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Measures of Central Bank Autonomy: Empirical Evidence for OECD, Developing, and Emerging Market Economies

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Measures of Central Bank Autonomy: Empirical Evidence for OECD, Developing, and Emerging Market Economies

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Abstract

This paper presents an update of the Grilli-Masciandaro-Tabellini (GMT) index of central bank (CB) autonomy, based on CB legislation as of end-2003. The index is applied to a set of OECD and developing countries, and emerging market economies. For a smaller set of countries, the paper presents a reconstruction of the GMT index based on Cukierman (1992) and assesses changes in CB autonomy between 1992 and 2003. The results point to a significant increase in CB autonomy, in particular for developing countries. In most cases, this improvement has involved a three-stage process: an initial stage in which the political foundations for CB autonomy are laid; a second stage in which operational autonomy develops; and a final stage in which CBs gain further political autonomy in terms of policy formulation and the appointment of senior management.

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I. Introduction and Data

This paper presents two applications of the indicator of central bank (CB) autonomy defined by Vittorio Grilli, Donato Masciandaro, and Guido Tabellini, and hence called the GMT indicator.[2] The first application is an update of their 1991 contribution. The second is a reconstruction of the same indicator based on information included in the Cukierman (1992) legal indicator. Thereafter, we calculate the value of the GMT indicator at the beginning of the 1990s and at the end of 2003. This will enable us to measure changes in the degree of CB autonomy over that period.

The sample includes: the 18 Organisation for Economic Cooperation and Development (OECD)-member countries studied by Grilli, Masciandaro, and Tabellini; 12 emerging market economies; and 10 developing countries.[3] The 18 OECD-member countries are: Australia, Austria, Belgium, Canada, Denmark, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Portugal, Spain, Switzerland, the United Kingdom, and the United States. The emerging market legal regulations considered here are those of: Brazil, the Czech Republic, Egypt, India, Israel, Mexico, Peru, the Philippines, Poland, Russia, South Africa, and Tunisia; while the developing country legislations are those of: Armenia, El Salvador, Guatemala, Islamic Republic of Iran, Morocco, Nigeria, Sri Lanka, Uganda, the West African Economic and Monetary Union (WAEMU, comprising Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo), and Zambia.

In the first application, we update the GMT measures of economic and political autonomy for the sample of OECD countries to obtain a quantitative and qualitative comparison of the legislative performance as of end-2003 against that of 13 years earlier, and we draw conclusions about their evolution. Then, we examine these measures calculated for the other two groups of countries.

The second application aims at applying the GMT methodology to a sample of developing and emerging market economies. We calculate a historical measure of CB autonomy for those countries, using the legal data in Cukierman (1992). While not fully consistent with the data in GMT, this information allows us to construct an indicator as close as possible to the GMT indicator for the emerging market economies and developing countries that are included in both our own sample and that of Cukierman (1992).[4] These countries are: Brazil, Egypt, India, Israel, Mexico, Morocco, Nigeria, Peru, the Philippines, Poland, South Africa, Uganda, and Zambia. We apply suitably standardized measures to ensure the closest possible comparison with the complete measures that are available only for the OECD countries.

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[2] See Grilli, Masciandaro, and Tabellini (1991), and Box 1. See also Arnone, Laurens, and Segalotto (2006) for a survey of the literature on the measurement of CB autonomy.

[3] The analysis of the EMU is a useful complement to that of the EMU member states included in GMT.

[4] See Cukierman (1992) and Box 1.

Box 1. GMT and Cukierman Indices of Central Bank Autonomy

Grilli, Masciandaro, and Tabellini (GMT)

GMT (1991) compare the monetary regimes of 18 OECD countries by building two simple additive legal measures of central bank autonomy; the first one focuses on political features (autonomy in setting objectives), the second focuses on economic and financial features (autonomy with respect to instruments).

By defining political autonomy as the ability of the central bank to select the final objectives of monetary policy, the authors assign to the central banks one point for each of the following eight criteria if satisfied: (i) the governor is appointed without government involvement; (ii) the governor is appointed for more than five years; (iii) the board of directors is appointed without government involvement; and (iv) it is appointed for more than five years; (v) there is no mandatory participation of government representatives in the board; (vi) no government approval is required in formulating monetary policy; (vii) there are requirements in the charter forcing the central bank to pursue monetary stability amongst its primary objectives; and (viii) there are legal protections that strengthen the central bank's position in the event of a conflict with the government.

The economic autonomy index is an indicator of autonomy in the selection of instruments, and the central bank under examination gets one point for each of the following criteria if satisfied: (i) there is no automatic procedure for the government to obtain direct credit facilities from the central bank; (ii) direct credit facilities to the government are extended at market interest rates; (iii) the credit is extended on a temporary basis; (iv) and for a limited amount; (v) the central bank does not participate in the primary market for public debt; (vi) the central bank is responsible for setting the discount rate; and (vii) the central bank has no responsibility for overseeing the banking sector (two points) or shares this responsibility with other institutional entities (one point).

The combination of the two indices (which rise with an increase in autonomy) is carried out by adding up all positive attributes. The overall index is defined as the total sum of the points the central bank earned under every criterion, i.e., the sum of the political and the economic indices.

Cukierman

Cukierman's (1992) de jure index of political and economic autonomy (LVAU: Legal Variables–Unweighted and LVAW: Legal Variables–Weighted) is a very comprehensive index of central bank autonomy. It is made up of 16 variables which are grouped under four main headings:

- First heading (CEO, chief executive officer): it contains proxies for (i) the length of the term of office of the governor; (ii) the entity delegated to appoint him/her; (iii) the provisions for his/her dismissal; (iv) and his/her ability to hold another office.
- Second heading (PF, policy formulation): it contains proxies for (v) the entity responsible for formulating monetary policy; (vi) the rules concerning the resolution of conflicts between the central bank and the government; and (vii) the degree of the bank's participation in formulating the government budget.
- Third heading (OBJ, objectives of the central bank): it contains proxies for (viii) the provisions of charters regarding primary monetary objectives—and the relative role of monetary stability.
- Fourth heading (LL, limitations on central bank lending to the government): it contains proxies for (ix) advances and (x) securitized lending; (xi) the authority that has control over the terms (maturity, interest rate and amount) of lending; (xii) the size of the circle of potential borrowers from the central bank; (xiii) the types of limitations on loans, where limits exist; (xiv) the maturity of possible loans; (xv) the limitations on interest rates applicable to these loans; (xvi) and prohibitions on central bank participation in the primary market for government securities.

Source: GMT (1991), Cukierman (1992), and Arnone, Laurens, and Segalotto (2006).

Most of the data on the legal framework were collected from the sources of the IMF's Monetary and Capital Market Department's Central Bank Legislation Database.[5] The data were subsequently supplemented, when necessary, with information from: (a) the Financial Sector Assessment Program (FSAP) documents; (b) the Code of Good Practices in Monetary and Financial Policies; (c) the IMF Reports on the Observance of Standards and Codes (ROSC). These reports are helpful in interpreting the central bank laws, particularly the aspects concerning banking supervision, and transparency of fiscal and monetary policy. They also allow the assessment of country practices in a way that would not be possible if one were to only analyze the body of laws and implementing regulations.[6]

The remainder of this paper is organized as follows. In Section II, we show the results of the update of GMT indices of CB autonomy in OECD countries. In Section III, we construct indices to measure political and economic autonomy for our sample of emerging market economies and developing countries. We then analyze progress towards autonomy in those economies and countries (Section IV). In Section V, we make an assessment of the changes over the period under review in OECD countries, emerging market economies, and developing countries, for which we have consistent data. Section VI concludes.

II. Updated Indicators of Central Bank Autonomy in Selected OECD Countries

Central bank autonomy in selected OECD countries, as measured by the indices for political and economic autonomy, has increased significantly. In most cases, the increase in autonomy is the result of a complete renovation of the legislation. Table 1 provides a summary comparison between the original indicator of autonomy for OECD countries as recorded in GMT (1991), and an update based on legislation as of end-2003. Results for each OECD country are provided in Appendix Table 1 and Appendix Table 2 (political and economic autonomy).

Political autonomy has increased sharply, rising from a mean score of 2.9 to a mean of 6.1 (5.9 excluding the European Central Bank (ECB)). In particular, regarding central banks in Europe, the increases in the indices of political autonomy are to a large extent the consequence of the convergence of central banks in Europe toward the Bundesbank model embodied by the European Central Bank ECB. As the Maastricht Treaty has been incorporated into national legislation, the result has been an "injection of autonomy" into the legislation of the central banks that are members of the European System of Central Banks

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[5] The legal sources consulted are summarized in Appendix I.

[6] These reports allow better assessment of current practices, in particular with regard to the implications for central bank autonomy of any formal or informal agreement that may be in place among the various public agencies involved in the formulation of economic policies.

(ESCB).[7] We can observe a particularly marked increase in political autonomy, where the number of banks with the highest possible score has increased from one to ten. Furthermore, while political autonomy has increased in all OECD countries, the gains are relatively larger among ESCB countries.

Table 1. Summary GMT Indices for OECD Countries

Mean Indexes	GMT 1991	GMT 2003
Political Autonomy	2.9	6.1
Of which Euro-Area central banks	3.0	8.0
Economic Autonomy	4.7	6.5
Of which Euro-Area central banks	4.0	5.9
Aggregate Index	7.6	12.6
Of which Euro-Area central banks	7.0	13.9

Source: Data from Grilli, Masciandaro, and Tabellini (1991) and authors' estimates. Detailed results are presented in Appendix Tables 1 and 2.

The most radical changes with regard to political autonomy have occurred in the areas of autonomy of objectives. One of the driving forces has been incorporating price stability as the objective of monetary policy into the legislation of ESCB countries under Article 105 of the Maastricht Treaty. Other driving forces in the sheltering of monetary policy from any form of political influence have to do with rules for appointing the central bank board (the top positions of the ECB are appointed by joint agreement of the governments of the participating states, under Article 109 of the Treaty); lesser participation of representatives of the executive branch in formulating or approving monetary policy; and curtailing government capacity to influence the decisions of the monetary authorities.[8]

Changes in *economic autonomy* have also been significant, albeit smaller than those in political autonomy. As shown in Table 1, the mean has risen from 4.7 to 6.5 (6.4 not counting the ECB). In addition, as shown in Table 2 and in contrast with developments in political autonomy, the distribution of the indices of economic autonomy for OECD countries is less dispersed than it was in the early 1990s. The number of ranking categories has also fallen from seven to four; and in this case as well, the influence of the Maastricht Treaty is quite evident, in particular Article 104, which prohibits any form of lending, direct or indirect, to any member state or public entity. It is evident that the central banks to have

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[7] The ESCB comprises the ECB and the national central banks (NBCs) of all EU Member States. The governors of the NCBs of EU Member States that have not adopted the euro do not participate in monetary policy decision-making for the euro area and such NCBs do not participate in the implementation of those decisions.

[8] Relevant in this regard is Article 107 of the Maastricht Treaty, which provides for autonomy of policy throughout the system. Neither the ECB nor the central banks of ESCB member states, nor any member of the boards of these institutions, is authorized to seek or take instructions from any other Community institution, from any government of a Member State, or from any other body, in exercising their own powers and carrying out their own responsibilities. This provision also requires this principle to be respected by the government of every participating state. Progress has been considerable, all in all: suffice it to note the outright leap in autonomy accomplished in Italy, France, Spain, Ireland, Greece, Portugal, and Belgium.

benefited most from these reforms are not only those of Italy, Spain, Ireland, and Portugal, but also the Danish central bank and the Bank of England, which are currently not participating in the final stage of monetary union. On the other hand, a slight dip in the score of the Bundesbank is evident, but this is a consequence of its loss of autonomy arising from the setting of the discount rate by a new institution (the ECB) that is at least equally autonomous.

Table 2. Distribution of GMT Indices for OECD Economies

Country	GMT 1991		GMT 2003	
	Political Autonomy Score	Ranking	Political Autonomy Score	Ranking
Australia	3	4	2	6
Austria	3	4	8	1
Belgium	1	6	8	1
Canada	4	3	3	5
Denmark	3	4	4	4
France	2	5	8	1
Germany	6	1	8	1
Greece	2	5	8	1
Ireland	3	4	8	1
Italy	4	3	8	1
Japan	1	6	1	7
Netherlands	6	1	8	1
New Zealand	0	7	2	6
Portugal	1	6	8	1
Spain	2	5	8	1
Switzerland	5	2	7	2
United Kingdom	1	6	3	5
United States	5	2	5	3
	Economic Autonomy Score	Ranking	Economic Autonomy Score	Ranking
Australia	6	2	8	1
Austria	6	2	7	2
Belgium	6	2	7	2
Canada	7	1	7	2
Denmark	5	3	8	1
France	5	3	7	2
Germany	7	1	6	3
Greece	2	6	5	4
Ireland	4	4	5	4
Italy	1	7	5	4
Japan	5	3	6	3
Netherlands	4	4	6	3
New Zealand	3	5	5	4
Portugal	2	6	5	4
Spain	3	5	6	3
Switzerland	7	1	8	1
United Kingdom	5	3	8	1
United States	7	1	7	2

Sources: Grilli, Masciandaro, and Tabellini (1991); and authors' estimates (updated data).

III. Autonomy Indicators for Emerging Markets and Developing Countries

As of end-2003, the mean indices of political and economic autonomy for our sample of emerging market economies and developing countries are somewhat lower than those reported for OECD countries, and the two sub-groups exhibit comparable performance. Table 3 shows the levels of the indices for our sample of emerging market economies and developing countries, consistent with the GMT methodology, as of end-2003. The mean value for political autonomy in emerging market economies and developing countries stands at 3.75 and 3.40, respectively, which is a significantly lower level than for OECD countries (6.1 at the same date). A similar result can be observed regarding economic autonomy, although the gap is somewhat smaller, 5.50 and 5.80 for emerging market economies and developing countries, respectively, against 6.50 for OECD countries.

Table 3. Summary GMT Indices for Emerging Economies and Developing Countries

	Emerging Economies 2003	Developing Countries 2003	OECD Countries	
			1991	2003
Political autonomy	3.75	3.40	2.90	6.10
Economic autonomy	5.50	5.80	4.70	6.50
Aggregate index	9.25	9.20	7.60	12.60

Source: Authors' estimates. See Appendix Tables 3 and 4 for detailed results.

However, the 2003 indices for emerging market economies and developing countries are higher than the GMT (1991) mean levels for OECD countries. Furthermore, as of end-2003, some of the non-OECD countries exhibit scores in line with those in OECD countries. These results suggest that the move toward greater central bank autonomy has spread over a large spectrum of countries, irrespective of the level of development of their financial markets. They also suggest that policymakers around the world generally agree with the position expressed by a number of parties and validated by empirical studies that an autonomous central bank can help improve macroeconomic performance.[9] As shown in Appendix I, this has entailed changes in central bank legislation in a number of emerging market economies and developing countries in the late 1990s and early 2000s.

In both market economies and developing countries, the mean levels for the economic indicators are higher than those for the political indicators. Thus it seems that the first steps toward greater central bank autonomy have been taken primarily in the design of instruments of monetary policy. This would be consistent with Fry (1998), who argues that in the case of developing countries, central banks with high instrument autonomy—even though policy autonomy may be low—can deal with fiscal dominance with some degree of success through sterilization operations.

Cases of countries with high central bank autonomy can be found among emerging market economies and developing countries (Table 4 and Appendix Tables 3 and 4). This is

[9] See Arnone, Laurens, and Segalotto (1996) for a survey of the literature on CB autonomy.

evidenced by the scores obtained by Poland, the Czech Republic, Peru, Mexico, Brazil, the Philippines and Tunisia among emerging market economies, and those obtained by Armenia, El Salvador, and Guatemala in developing countries. It is not accidental that, except for Tunisia, these countries have recent central bank laws (no earlier than 1991):

Table 4. Distribution of GMT Indices for Emerging Market Economies and Developing Countries

Country	Political Autonomy Score	Ranking	Economic Autonomy Score	Ranking
Emerging market economies				
Brazil	4	3	6	3
Czech Rep.	7	1	7	2
Egypt	1	6	5	4
India	2	5	5	4
Israel	1	6	5	4
Mexico	5	2	6	3
Peru	3	4	8	1
Philippines	5	2	5	4
Poland	7	1	7	2
Russia	4	3	3	5
South Africa	1	6	3	5
Tunisia	5	2	6	3
Developing countries				
Armenia	7	1	6	3
El Salvador	5	2	8	1
Guatemala	3	4	7	2
Iran	0	6	6	3
Morocco	2	5	6	3
Nigeria	2	5	5	4
Sri Lanka	4	3	5	4
Uganda	4	3	5	4
WAEMU	4	3	6	3
Zambia	3	4	4	5

Source: Authors' estimates.

- The performance of the laws in Brazil, the Czech Republic, Mexico, and Peru with regard to economic autonomy is noteworthy. For instance, lending to the executive branch or any public enterprise is explicitly prohibited in Brazil and Peru. In Mexico, such facilities are subject to a ceiling of 1.5 percent of the government's current expenses. Institutional progress, particularly in Brazil and Peru, appears in part to be the result of the hyperinflations both countries experienced at the end of the 1980s and in the first half of the 1990s.

- Among developing countries, Armenia offers an example of modern central bank legislation, including a high degree of political and economic autonomy. Progress in central bank autonomy in Armenia follows a period of high inflation, which certainly helped build the political consensus that eventually resulted in the promulgation, in 1996, of a new central bank. This policy choice was validated by the significant improvement in inflation performance in subsequent years.

- In El Salvador, Guatemala, and Iran,[10] the central bank is prohibited from any form of lending to the government, while in Armenia direct central bank lending to the government, while still authorized, should be at market interest rates.

We observe a concentration of positive valuations with regard to the formulation and primary objective of monetary policy. Such a finding suggests that conservatism, as underpinned by the objective of monetary stability, and autonomy, as embodied by autonomy in formulating monetary policy, have become the cornerstones of modern central banking.

The relatively higher scores on economic autonomy over political autonomy in emerging market economies and developing countries is clear when one compares the aggregate distributions (Figure 1). Even if political autonomy may still be concentrated primarily in the OECD countries—in part because all but six of these countries belong to the ESCB—the same does not hold true for economic autonomy (or instrument autonomy), which seems to be almost evenly distributed among the three groups of countries.

IV. Progress Towards Autonomy in Emerging Markets and Developing Countries

This section evaluates progress made by emerging market economies and developing countries with regard to central bank political and economic autonomy. We use the legal data with which Cukierman constructed his measure of legal autonomy in 1992. Then we construct two partial indicators, which are as close as possible to the indices proposed by GMT (1991). Among the various measures of central bank legal autonomy, the de jure index of political and economic autonomy (LVAU and LVAW)[11] by Cukierman (1992) is the most widely used and the one that is based on the broadest sampling. Excluding the OECD countries used by GMT (1991), thirteen countries—nine emerging market economies and four developing countries—appear in our sample and Cukierman's, including: Brazil, Egypt, India, Israel, Mexico, Morocco, Nigeria, Peru, the Philippines, Poland, South Africa, Uganda, and Zambia.

Some qualification is warranted given that there is not a perfect match between the methodology and variables used in GMT (1991) and Cukierman (1992):

- We use only 12 variables out of the 16 observed by Cukierman (1992) for the partial reconstruction of the GMT indicators.

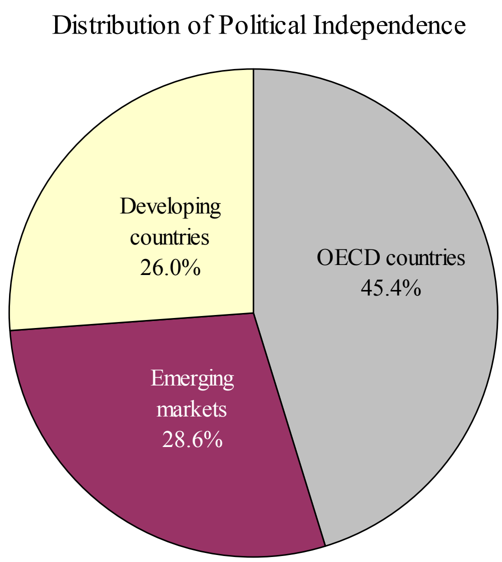
[10] The arrangement in Iran has been set forth in the latest five-year plan.

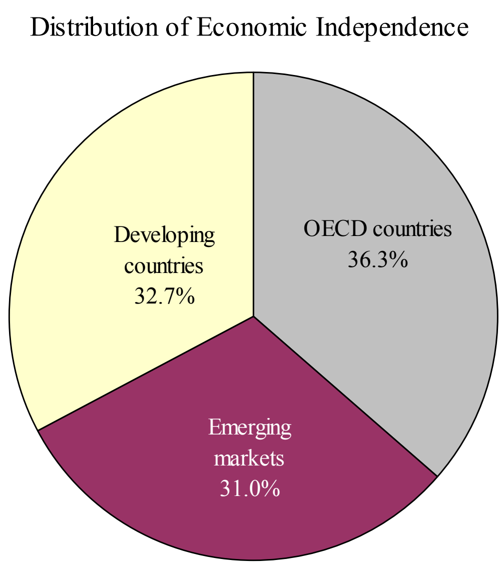
[11] LVAU stands for Legal Variables–Unweighted; and LVAW stands for Legal Variables–Weighted.

- Two variables for political and two variables for economic autonomy that are used by GMT are missing from Cukierman.[12]

- In view of the lack of more specific information among the criteria used by Cukierman, the variable in the GMT indicator for political autonomy related to the absence of government representatives on the board of the central bank has been replaced by the variable in Cukierman which represents the possibility for the governor to hold government office.

Figure 1. Comparison of Aggregate Distributions of GMT Indices





[12] Appendix II summarizes the variables in GMT versus those in Cukierman, and the conversion rule to transpose Cukierman's scores into the GMT scale.

Source: Authors' estimates. The aggregate distributions represent the share of political and economic autonomy of each group of countries. These shares are calculated by dividing each group's autonomy average by the sum of the three group autonomy averages.

By incorporating into the GMT indicator information available in Cukierman, we show a significant strengthening in central banks' autonomy (Table 5 and Appendix Tables 5 and 6). Changes in autonomy measured by our indices reflect amendments to central bank laws that were introduced after 1993. The most salient features are as follows:

- **Political autonomy has increased significantly**, despite a reduction in autonomy regarding the appointment of the governor by the executive branch. Only in Poland is the governor not appointed by the government, whereas in 1992, this was the case in six of the 13 countries. However, this decrease in autonomy is more than outweighed by progress in the other aspects, including significant progress with regard to the fifth variable (the governor cannot hold government office), the sixth variable (no government approval needed in formulating monetary policy) and the eighth variable (legal protection to support the CB when in conflict with the government), which are important aspects of central bank autonomy. Today, most governors have full time jobs and cannot hold a government position. In hardly any instance is the approval of the executive branch required for monetary policy. Finally, some central bank laws have incorporated clauses to protect the central bank in the event of conflicts with the executive branch, something that was absent before.

- **Great strides have also been made regarding economic autonomy**. Almost all countries have achieved high scores regarding the monetary financing of the government (the first, third, and fourth variable), further improving an already positive trend in 1992.[13] Today the laws of all countries in the sample stipulate that lending to the government (when allowed) cannot be automatic, must be temporary, and is subject to quantitative limits. Whereas the ban on participating in the primary market for public debt was entirely absent before, this is a distinctive characteristic today, confirming that a central bank cannot credibly call itself autonomous unless a clause exists to prohibit any form of direct credit of the central bank to the government. In addition, the variable relating to the pricing of central bank credit to the government at market rates (second variable) has also spread to a large number of countries, confirming that another important characteristic of good practice in monetary policy is to prevent government borrowing from the central bank at interest rates that are not market-related.

[13] These variables are as follows: (1) Direct credit not automatically extended; (3) Direct credit is explicitly temporary; and (4) Direct credit subject to limitations on amount.

Table 5. Emerging Economies and Developing Countries: Cukierman Indices of Autonomy

	Political Autonomy		Economic Autonomy	
	1992	Updated	1992	Updated
Partial GMT index (mean)	1.50	3.00	2.00	4.00

Source: Authors' estimates. Detailed results are shown in Appendix Tables 5 and 6.

Although the sample is incomplete from the viewpoint of both the variables and the number of economies considered, certain individual comparisons are possible. The Peruvian central bank—one of the economically most autonomous in emerging markets—has raised its score due to the reform of monetary policy instruments and the ruling out of direct lending to the government. The Brazilian central bank has followed a similar path, from a position with no economic autonomy in 1992 on the basis of the partial index. The score of the Bank of Israel has risen from one to four (although it still lacks an explicit provision imposing market rates on government loans from the central bank). The Bank of Mexico's score has risen from one to five due to the implementation of all the credit limitations specified by the indicator. The Polish central bank represents a remarkable case: its autonomy was among the lowest measured by the 1992 data, whereas it has become the most independent among these 13 economies according to the data available at the end of 2003. The noteworthy performance (from zero to six in the political dimension and from one to five in the economic dimension) reflects strong political will, in addition to the driving force represented by the framework of autonomy embodied in the Maastricht Treaty. The Philippine central bank is also showing interesting progress in political autonomy, where the relevant legislation has been enriched with pronounced autonomy with regard to objectives. The same holds true for the central banks of India and Morocco (although there are no legal provisions yet that strengthen the position of the monetary institution against the government), and those of Zambia and Uganda, which now enjoy autonomy in policy.

Our work shows that the variables that were omitted in Cukierman's sample are relevant indicators of central bank autonomy. To reach this conclusion, we compare the standardized scores (and relative ranking) obtained from the partial GMT indicator as of end-2003 with those derived using the complete GMT indicator for the same period. This methodology allows us to provide a qualitative indication of the significance of the variables that were omitted for lack of data in Cukierman's sample. The results provided in Appendix Tables 7 and 8 show that the omitted variables and the substituted one have some effect on central bank autonomy, at least in the updated data set. The relative data and the rankings change when we shift from the partial indicator to the complete one. This effect is consistent with expectations, mainly as regards the economic indicator: in the complete set of variables the criterion that identifies the central bank's control over its policy rate is particularly relevant as it is satisfied by a large number of central banks (Appendix Table 8). On the other hand, the rules for appointing the Board (third and fourth variables under the political indicator), which are also missing in Cukierman (1992), are satisfied by a smaller number of central banks.

V. Overview of Indicators and Standardized Results

This section surveys the changes in the aggregated measures of political and economic autonomy that occurred between 1991 and 2003. This overview has been done for the OECD countries in the sample (relying on the 1991 work of GMT), nine emerging market economies countries, and four developing countries (relying on the 1992 work of Cukierman). We use the following methodology:

- First we present the absolute measures available from the two past studies (GMT 1991 and Cukierman 1992) and the corresponding updated measures;
- Second, in order to assess the above mentioned set of scores, we consider the associated standardized relative measures for each sub-group. This procedure allows best effort comparability over time and cross section. Standardized measures are obtained through the following steps: first, we calculate the maximum potential score for each category (political, economic, and overall autonomy); second, we divide each country score by its category potential maximum.[14]

The general improvement in central bank autonomy is confirmed by higher scores for central bank autonomy in all three sub-categories (Table 6 and Figure 2).

- **Regarding overall autonomy**, the trend appears to be similar in all three groups of countries, as shown by the ascending slope of the lines in Figure 2.The larger improvement took place in the emerging market economies; OECD countries come second. The performance of developing countries, which follows very closely OECD countries' performance, should also be noted.
- **Regarding economic autonomy**, the largest improvement has taken place in the emerging market economies, due to the changes in central bank laws to ensure greater autonomy in the use of instruments.
- **Regarding political autonomy,** OECD countries have made the most significant advances due to progress in those central banks that were less autonomous according to the GMT (1991) data (Belgium, France, Greece, Ireland, Italy, Portugal, and Spain). However, central banks in developing countries have also made notable progress toward political autonomy.
- **Examples of good performers** in non-OECD countries include Mexico, where relative economic autonomy has risen from 0.2 to the maximum score of 1; the Philippines, whose index of political autonomy has more than doubled; Poland where the political indicator has risen from zero to 1; and Morocco, where the Bank Al-Maghrib's general index of autonomy went from 0.18 to 0.64.

[14] Standardized overall autonomy is the sum of the components of the sub-categories divided by the potential maximum; e.g., Uganda updated indicator: political autonomy 4/6 = 0.667, economic autonomy 4/5 = 0.8, overall autonomy (4+4)/(5+6) = 8/11 = 0.727

Table 6. All Countries: Summarized Evolution of Standardized Indices

(Mean indices)	Political Index		Economic Index		General Index	
	1991–1992	Updated	1991–1992	Updated	1991–1992	Updated
OECD countries	0.361	0.743	0.590	0.806	0.476	0.775
Emerging Economies	0.278	0.500	0.356	0.822	0.313	0.646
Developing Countries	0.208	0.542	0.500	0.750	0.341	0.636

Source: Authors' estimates and Appendix Tables 9 and 10.

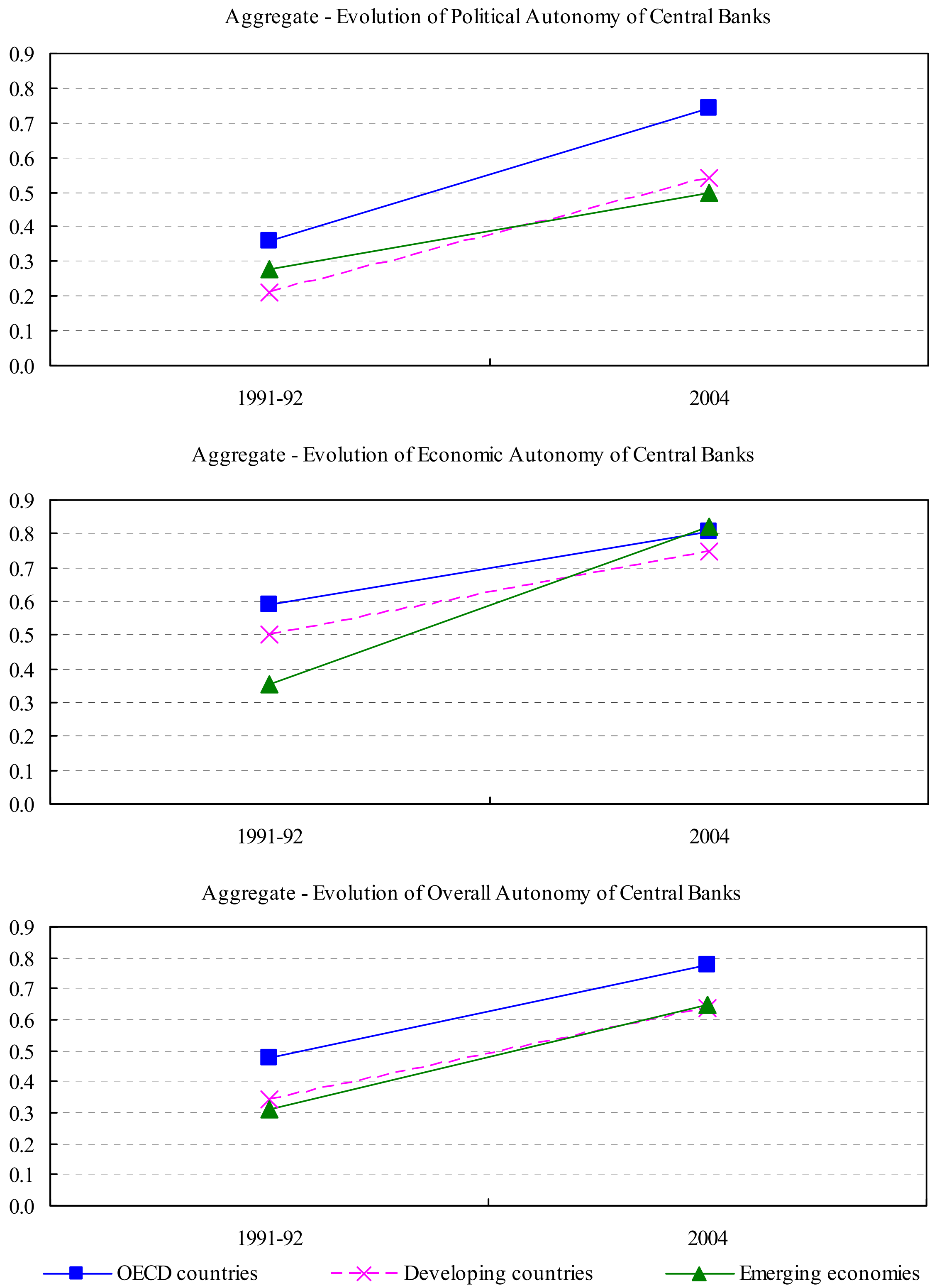
Our findings suggest a trend in the evolution of central bank legislation, depending on the stage of economic development. At an early stage of economic development the law aims to protect the central bank from political interference. In a subsequent stage, the one in which emerging economies are now situated, greater focus is given to instrument autonomy, suggesting that the objective is to safeguard de facto autonomy for an institution that enjoys a high level of de jure autonomy. The process concludes with a final push on political autonomy, characterized by greater autonomy in the appointment of governors and longer terms of office; even less political interference in the formulation of monetary policy; and stronger provisions to protect the central bank in case of conflict with the government.

Regarding the dispersion of central banks according to the GMT (1991) framework, one can note a shift of most countries upward and to the right (Figures 3 and 4), confirming progress in both dimensions of autonomy in all OECD countries and more advanced levels of autonomy in developing countries and emerging market economies than those observed in OECD countries in 1991. Noteworthy strides have been made by the European central banks that were less independent in the earlier studies, including Greece, Ireland, Italy, Portugal, and Spain which show the greatest progress. The remaining non-ESCB central banks show higher economic autonomy than political autonomy, but with scores in 2003 higher than in 1991. On the other hand, we note a greater dispersion of non-OECD central banks; in particular, the fourth quadrant remains relevant for emerging market economies, whereas it has become largely irrelevant for OECD countries.

VI. Concluding Remarks

Overall, the picture provided by the autonomy measures presented this paper confirms a sharp move towards greater CB autonomy in OECD countries. A preliminary comparison of the data in GMT (1991) against the current data for the same group of OECD countries shows substantial changes in terms of both economic and political autonomy. In most cases, these changes are attributable to the implementation of the ESCB model in those central banks that had showed the lowest levels of autonomy in the earlier evaluation by GMT. Three features of the ESCB standard have played a leading role: (i) the adoption of price stability as the sole objective of monetary policy; (ii) the insulation of the central bank from political interference; and (iii) the prohibition for the central banks to provide direct credit to governments. Progress in OECD countries is not confined within the boundaries of the euro area. The data also show significant progress—particularly in economic autonomy—for the

Figure 2. Aggregate Political, Economic, and Overall Trends



Source: Authors' estimates.

other central banks belonging to the ESCB and for the extra-European banks that initially did not enjoy much autonomy. In sum, all the 2003 scores for the OECD countries have improved when compared to the results of GMT (1991).

Similar trends can be observed in emerging economies and developing countries. Some of these countries have reached levels of autonomy that compare well with those observed in OECD countries using the GMT methodology. Using data from Cukierman's (1992) legal measure, we could track the evolution of legislation in these countries as well. The results point to significant progress since, on average, the measure for both political and economic autonomy doubled during the period under review.

It appears that in a number of emerging markets and developing countries, CB autonomy has gained momentum in the course of the last decade. This has been accomplished through a consistent political will and a strong interest in central bank reform, leading to rapid progress in terms of both policy and instrument autonomy. These developments were underpinned by the growing consensus among developed and developing countries about the benefits for overall economic performance to be expected from assigning price stability as the primary objective of the central bank, and limiting the scope for the monetization of public deficits. As a consequence, today we can see an approximately equal distribution of autonomy among countries, irrespective of the level of economic development.

The analysis suggests a three-stage modernization process. Such a process, which can be observed in all three categories of countries, has developed from an initial stage in which the foundations are laid for basic de jure autonomy (i.e., price stability as the objective of monetary policy; clauses to protect the central bank from political interference). A second stage involves the development of an autonomous operating capacity, while in the final stage, the political autonomy of the central bank expands in terms of both policy formulation and the appointment of senior management.

Figure 3. Comparison of Original and Updated Dispersion Among OECD Central Banks

Figure 3a. Dispersion of Economic and Political Independence (1991)

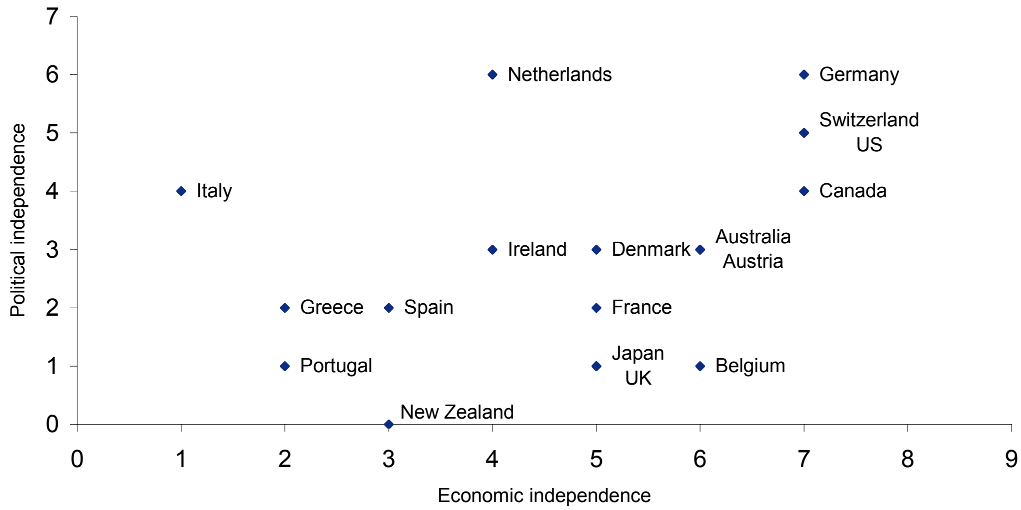
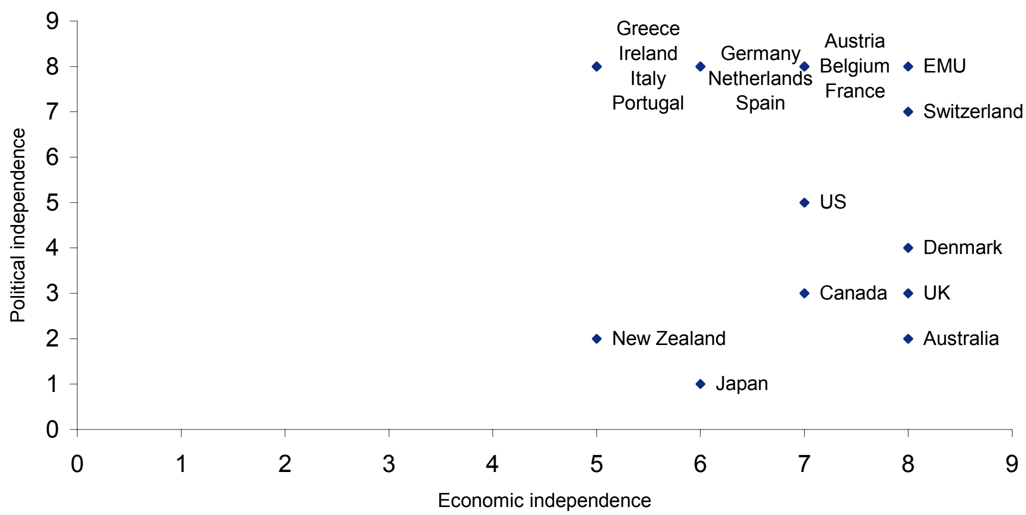


Figure 3b. Dispersion of Economic and Political Independence (Updated)



Source: Grilli, Masciandaro, and Tabellini (1991); and authors' estimates (updated data).

Figure 4. Dispersion of Scores for Central Banks of Less Developed Countries (2003)

Figure 4a. Emerging Markets: Dispersion of Economic and Political Autonomy

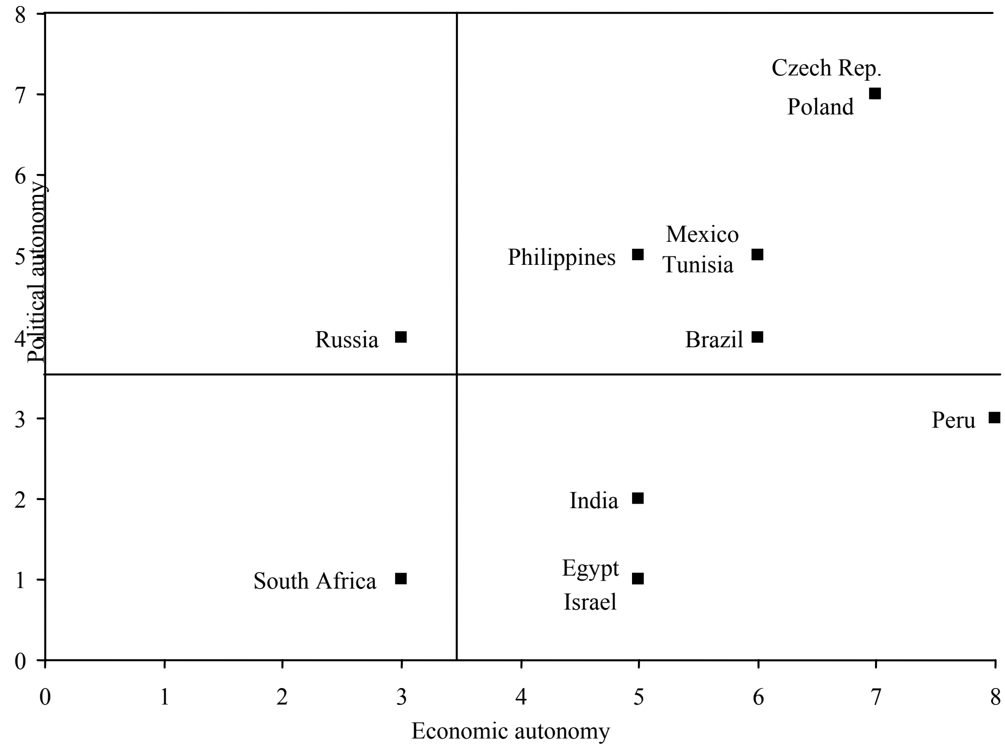
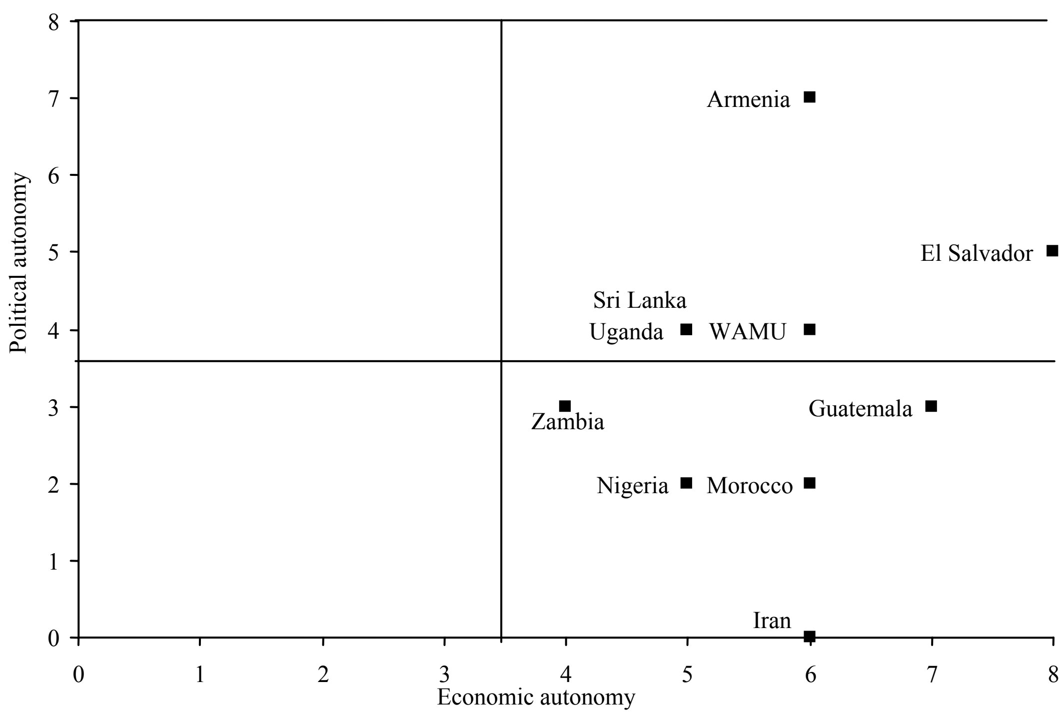


Figure 4b. Developing Countries: Dispersion of Economic and Political Autonomy



Source: Authors' estimates.

Legal Sources Consulted

Country	Name of Law Consulted	Year Promulgated	Last Amended
OECD			
Australia	• Reserve Bank Act	1959	July 2002
	• Constitution of Australia (last amended: October 1986)		
Austria	• Federal Act on the Österreichische Nationalbank	1984	April 2002
	• Austrian constitution		
Belgium	• Organic Law of the National Bank of Belgium	1998	February 1999
	• Statutes of the National Bank of Belgium (1998, last amended: February 1999)		
	• Belgian constitution (1970)		
Canada	• Bank of Canada Act	2001	
	• Constitution of Canada (last amended: October 1989)		
Denmark	• National Bank of Denmark Act	1936	1998
EMU	• Statute of the ESCB and ECB		
France	• Statute of the Banque de France	1993	September 2000
	• Constitution of France (1958, last amended: August 1995)		
Germany	• Bundesbank Act	2002	
	• The Basic Law of the Federal Republic of Germany (last amended: October 1994)		
Greece	• Statute of the Bank of Greece	1997	December 2000
Ireland	• Central Bank and Financial Services Authority of Ireland Bill	2000	
	• Companies Act (1990)		
Italy	• Statute of the Bank of Italy	1936	April 1998
Japan	• Bank of Japan Law	1997	January 2001
Netherlands	• Bank Act	1998	2000
New Zealand	• Reserve Bank of New Zealand Act	1989	August 2003
	• The Constitution Act of New Zealand (last amended: August 1990)		
Portugal	• Banco de Portugal Organic Law	1998	April 2001
Spain	• Law of autonomy of the Banco de España	1994	April 1998
Switzerland	• National Bank Law	1953	May 2000
	• Constitution of Switzerland (last amended: October 1999)		
United Kingdom	• Bank of England Act	1998	
	• Memorandum of Understanding between HM Treasury, the Bank of England, and the FSA (2000)		
	• Financial Services Act (1986)		
United States	• Federal Reserve Act	1959	December 2000

Country	Name of Law Consulted	Year Promulgated	Last Amended
Emerging markets			
Brazil	• Central Bank Law of Brazil	1964	May 2000
	• Constitution of the Federative Republic of Brazil (1988, last amended: May 2000)		
Czech Republic	• Czech National Council Act on the Czech National Bank	1992	May 2002
Egypt	• Statutes of the Central Bank of Egypt	1957	1998
	• Constitution of the Arab Republic of Egypt (1971, last amended: May 1980)		
India	• Reserve Bank of India Act	1934	January 1997
	• Banking Regulation Act (1949)		
Israel	• Bank of Israel Law	1954	December 2002
Mexico	• Law on the Banco de Mexico	1994	January 1999
Peru	• Central Reserve Bank of Peru Organic Law	1993	
Philippines	• New Central Bank Act of the Republic of Philippines	1993	January 2002
	• Constitution of the Republic of The Philippines (1986)		
Poland	• Law on the National Bank of Poland	1997	January 2003
Russia	• Federal Law on the Central Bank of the Russian Federation	2002	
	• Constitution of the Russian Federation (1993)		
South Africa	• South African Reserve Bank Act	1989	2000
	• Constitution of the Republic of South Africa (last amended: 1999)		
Tunisia	• Law Establishing and Organizing the Central Bank of Tunisia	1958	April 2000
	• Tunisia Constitution (1959, last amended: 1993)		
Developing economies			
Armenia	• Law on the Central Bank of Armenia	1996	
	• Constitution of the Republic of Armenia (1995)		
El Salvador	• Organic Law of the Central Reserve Bank of El Salvador	1991	January 2001
	• Monetary Integration Law (2001)		
	• Constitution of the Republic of El Salvador (1983, last amended: July 1996)		
Guatemala	• Organic Law of the Bank of Guatemala	2002	
	• Political Constitution of the Republic of Guatemala (1985, last amended: November 1993)		
Iran	• Iranian Banking and Monetary Act	1960	1983
Morocco	• Statutes of Bank Al-Maghrib	1959	1993
	• Constitution of Morocco (1996)		
Nigeria	• Central Bank of Nigeria Decree	1991	1998
	• Constitution of the Federal Republic of Nigeria (1999)		
Sri Lanka	• Monetary Law Act	1949	December 2002
	• Banking Act (1988, last amended: December 1998)		
Uganda	• Bank of Uganda Statute	1966	1993
WAEMU	• Statute of the Central Bank of West African States	1962	November 1973
Zambia	• Bank of Zambia Act	1996	

Source: IMF – Central Bank Legislation Database.

CUKIERMAN VARIABLES VERSUS GMT VARIABLES

GMT Variable (1991)	Cukierman Variable (1992)	Definition	Cukierman's Score (1992)	Conversion to Score on the GMT Scale(1991)
Political Indicator				
(1) Governor not appointed by government.	*App*: Who appoints the governor?	Appointed by board of the central bank.	1	1
		Appointed by a board composed of members of executive branch, parliament, and the board of the central bank.	0.75	1
		Appointed by the legislative branch.	0.5	1
		Appointed by the executive branch.	0.25	0
		Appointed by one or two members of the executive branch.	0	0
(2) Governor appointed for more than 5 years.	*Too*: Length of governor's term of office, in years	Greater than or equal to 8.	1	1
		Between 8 and 6.	0.75	1
		Equal to 5.	0.5	0
		Equal to 4.	0.25	0
		Less than 4.	0	0
(5) No mandatory involvement of government representatives in board (substituted criterion).	*Off*: Possibility for governor to hold government office	Governor prohibited by law from holding government office.	1	1
		Prohibited unless authorized by the government.	0.5	0
		No prohibitions of law in this matter.	0	0
(6) Government approval not required in formulating monetary policy.	*Monpol*: Who formulates monetary policy?	Central bank alone has this authority.	1	1
		Authority is shared by government and central bank.	0.66	0
		Central bank has advisory role in setting policy.	0.33	0
		Only government has this power.	0	0
(7) Central bank is required to pursue monetary stability as one of its primary objectives.	*Obj*: Objectives of central bank	Price stability is the sole or main objective and takes precedence in case of conflict.	1	1
		Price stability is the only objective.	0.8	1
		Price stability is mentioned together with other objectives that do not conflict with it.	0.6	1
		Price stability is mentioned together with other objectives that may potentially conflict with it.	0.4	1
		Laws regarding the central bank do not include objectives of this type.	0.2	0
		Some objectives appear in the law but price stability is not among them.	0	0
(8) Legal protections exist to strengthen the central bank's position in event of conflict with the government.	*Conf*: Government directives and conflict resolution	Central bank has final authority on matters explicitly defined by law as its objectives.	1	1
		Government has ultimate authority only on policy matters not explicitly defined as objectives of the central bank, or in the event of internal conflict within the central bank.	0.8	1
		In case of conflict, the final decision lies with a body comprising members of the central bank, the legislative branch, and the executive branch.	0.6	1
		Legislative branch has final authority in policy matters.	0.4	1
		Executive branch has final authority in policy matters, but is subject to possible opposition by the central bank.	0.2	0
		Executive branch has unconditional final authority.	0	0

GMT Variable (1991)	Cukierman Variable (1992)	Definition	Cukierman's Score (1992)	Conversion to Score on the GMT Scale(1991)
Excluded variables				
(3) Board not appointed by government.				
(4) Board is appointed for more than five years.				
	Diss: Legal protections against dismissal of governor			
	Adv: Does central bank has advisory role in formulating government budget?			
Economic Indicator				
(1) Direct credit is not automatically extended to the government.	*Lla*: Limitations on advances	Advance lending to the government is prohibited.	1	1
		Advances are possible but limited in absolute terms, or subject to other types of similarly restrictive limitations.	0.66	1
		Advances are possible and subject to more accommodating limitations.	0.33	1
		No legal limitations on advances; amount is periodically negotiated between the central bank and the government.	0	0
	Lls: Limitations on guaranteed loans to the government	Same distinctions as for *Lla*		
(2) Direct credit provided at market interest rates.	*Lint*: Limitations on interest rates applicable to loan by central bank	Loan is possible only at market rates.	1	1
		Minimum level applies to interest rate paid by the government.	0.75	0
		Ceiling applies to interest rates paid by the government.	0.5	0
		No explicit legal provisions on interest applied to loans by the central bank.	0.25	0
		Law does not provide for the government to pay interest on loans from the central bank.	0	0
(3) Direct credit is explicitly temporary.	Lmat: Maturity of possible loans	Limited to six months.	1	1
		Limited to one year.	0.66	1
		Limit of more than one year.	0.33	1
		No legal limit on maturity of loan.	0	0
(4) Direct credit subject to limitations on amount.	*Ltype*: Types of limitations on loans, where limits exist (interpreted)	Limit on loan amount is prescribed in absolute terms.	1	1
		Limit on loan amount is prescribed in terms of capital or other liabilities of the central bank.	0.75	1
		Limit on loan amount is prescribed in terms of percentage of government's revenues.	0.5	1
		Limit on loan amount is prescribed in terms of percentage of government expenses.	0.25	1
		No limit (NA).	0	0
(5) Central bank does not participate in the primary market for public debt securities.	*Lprm*: Prohibitions on lending on the primary market	Central bank prohibited from underwriting public debt securities on the primary market.	1	1
		Central bank may underwrite public debt securities on the primary market.	0	0
Excluded variables				
(6) Central bank sets discount rate autonomously.				
(7) Banking supervision is not the responsibility of central bank, or is not responsibility of the central bank alone.				
	Ldec: Who has the authority to control terms and conditions of loans to the government?			
	Lwidth: Who has access to loans granted by the central bank?			

Sources: Grilli, Masciandaro, and Tabellini (1991), and Cukierman (1992).

Appendix Table 1. Political Autonomy in OECD Countries

Country	Appointment				Relations with Government		Constituting Laws		Political Autonomy Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Data from Grilli, Masciandaro, and Tabellini (1991)									
Australia		1					1	1	3
Austria						1	1	1	3
Belgium				1					1
Canada	1	1					1	1	4
Denmark		1				1	1		3
France		1		1					2
Germany		1		1	1	1	1	1	6
Greece			1					1	2
Ireland		1				1	1		3
Italy	1	1	1		1				4
Japan							1		1
Netherlands		1		1	1	1	1	1	6
New Zealand									0
Portugal					1				1
Spain				1	1				2
Switzerland		1			1	1	1	1	5
United Kingdom					1				1
United States				1	1	1	1	1	5
MEAN									2.9
Updated data									
Australia		1					1		2
Austria	1	1	1	1	1	1	1	1	8
Belgium	1	1	1	1	1	1	1	1	8
Canada	1	1					1		3
Denmark		1				1	1	1	4
EMU	1	1	1	1	1	1	1	1	8
France	1	1	1	1	1	1	1	1	8
Germany	1	1	1	1	1	1	1	1	8
Greece	1	1	1	1	1	1	1	1	8
Ireland	1	1	1	1	1	1	1	1	8
Italy	1	1	1	1	1	1	1	1	8
Japan							1		1
Netherlands	1	1	1	1	1	1	1	1	8
New Zealand					1		1		2
Portugal	1	1	1	1	1	1	1	1	8
Spain	1	1	1	1	1	1	1	1	8
Switzerland		1	1	1	1	1	1	1	7
United Kingdom					1		1	1	3
United States				1	1	1	1	1	5
MEAN									6.1

Source: Data from Grilli, Masciandaro, and Tabellini (1991) and authors' estimates (update).

Note: (1) Governor not appointed by government; (2) Governor appointed for more than five years; (3) Board not appointed by government; (4) Board appointed for more than five years; (5) No mandatory involvement of government representatives in Board; (6) Government's approval not required in policy formulation; (7) Central bank (CB) required to pursue monetary stability among primary objective; (8) Legal protections exist to strengthen CB's position in event of conflict with government.

Appendix Table 2. Economic Autonomy in OECD Countries

Country	Monetary Financing of Public Deficits					Monetary Instruments		Economic Autonomy Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Data from Grilli, Masciandaro, and Tabellini (1991)								
Australia	1	1	1	1	1	1		6
Austria			1	1	1	1	2	6
Belgium		1		1	1	1	2	6
Canada	1	1	1	1		1	2	7
Denmark		1			1	1	2	5
France				1	1	1	2	5
Germany	1	1	1	1	1	1	1	7
Greece				1		1		2
Ireland		1	1	1		1		4
Italy				1				1
Japan	1		1		1	1	1	5
Netherlands			1	1	1	1		4
New Zealand			1	1		1		3
Portugal				1		1		2
Spain			1	1			1	3
Switzerland		1	1	1	1	1	2	7
United Kingdom	1	1	1	1		1		5
United States	1	1	1	1	1	1	1	7
MEAN								4.7
Updated data								
Australia	1	1	1	1	1	1	2	8
Austria	1	1	1	1	1		2	7
Belgium	1	1	1	1	1		2	7
Canada	1		1	1	1	1	2	7
Denmark	1	1	1	1	1	1	2	8
EMU	1	1	1	1	1	1	2	8
France	1	1	1	1	1		2	7
Germany	1	1	1	1	1		1	6
Greece	1	1	1	1	1			5
Ireland	1	1	1	1	1			5
Italy	1	1	1	1	1			5
Japan	1		1	1		1	2	6
Netherlands	1	1	1	1	1		1	6
New Zealand		1	1	1	1	1		5
Portugal	1	1	1	1	1			5
Spain	1	1	1	1	1		1	6
Switzerland	1	1	1	1	1	1	2	8
United Kingdom	1	1	1	1	1	1	2	8
United States	1	1	1	1	1	1	1	7
MEAN								6.5

Source: Data from Grilli, Masciandaro, and Tabellini (1991) and authors' estimates (update).

Note: (1) Direct credit not automatically extended; (2) Direct credit provided at market rates; (3) Direct credit is explicitly temporary; (4) Direct credit subject to limitations on amount; (5) Central bank does not participate in primary market for public debt securities; (6) Central bank sets discount rate autonomously; (7) Banking supervision not the responsibility of central bank -2-; banking supervision not the responsibility of central bank alone -1-.

Appendix Table 3a. Political Autonomy in Emerging Market Economies (2003)

Country	Appointment				Relations with Government		Constituting Laws		Political Autonomy Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Brazil		1		1	1		1		4
Czech Rep.	1	1	1	1		1	1	1	7
Egypt							1		1
India						1	1		2
Israel							1		1
Mexico		1	1	1			1	1	5
Peru					1	1	1		3
Philippines		1		1		1	1	1	5
Poland	1	1	1	1		1	1	1	7
Russia			1			1	1	1	4
South Africa					1				1
Tunisia		1			1	1	1	1	5
MEAN									3.75

Source: Authors' estimates.

Note: (1) Governor not appointed by government; (2) Governor appointed for more than five years; (3) Board not appointed by government; (4) Board appointed for more than five years; (5) No mandatory involvement of government representatives in Board; (6) Government's approval not required in formulating monetary policy; (7) Central bank required to pursue monetary stability among its primary objectives; (8) Legal protections exist to strengthen central bank's position in event of conflict with government.

Appendix Table 3b. Economic Autonomy in Emerging Market Economies (2003)

Country	Monetary Financing					Monetary Instruments		Economic Autonomy Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Brazil	1	1	1	1	1	1		6
Czech Rep.	1	1	1	1	1	1	1	7
Egypt	1		1	1	1	1		5
India	1		1	1		1	1	5
Israel	1		1	1	1	1		5
Mexico	1	1	1	1	1		1	6
Peru	1	1	1	1	1	1	2	8
Philippines	1		1	1	1	1		5
Poland	1	1	1	1	1	1	1	7
Russia	1		1		1			3
South Africa	1	1				1		3
Tunisia	1		1	1	1	1	1	6
MEAN								5.5

Source: Authors' estimates.

Note: (1) Direct credit to government (gov.) not automatically extended; (2) Direct credit to gov. provided at market rates; (3) Direct credit to gov. is explicitly temporary; (4) Direct credit to gov. subject to limitations on amount; (5) Central bank does not participate in primary market for public debt securities; (6) Central bank sets discount rate autonomously; (7) Banking supervision not the responsibility of central bank -2-; banking supervision not the responsibility of central bank alone -1-.

Appendix Table 4a. Political Autonomy in Developing Countries (2003)

Country	Appointment				Relations with Government		Constituting Laws		Political Autonomy Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Armenia	1	1	1		1	1	1	1	7
El Salvador		1		1	1	1	1		5
Guatemala						1	1	1	3
Iran									0
Morocco						1	1		2
Nigeria					1		1		2
Sri Lanka		1		1		1	1		4
Uganda			1			1	1	1	4
WAEMU		1		1			1	1	4
Zambia						1	1	1	3
MEAN									3.4

Source: Authors' estimates.

Note: (1) Governor not appointed by government; (2) Governor appointed for more than five years; (3) Board not appointed by government; (4) Board appointed for more than five years; (5) No mandatory involvement of government representatives in Board; (6) Government's approval not required in formulating monetary policy; (7) Central bank required to pursue monetary stability among its primary objectives; (8) Legal protections exist to strengthen central bank's position in event of conflict with government.

Appendix Table 4b. Economic Autonomy in Developing Countries (2003)

	Monetary Financing of Public Deficits					Monetary Instruments		Economic Autonomy Index
Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Armenia	1	1	1	1	1	1		6
El Salvador	1	1	1	1	1	1	2	8
Guatemala	1	1	1	1	1	1	1	7
Iran	1	1	1	1	1		1	6
Morocco	1		1	1	1	1	1	6
Nigeria	1		1	1	1	1		5
Sri Lanka	1		1	1		1	1	5
Uganda	1	1	1	1		1		5
WAEMU	1	1	1	1	1	1		6
Zambia	1		1	1		1		4
MEAN								5.8

Source: Authors' estimates.

Note: (1) Direct credit not automatically extended; (2) Direct credit provided at market rates; (3) Direct credit is explicitly temporary; (4) Direct credit subject to limitations on amount; (5) Central bank does not participate in primary market for public debt securities; (6) Central bank sets discount rate autonomously; (7) Banking supervision not the responsibility of central bank -2-; banking supervision not the responsibility of central bank alone -1-.

Appendix Table 5. Emerging Market and Developing Economies: Evolution of Political Autonomy

Country	Category	Appointment		Relations with Government		Constituting Laws		Political Autonomy Index
		(1)	(2)	(5)	(6)	(7)	(8)	(9)
Data from Cukierman (1992)–Partial GMT Index Six variables								
Brazil	Emerging	1						1
Egypt	Emerging	1		1		1		3
India	Emerging					1		1
Israel	Emerging	1				1		2
Mexico	Emerging	1	1	1				3
Morocco	Developing							0
Nigeria	Developing					1		1
Peru	Emerging	1		1		1		3
Philippines	Emerging		1			1		2
Poland	Emerging							0
South Africa	Emerging							0
Uganda	Developing	1				1		2
Zambia	Developing			1		1		2
MEAN								1.5
Updated Data–Partial GMT Index Six variables								
Brazil	Emerging		1			1		2
Egypt	Emerging					1		1
India	Emerging			1	1	1		3
Israel	Emerging			1		1		2
Mexico	Emerging		1	1		1	1	4
Morocco	Developing			1	1	1		3
Nigeria	Developing			1		1		2
Peru	Emerging			1	1	1		3
Philippines	Emerging		1	1	1	1	1	5
Poland	Emerging	1	1	1	1	1	1	6
South Africa	Emerging			1				1
Uganda	Developing			1	1	1	1	4
Zambia	Developing			1	1	1	1	4
MEAN								3

Sources: Cukierman (1992); and authors' estimates.

Note: (1) Governor not appointed by government; (2) Governor appointed for more than five years; (5) Governor cannot hold government office; (6) Government's approval not required in formulating monetary policy; (7) Central bank required to pursue monetary stability among its primary objectives; (8) Legal protections exist to strengthen central bank's position in event of conflict with government.

Appendix Table 6. Emerging Market and Developing Economies: Evolution of Economic Autonomy

Country	Category	Monetary Financing of Public Deficits					Economic Autonomy Index
		(1)	(2)	(3)	(4)	(5)	(8)
Data from Cukierman (1992—Partial GMT Index Five variables							
Brazil	Emerging						0
Egypt	Emerging	1		1	1		3
India	Emerging	1		1	1		3
Israel	Emerging	1					1
Mexico	Emerging	1					1
Morocco	Developing			1	1		2
Nigeria	Developing	1		1	1		3
Peru	Emerging	1		1	1		3
Philippines	Emerging	1		1	1		3
Poland	Emerging	1					1
South Africa	Emerging	1					1
Uganda	Developing	1		1	1		3
Zambia	Developing			1	1		2
MEAN							2
Updated data—Partial GMT Index Five variables							
Brazil	Emerging	1	1	1	1	1	5
Egypt	Emerging	1		1	1	1	4
India	Emerging	1		1	1		3
Israel	Emerging	1		1	1	1	4
Mexico	Emerging	1	1	1	1	1	5
Morocco	Developing	1		1	1	1	4
Nigeria	Developing	1		1	1	1	4
Peru	Emerging	1	1	1	1	1	5
Philippines	Emerging	1		1	1	1	4
Poland	Emerging	1	1	1	1	1	5
South Africa	Emerging	1	1				2
Uganda	Developing	1	1	1	1		4
Zambia	Developing	1		1	1		3
MEAN							4

Source: Cukierman (1992)

Note: (1) Direct credit not automatically extended; (2) Direct credit provided at market rates; (3) Direct credit is explicitly temporary; (4) Direct credit subject to limitations on amount; (5) Central bank does not participate in primary market for public debt securities.

Appendix Table 7. Emerging Market and Developing Economies: Political Indices, Comparison of GMT Partial and Full Indices on Updated Data

Political index—Partial GMT index, six variables with updated data

Country	Appointment		Relations with Government		Constituting Laws		Political Index	Maximum Possible Value	Relative value (Ranking)
	(1)	(2)	(5)	(6)	(7)	(8)	(9)		
Brazil		1			1		2	6	2/6 = 0,33 (5)
Egypt					1		1	6	0,17 (6)
India			1	1	1		3	6	0,5 (4)
Israel			1		1		2	6	0,33 (5)
Mexico		1	1		1	1	4	6	0,67 (3)
Morocco			1	1	1		3	6	0,5 (4)
Nigeria			1		1		2	6	0,33 (5)
Peru			1	1	1		3	6	0,5 (4)
Philippines		1	1	1	1	1	5	6	0,83 (2)
Poland	1	1	1	1	1	1	6	6	1 (1)
South Africa			1				1	6	0,17 (6)
Uganda			1	1	1	1	4	6	0,67 (3)
Zambia			1	1	1	1	4	6	0,67 (3)

Political index – Full GMT index, with updated data

Country	Appointment				Relations with Government		Constituting Laws		Political Index	Maximum Possible Value	Relative value (Ranking)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
Brazil		1		1			1		3	8	3/8 = 0.375 (5)
Egypt							1		1	8	0.125 (7)
India					1	1	1		3	8	0.375 (5)
Israel					1		1		2	8	0.25 (6)
Mexico		1	1	1	1		1	1	6	8	0.75 (2)
Morocco					1	1	1		3	8	0.375 (5)
Nigeria					1		1		2	8	0.25 (6)
Peru					1	1	1		3	8	0.375 (5)
Philippines		1		1	1	1	1	1	6	8	0.75 (2)
Poland	1	1	1	1	1	1	1	1	8	8	1 (1)
South Africa					1				1	8	0.125 (7)
Uganda			1		1	1	1	1	5	8	0.625 (3)
Zambia					1	1	1	1	4	8	0.5 (4)

Sources: Cukierman (1992); and authors' estimates.

Note: (1) Governor not appointed by government; (2) Governor appointed for more than five years; (3) Board not appointed by government; (4) Board appointed for more than five years; (5) Governor cannot hold government office; (6) Government's approval not required in formulating monetary policy; (7) Central bank required to pursue monetary stability among its primary objectives; (8) Legal protections exist to strengthen central bank's position in event of conflict with government.

Appendix Table 8. Emerging Market and Developing Economies: Economic Indices, Comparison of GMT Partial and Full Indices on Updated Data

Economic index—Partial GMT index, five variables, with updated data

Country	Monetary Financing of Public Deficits					Economic Index	Maximum Possible Value	Relative Value (ranking)
	(1)	(2)	(3)	(4)	(5)	(8)		
Brazil	1	1	1	1	1	5	5	5/5 = 1 (1)
Egypt	1		1	1	1	4	5	0,8 (2)
India	1		1	1		3	5	0.6 (3)
Israel	1		1	1	1	4	5	0,8 (2)
Mexico	1	1	1	1	1	5	5	1 (1)
Morocco	1		1	1	1	4	5	0,8 (2)
Nigeria	1		1	1	1	4	5	0,8 (2)
Peru	1	1	1	1	1	5	5	1 (1)
Philippines	1		1	1	1	4	5	0,8 (2)
Poland	1	1	1	1	1	5	5	1 (1)
South Africa	1	1				2	5	0,4
Uganda	1	1	1	1		4	5	0,8 (2)
Zambia	1		1	1		3	5	0,6 (3)

Economic index—Full GMT index, with updated data

Country	Monetary Financing of Public Deficits					Monetary Instruments		Economic Index	Maximum Possible Value	Relative Value (ranking)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
Brazil	1	1	1	1	1	1		6	8	6/8 = 0.75 (3)
Egypt	1		1	1	1	1		5	8	0.625 (4)
India	1		1	1		1	1	5	8	0.625 (4)
Israel	1		1	1	1	1		5	8	0.625 (4)
Mexico	1	1	1	1	1		1	6	8	0.75 (3)
Morocco	1		1	1	1	1	1	6	8	0.75 (3)
Nigeria	1		1	1	1	1		5	8	0.625 (4)
Peru	1	1	1	1	1	1	2	8	8	1 (1)
Philippines	1		1	1	1	1		5	8	0.625 (4)
Poland	1	1	1	1	1	1	1	7	8	0.875 (2)
South Africa	1	1				1		3	8	0.375 (6)
Uganda	1	1	1	1		1		5	8	0.625 (4)
Zambia	1		1	1		1		4	8	0.5 (5)

Sources: Cukierman (1992); and authors' estimates.

Note: (1) Direct credit not automatically extended; (2) Direct credit provided at market rates; (3) Direct credit is explicitly temporary; (4) Direct credit subject to limitations on amount; (5) Central bank does not participate in primary market for public debt securities; (6) Central bank sets discount rate autonomously; (7) Banking supervision not the responsibility of central bank -2-; banking supervision not the responsibility of central bank alone -1-.

Appendix Table 9a. OECD Countries: Past and Updated Scores and Rankings

OECD Countries	Political Index GMT Data (1991)	Economic Index GMT Data (1991)	Sum of Both Indexes	Ranking	Political Index –Updated Data	Economic Index –Updated Data	Sum of Both Indexes	Ranking
Australia	3	6	9	5	2	8	10	6
Austria	3	6	9	5	8	7	15	1
Belgium	1	6	7	7	8	7	15	1
Canada	4	7	11	3	3	7	10	6
Denmark	3	5	8	6	4	8	12	4
France	2	5	7	7	8	7	15	1
Germany	6	7	13	1	8	6	14	2
Greece	2	2	4	10	8	5	13	3
Ireland	3	4	7	7	8	5	13	3
Italy	4	1	5	9	8	5	13	3
Japan	1	5	6	8	1	6	7	7
Netherlands	6	4	10	4	8	6	14	2
New Zealand	0	3	3	11	2	5	7	7
Portugal	1	2	3	11	8	5	13	3
Spain	2	3	5	9	8	6	14	2
Switzerland	5	7	12	2	7	8	15	1
United Kingdom	1	5	6	8	3	8	11	5
United States	5	7	12	2	5	7	12	4

Source: Grilli, Masciandaro, and Tabellini (1991) and authors' estimates.

Appendix Table 9b. Emerging Market and Developing Economies: Past and Updated Scores and Rankings

Emerging and Developing Countries	Political Index –Six Variables– Data from Cukierman (1992)	Economic Index –Five Variables– Data from Cukierman (1992)	Sum of Both Indexes	Ranking	Political Index –Six Variables– Current Data	Economic Index –Five Variables– Current Data	Sum of both Indexes	Ranking
Emerging economies								
Brazil	1	0	1	5	2	5	7	4
Egypt	3	3	6	1	1	4	5	6
India	1	3	4	3	3	3	6	5
Israel	2	1	3	4	2	4	6	5
Mexico	3	1	4	3	4	5	9	2
Peru	3	3	6	1	3	5	8	3
Philippines	2	3	5	2	5	4	9	2
Poland	0	1	1	5	6	5	11	1
South Africa	0	1	1	5	1	2	3	7
Developing countries								
Morocco	0	2	2	3	3	4	7	2
Nigeria	1	3	4	2	2	4	6	3
Uganda	2	3	5	1	4	4	8	1
Zambia	2	2	4	2	4	3	7	2

Country	Relative Political Index –Six Variables– Data from Cukierman (1992	Relative Economic Index –Five Variables– Data from Cukierman (1992)	Mean of the Two Indexes	Ranking	Relative Political Index –Six Variables– Updated Data	Relative Economic Index –Five Variables– Updated Data	Mean of the Two Indexes	Ranking
Emerging economies								
Brazil	1/6 = 0.167	0/5 = 0	1/11=0.091	5	2/6 = 0.333	5/5 = 1	7/11 = 0.636	4
Egypt	0.5	0.6	0.545	1	0.167	0.8	0.455	6
India	0.167	0.6	0.364	3	0.5	0.6	0.545	5
Israel	0.333	0.2	0.273	4	0.333	0.8	0.545	5
Mexico	0.5	0.2	0.364	3	0.667	1	0.818	2
Peru	0.5	0.6	0.545	1	0.5	1	0.727	3
Philippines	0.333	0.6	0.455	2	0.833	0.8	0.818	2
Poland	0	0.2	0.091	5	1	1	1	1
South Africa	0	0.2	0.091	5	0.167	0.4	0.273	7
Developing countries								
Morocco	0/6 = 0	2/5 = 0.4	2/11=0.182	3	3/6 = 0.5	4/5 = 0.8	7/11 = 0.636	2
Nigeria	0.167	0.6	0.364	2	0.333	0.8	0.545	3
Uganda	0.333	0.6	0.455	1	0.667	0.8	0.727	1
Zambia	0.333	0.4	0.364	2	0.667	0.6	0.636	2

Source: Grilli, Masciandaro, and Tabellini (1991), Cukierman (1992), and authors' estimates.

Appendix Table 10. All Countries: Evolution of Standardized Scores

Country	Relative Political Index Standardized (1991–1992)	Relative Political Index Standardized (2004)	Relative Economic Index Standardized (1991–1992)	Relative Economic Index Standardized (2004)	Relative General Index Standardized (1991–1992)	Relative General Index Standardized (2004)
18 OECD countries						
Australia	0.375	0.25	0.75	1	0.563	0.625
Austria	0.375	1	0.75	0.875	0.563	0.938
Belgium	0.125	1	0.75	0.875	0.438	0.938
Canada	0.5	0.375	0.875	0.875	0.688	0.625
Denmark	0.375	0.5	0.625	1	0.500	0.750
France	0.25	1	0.625	0.875	0.438	0.938
Germany	0.75	1	0.875	0.75	0.813	0.875
Greece	0.25	1	0.25	0.625	0.250	0.813
Ireland	0.375	1	0.5	0.625	0.438	0.813
Italy	0.5	1	0.125	0.625	0.313	0.813
Japan	0.125	0.125	0.625	0.75	0.375	0.438
Netherlands	0.75	1	0.5	0.75	0.625	0.875
New Zealand	0	0.25	0.375	0.625	0.188	0.438
Portugal	0.125	1	0.25	0.625	0.188	0.813
Spain	0.25	1	0.375	0.75	0.313	0.875
Switzerland	0.625	0.875	0.875	1	0.75	0.938
United Kingdom	0.125	0.375	0.625	1	0.375	0.688
United States	0.625	0.625	0.875	0.875	0.75	0.75
MEAN	0.361	0.743	0.590	0.806	0.476	0.774
9 Emerging Economies						
Brazil	0.167	0.333	0	1	0.091	0.636
Egypt	0.5	0.167	0.6	0.8	0.545	0.455
India	0.167	0.5	0.6	0.6	0.364	0.545
Israel	0.333	0.333	0.2	0.8	0.273	0.545
Mexico	0.5	0.667	0.2	1	0.364	0.818
Peru	0.5	0.5	0.6	1	0.545	0.727
Philippines	0.333	0.833	0.6	0.8	0.455	0.818
Poland	0	1	0.2	1	0.091	1
South Africa	0	0.167	0.2	0.4	0.091	0.273
MEAN	0.278	0.5	0.356	0.822	0.313	0.646
4 Developing Countries						
Morocco	0	0.5	0.4	0.8	0.182	0.636
Nigeria	0.167	0.333	0.6	0.8	0.364	0.545
Uganda	0.333	0.667	0.6	0.8	0.455	0.727
Zambia	0.333	0.667	0.4	0.6	0.364	0.636
MEAN	0.208	0.542	0.5	0.750	0.341	0.636

Source: Authors' estimates.

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