s instrument autonomy and its ability to promote fiscal discipline.

### ***Step 2: Strengthen further instrument autonomy***

In the early stages of financial market development, establishing a clear separation between liquidity management by the central bank and the financing of the budget may not be feasible. However, as already discussed, direct central bank credit to the government should be at market rates, and intended to facilitate short-term cash management by the treasury. There are several conditions for moving toward full autonomy for monetary policy and public debt management, which will allow separation of monetary and fiscal policy responsibilities. Especially important is the development of a government securities market, where market forces determine the conditions under which a budget deficit may be financed,<sup>30</sup> and a public debt management capacity at the treasury. This makes it possible to phase out direct central bank credit to the government.

### ***Step 3: Strengthen further political autonomy***

The last stage in the process of building an autonomous central bank has to do with strengthening further political autonomy. As evidenced in the results in Table 3, only advanced economies have achieved high levels of political autonomy (that is, above 50 percent) with regard to the appointment of their management of governing bodies. Therefore, the last stage in CBA involves strengthening further the legal provisions that deal with the potential for political interference in the operations of the central bank, including having the governor and the central bank board appointed more autonomously and for longer terms, and with even less political interference.

Such provisions help to establish a total separation between monetary and fiscal policies. In such an environment, financial markets are expected to react to monetary policy signals, and the credibility of monetary policy is critical for maintaining orderly market conditions. However, in view of the conditions that are required to establish such separation (most importantly efficient money markets and the market for government securities), not all countries can reach this ultimate stage of CBA. For countries that cannot establish a complete separation, there is an even stronger case for establishing coordination mechanisms to supplement the role of the markets as a means to ensure financial discipline.<sup>31</sup>

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<sup>30</sup>See Laurens (2005) for the benefits that participation in a monetary union can bring to help reach the critical stage for the emergence of an active money market.

<sup>31</sup>Financial programming frameworks can be instrumental in preventing inconsistencies in the macroeconomic policy mix. Committees for the coordination of liquidity management at the central bank and government cash management play a useful role for the day-to-day implementation of monetary and fiscal policies—the microperspective. See Laurens and de la Piedra (1998) for a discussion.



## VI. Conclusions

Building on extensive theoretical and empirical research that highlights the macroeconomic advantages of CBA, central banks in most countries have been granted higher levels of autonomy over the past couple of decades, irrespective of the country's income level. Central banks in advanced economies continue to enjoy greater autonomy than those in emerging markets and developing countries, but at the end of 2003 all country groups exhibited indexes of political and economic autonomy that were higher than those reached by advanced economies in the late 1980s.

Almost all central banks have been mandated to set price stability as one of the objectives of monetary policy, are free to set the policy rate, and are not required to provide automatically direct credit to the government. These trends reflect what can be considered as the consensus view about CBA among policymakers. However, in contrast to the theoretical views on CBA, many central banks—especially in emerging markets and developing countries, but also in a few advanced economies—have retained their responsibilities in the area of financial supervision.

Our analysis also suggests that the movement toward greater CBA has paid off in terms of sustained low average inflation levels in many emerging market and developing countries. This result holds up even after the analysis accounts for the other determinants of inflation such as fiscal deficits or price movements abroad.

It is also worth noting the higher scores of CBA among regional central banks, whether they operate in advanced economies (such as the ESCB) or in developing countries (such as the BCEAO, BEAC, and ECCB). Given that participation in a currency union can be beneficial for market development, and that an active money market is required to eliminate direct central bank credit to the government (or central bank participation in primary markets for government securities), currency unions can help enhance the autonomy of the central bank.

A number of emerging market and developing countries, but also some advanced economies, continue to strengthen their instrument autonomy. However, looking forward, the main challenge will be to further boost political autonomy of central banks, mainly by ensuring that central bank governing bodies are appointed without much political interference and for longer terms. The final stage in the evolution of CBA implies a *de jure* complete separation between fiscal and monetary policies. However, that does not rule out the relevance of mechanisms for monetary and fiscal policy coordination to supplement the role of markets as a means to ensure financial discipline, although such mechanisms will play a greater role in those countries that have not yet reached the ultimate stage of CBA.

## APPENDIX I

See Table A1.

Table A1. Summary Indexes of Central Bank Autonomy, Late 1980s to 2003									
Central Banks (number)	Late 1980s (Narrow index for Cukierman, 1992) (Full index for GMT, 1991)			End-2003					
				Narrow index			Full index		
	Political	Economic	Overall	Political	Economic	Overall	Political	Economic	Overall
<b>All central banks</b>									
Full sample (163)	...	...	...	...	...	...	0.49	0.68	0.59
GMT sample (18)	0.36	0.59	0.48	...	...	...	0.74	0.81	0.77
Cukierman (1992)sample (50)	0.28	0.39	0.33	0.52	0.82	0.66	0.42	0.73	0.57
<b>Advanced economies</b>									
European Central Bank							1.00	1.00	1.00
Australia	0.38	0.75	0.56				0.25	1.00	0.63
Austria	0.38	0.75	0.56				1.00	0.88	0.94
Belgium	0.13	0.75	0.44				1.00	0.88	0.94
Canada	0.50	0.88	0.69				0.38	0.88	0.63
Cyprus							0.38	0.75	0.56
Denmark	0.38	0.63	0.50				0.50	1.00	0.75
Finland	0.40	0.00	0.22	1.00	1.00	1.00	1.00	0.88	0.94
France	0.25	0.63	0.44				1.00	0.88	0.94
Germany	0.75	0.88	0.81				1.00	0.75	0.88
Greece	0.25	0.25	0.25				1.00	0.63	0.81
Hong Kong							0.38	0.38	0.38
Iceland	0.50	0.20	0.36	0.33	1.00	0.64	0.50	1.00	0.75
Ireland	0.38	0.50	0.44				1.00	0.63	0.81
Italy	0.50	0.13	0.31				1.00	0.63	0.81
Japan	0.13	0.63	0.38				0.13	0.75	0.44
Korea	0.20	0.20	0.20	0.50	0.80	0.64	0.25	0.88	0.56
Luxembourg	0.40	0.20	0.31	1.00	1.00	1.00	1.00	0.88	0.94
Netherlands	0.75	0.50	0.63				1.00	0.75	0.88

New Zealand	0.00	0.38	0.19				0.25	0.63	0.44
Norway	0.33	0.20	0.27	0.50	1.00	0.73	0.50	1.00	0.75
Portugal	0.13	0.25	0.19				1.00	0.63	0.81
Singapore	0.25	0.25	0.25	0.50	0.40	0.45	0.38	0.38	0.38
Spain	0.25	0.38	0.31				1.00	0.75	0.88
Sweden	0.25	0.40	0.32	0.83	1.00	0.91	0.88	1.00	0.94
Switzerland	0.63	0.88	0.75				0.88	1.00	0.94
United Kingdom	0.13	0.63	0.38				0.38	1.00	0.69
United States	0.63	0.88	0.75				0.63	0.88	0.75
Full sample (27)	...	...	...	...	...	...	0.70	0.81	0.75
GMT (1991)sample (18)	0.36	0.59	0.48	...	...	...	0.74	0.81	0.77
Cukierman (1992)sample (7)	0.33	0.21	0.28	0.67	0.89	0.77	0.64	0.86	0.75
ESCB (13)	...	...	...	...	...	...	1.00	0.78	0.89
<b>Emerging markets</b>									
Argentina	0.33	0.60	0.45	0.83	1.00	0.91	0.75	0.75	0.75
Brazil	0.17	0.00	0.09	0.33	1.00	0.64	0.50	0.75	0.63
Bulgaria							1.00	0.75	0.88
Chile	0.17	0.20	0.18	0.50	1.00	0.73	0.50	0.88	0.69
China	0.25	0.40	0.32	0.33	1.00	0.64	0.38	0.75	0.56
Croatia <sup>1</sup>	0.17	0.00	0.09	1.00	1.00	1.00	1.00	0.75	0.88
Czech Rep.							0.88	0.88	0.88
Egypt	0.50	0.60	0.55	0.17	0.80	0.45	0.13	0.63	0.38
Estonia							0.63	1.00	0.81
Hungary	0.17	0.60	0.36	0.67	1.00	0.82	0.88	1.00	0.94
India	0.17	0.60	0.36	0.50	0.60	0.55	0.25	0.75	0.50
Indonesia	0.17	0.40	0.27	0.67	1.00	0.82	0.63	0.75	0.69
Israel	0.33	0.20	0.27	0.33	0.80	0.55	0.13	0.63	0.38
Jordan							0.25	0.50	0.38
Latvia							1.00	1.00	1.00
Lithuania							0.88	0.75	0.81
Malaysia	0.17	0.60	0.36	0.50	0.80	0.64	0.25	0.75	0.50
Malta	0.50	0.40	0.45	0.67	1.00	0.82	0.50	0.88	0.69
Mexico	0.50	0.20	0.36	0.67	1.00	0.82	0.63	0.75	0.69
Morocco	0.00	0.40	0.18	0.50	0.80	0.64	0.25	0.75	0.50
Pakistan	0.17	0.20	0.18	0.67	0.80	0.73	0.38	0.63	0.50

Table A1. continued

Central Banks (number)	Late 1980s (Narrow index for Cukierman, 1992) (Full index for GMT, 1991)			End-2003					
				Narrow index			Full index		
	Political	Economic	Overall	Political	Economic	Overall	Political	Economic	Overall
Peru	0.50	0.60	0.55	0.50	1.00	0.73	0.38	1.00	0.69
Philippines	0.33	0.60	0.45	0.83	0.80	0.82	0.63	0.63	0.63
Poland	0.00	0.20	0.09	1.00	1.00	1.00	0.88	0.88	0.88
Romania	0.33	0.20	0.27	0.83	1.00	0.91	0.63	0.75	0.69
Russia							0.50	0.38	0.44
Slovak Rep.							0.50	0.75	0.63
Slovenia <sup>1</sup>	0.17	0.00	0.09	1.00	1.00	1.00	0.88	0.75	0.81
South Africa	0.00	0.20	0.09	0.17	0.40	0.27	0.13	0.38	0.25
Thailand	0.33	0.40	0.36	0.33	0.40	0.36	0.50	0.38	0.44
Turkey	0.50	0.60	0.55	0.67	1.00	0.82	0.63	1.00	0.81
Venezuela	0.33	0.20	0.27	0.67	1.00	0.82	0.50	0.88	0.69
Full sample (32)	...	...	...	...	...	...	0.56	0.75	0.65
Cukierman (1992) sample (22)	0.27	0.38	0.32	0.56	0.87	0.70	0.47	0.75	0.61
<b>Developing countries</b>									
Afghanistan							0.50	0.75	0.63
Albania							0.75	0.75	0.75
Algeria							1.00	0.63	0.81
Angola							0.25	0.38	0.31
Armenia							0.88	0.75	0.81
Aruba							0.75	0.38	0.56
Azerbaijan							0.75	0.50	0.63
Bahamas	0.20	0.60	0.38	0.33	0.60	0.45	0.13	0.50	0.31
Bahrain							0.25	0.63	0.44
Bangladesh							0.00	0.38	0.19
Barbados	0.17	0.40	0.27	0.17	0.80	0.45	0.13	0.63	0.38
BCEAO <sup>2</sup>							0.50	0.88	0.69
BEAC <sup>3</sup>							0.50	0.88	0.69

Belarus							0.50	0.38	0.44
Belize							0.13	0.63	0.38
Bermuda							0.13	0.75	0.44
Bhutan							0.13	0.50	0.31
Bolivia	0.33	0.40	0.36	0.67	1.00	0.82	0.50	1.00	0.75
Bosnia & Herz. <sup>1</sup>	0.17	0.00	0.09	1.00	1.00	1.00	1.00	0.75	0.88
Botswana	0.00	0.60	0.27	0.17	0.80	0.45	0.13	0.75	0.44
Burundi							0.38	0.38	0.38
Cambodia							0.38	0.75	0.56
Cape Verde							0.38	0.63	0.50
Cayman Islands							0.13	0.63	0.38
Colombia	0.17	0.40	0.27	0.33	1.00	0.64	0.13	0.88	0.50
Comoros							0.13	0.75	0.44
Costa Rica	1.00	0.60	0.82	0.67	1.00	0.82	0.50	0.88	0.69
Cuba							0.38	0.25	0.31
Dominican Rep.							0.25	0.88	0.56
ECCB <sup>4</sup>							0.63	0.63	0.63
Ecuador							0.88	1.00	0.94
El Salvador							0.63	1.00	0.81
Eritrea							0.38	0.63	0.50
Ethiopia	0.20	0.60	0.38	0.33	0.80	0.55	0.38	0.63	0.50
Fiji							0.13	0.63	0.38
Georgia							0.88	0.63	0.75
Ghana	0.17	0.40	0.27	0.50	0.80	0.64	0.38	0.63	0.50
Guatemala							0.38	0.88	0.63
Guinea Rep.							0.63	0.63	0.63
Guyana							0.25	0.75	0.50
Haiti							0.50	0.50	0.50
Honduras	0.50	0.60	0.55	0.33	1.00	0.64	0.13	0.88	0.50
Iran							0.00	0.75	0.38
Iraq							0.50	0.75	0.63
Jamaica							0.13	0.63	0.38
Kazakhstan							0.63	0.88	0.75
Kenya	0.20	0.60	0.38	0.33	0.80	0.55	0.13	0.75	0.44
Kuwait							0.13	0.50	0.31
Kyrgyz Rep.							1.00	0.75	0.88
Laos							0.13	0.63	0.38

Table A1. concluded

Central Banks (number)	Late 1980s (Narrow index for Cukierman, 1992) (Full index for GMT, 1991)			End-2003					
				Narrow index			Full index		
	Political	Economic	Overall	Political	Economic	Overall	Political	Economic	Overall
Lebanon	0.40	0.60	0.49	0.50	0.80	0.64	0.25	0.75	0.50
Lesotho							0.25	0.63	0.44
Liberia							0.38	0.63	0.50
Libya							0.25	0.63	0.44
Macau							0.50	0.38	0.44
Macedonia <sup>1</sup>	0.17	0.00	0.09	1.00	1.00	1.00	1.00	0.75	0.88
Madagascar							0.50	0.75	0.63
Malawi							0.13	0.63	0.38
Maldives							0.38	0.38	0.38
Mauritius							0.50	0.50	0.50
Moldova							0.75	0.75	0.75
Mongolia							1.00	0.50	0.75
Mozambique							0.38	0.50	0.44
Myanmar							0.25	0.50	0.38
Namibia							0.25	0.50	0.38
Nepal	0.00	0.20	0.09	0.67	0.80	0.73	0.38	0.63	0.50
Netherlands Ant.							0.38	0.50	0.44
Nicaragua	0.40	0.60	0.49	0.33	1.00	0.64	0.13	1.00	0.56
Nigeria	0.17	0.60	0.36	0.33	0.80	0.55	0.25	0.63	0.44
Oman							0.13	0.50	0.31
Palestine							0.38	0.63	0.50
Panama	0.40	0.00	0.22	0.50	0.00	0.27	0.50	0.25	0.38
Papua New Guinea							0.63	0.63	0.63
Paraguay							0.25	0.75	0.50
Qatar	0.17	0.00	0.09	0.17	0.20	0.18	0.13	0.25	0.19
Rwanda							0.50	0.63	0.56
São Tomé & Príncipe							0.25	0.38	0.31
Saudi Arabia							0.25	0.75	0.50
Serbia Mont. <sup>1</sup>	0.17	0.00	0.09	0.83	0.80	0.82	0.63	0.63	0.63

Seychelles							0.13	0.38	0.25
Sierra Leone							0.50	0.63	0.56
Solomon Islands							0.13	0.63	0.38
Sri Lanka							0.50	0.63	0.56
Sudan							0.00	0.63	0.31
Suriname							0.13	0.63	0.38
Syrian Arab Rep.							0.38	0.50	0.44
Tajikistan							1.00	0.63	0.81
Tanzania	0.17	0.60	0.36	0.33	0.80	0.55	0.13	0.63	0.38
Timor-Leste							0.75	0.63	0.69
Tonga							0.25	0.38	0.31
Trinidad and Tobago							0.38	0.50	0.44
Tunisia							0.63	0.75	0.69
Turkmenistan							0.63	0.75	0.69
Uganda	0.33	0.60	0.45	0.67	0.80	0.73	0.50	0.63	0.56
Ukraine							0.88	0.75	0.81
United Arab Emir.							0.38	0.50	0.44
Uruguay	0.17	0.00	0.09	0.67	0.80	0.73	0.63	0.63	0.63
Uzbekistan							0.75	0.63	0.69
Vanuatu							0.13	0.63	0.38
Vietnam							0.38	0.50	0.44
Yemen Rep.							0.38	0.50	0.44
Zambia	0.33	0.40	0.36	0.67	0.60	0.64	0.38	0.50	0.44
Zimbabwe	0.17	0.60	0.36	0.17	0.60	0.36	0.25	0.63	0.44
Full sample (103)	...	...	...	...	...	...	0.41	0.63	0.52
Cukierman (1992) sample (21)	0.27	0.45	0.35	0.42	0.75	0.57	0.29	0.67	0.48
Monetary unions (3)	...	...	...	...	...	...	0.54	0.79	0.67

Note: ESCB = European System of Central Banks; GMT = Grilli, Masciandaro, and Tabellini (1991).

<sup>1</sup>Indexes for Bosnia, Croatia, Slovenia, Serbia Montenegro, and Macedonia for the late 1980s are those of Yugoslavia at the time.

<sup>2</sup>The Central Bank of West African States (BCEAO) includes Benin, Burkina Faso, Côte d'Ivoire, Guinée Bissau, Mali, Niger, Senegal, and Togo.

<sup>3</sup>The BEAC (Bank of Central African States) includes Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea, and Gabon.

<sup>4</sup>The ECCB and (Eastern Caribbean Central Bank) includes Anguilla, Antigua-Barbuda, Dominica, Grenada, Montserrat, St. Kitts-Nevis, St. Lucia, and St. Vincent and the Grenadines.

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