

$$\sigma_{\bar{v}} \leq \frac{\sqrt{1-\rho^2}}{K} \max[\bar{\delta}, 1-\bar{\delta}]. \quad (18A.20)$$

When condition (18A.20) is satisfied for $K \geq 2.6$, δ_i falls in the range $[0, 1]$ with a probability that is at least 0.99.

Appendix D: Proof of Part 2 in Proposition 18.8

Differentiating (18.24a) totally with respect to D and using (18.23), we have

$$\frac{dEm_i}{dD} = \frac{1-\beta\rho}{(1-\beta\lambda)^2} \left[(1-\beta\lambda)\bar{\delta} + 2\beta D\sigma_{\bar{v}}^2(A_{CB} + D\bar{\delta}) \frac{d\lambda}{d\sigma_{\bar{v}}^2} \right]. \quad (18A.21)$$

Then substituting (18A.12) into (18A.21) and rearranging, we get

$$\frac{dEm_i}{dD} = \frac{1-\beta\rho}{(1-\beta\lambda)^2} \times \frac{K_1\bar{\delta}(A_T - A_{CB}) - K_2A_{CB}}{\rho D[\beta\lambda r + (1-\beta\rho\lambda)\sqrt{b}]}, \quad (18A.22)$$

where

$$K_1 \equiv \rho(1-\beta\rho\lambda)(1-\beta\lambda)\sqrt{b} - (1-\rho)\lambda\beta r, \quad (18A.23a)$$

$$K_2 \equiv (1-\beta\rho\lambda)\lambda\beta r. \quad (18A.23b)$$

Since ρ , λ , and β are all bounded between zero and one, all the terms in (18A.22) (except possibly K_1) are positive. However, K_1 is also the coefficient of $A_T - A_{CB}$ in equation (18A.13). It was shown in appendix B that this coefficient is positive too. Hence all terms in (18A.22) including K_1 and K_2 are positive. It follows that dEm_i/dD is positive if

$$A_T - A_{CB} > \frac{K_2}{\delta K_1} A_{CB}.$$

Alternatively, it can be seen from equations (18A.23) that dEm_i/dD is positive provided that β is sufficiently small. \square

19

The Measurement of Central Bank Independence

Cukierman (1992), Ch. 19

19.1 Introduction

Economists and practitioners in the area of monetary policy generally believe that the degree of CB independence from other parts of government affects the rates of expansion of money and credit and through them important macroeconomic variables such as inflation and the size of the budget deficit. In particular it is generally felt that a high level of CB independence coupled with an explicit mandate for the bank to focus on the price stability objective are important institutional devices for the assurance of price stability.

This belief has eluded comprehensive verification because of the obvious difficulties in objectively measuring the degree of independence of various central banks. Actual, as opposed to formal, CB independence depends on the degree of independence conferred on the bank by law but also on a myriad of other less structured factors such as informal arrangements between the bank and other parts of government, the quality of the bank's research department, and the personalities of key individuals in the bank and other economic policymaking organs like the Treasury. It is obviously hard to quantify such features in an impartial manner. As a consequence existing efforts to develop indices of CB independence have focused mostly on legal independence and only for the developed countries at that.¹ Additional indicators of CB independence are therefore called upon. Such indicators would usefully complement those that are based only on the law for at least two reasons. First, CB laws are usually incomplete in the sense that they do not specify explicitly the limits of authority between the CB and the political authorities under all contingencies. These voids are filled by informal practices, tradition, and the like. Second, even when the law is quite explicit, actual practice may deviate from it.

This chapter presents three different sets of indicators for CB independence. The first set includes various proxies of legal independence. The other two indicators are designed to proxy for deviations of actual from legal independence. One is the actual turnover of CB governors or, in some cases, the ratio of the actual to the legal term of office of the governor. These proxies are motivated by the notion that above some threshold, turnover and actual CB independence are negatively related, and by the observation that in many countries there are substantial discrepancies between the actual and the legal terms of office of the CB governor. For example, in Argentina the legal term of office is four years. However, the

actual average term in office of Argentinian CB governors has been less than a year over the 1980s. The last set of indicators (which, unlike the previous two, refers only to the 1980s and to a subset of twenty-four countries) is based on the responses of specialists on monetary policy in the respective countries to a questionnaire designed to identify factors that may induce divergences between the CB charter and actual practice.

The concept of independence that this chapter attempts to measure is not the independence to do anything that the CB pleases. It is rather the ability of the bank to stick to the price stability objective even at the cost of other short-term real objectives. This point of view implies that tighter limitations on borrowing by government from the CB make the bank more independent. It also implies that, *ceteris paribus*, a bank whose charter specifies explicitly that the bank's first priority should be price stability is more independent than a bank whose charter mentions price stability along with several other objectives without specifying which objective is more important.

The use of many different proxies to characterize independence is based on the notion that each proxy is a noisy indicator that captures a somewhat different aspect of CB independence. Using them all to characterize independence is therefore desirable, first because they partly complement each other and second because this reduces the noisiness of the overall measure. This idea is implemented in several steps. In the first stage CBs are ranked by combining information only within each set of indicators. This produces three alternative rankings of CBs by their degree of independence: one by legal independence, the other by CB governors' turnover rates, and the third by an aggregate of coded responses to the questionnaire on CB independence. In the second stage the first two sets of indicators are combined by using their relative impacts on inflation to produce an overall ranking. The first and second stages are discussed in this and the next chapters respectively.

This chapter extends existing measures of CB independence along several dimensions. First, the set of countries is wider. Second, additional new proxies for CB independence are used in addition to the legal proxies. The sample considered is composed of up to seventy countries including all the developed (or industrial) countries (DC) as well as up to forty-nine less developed or developing countries (LDC). The wider sample makes it possible to rank central banks by their independence over a more heterogeneous group of countries and to examine whether there are systematic

differences in CB independence between the two groups. Finally, the legal proxies for independence are constructed in a uniform manner for the entire sample.

The following two chapters utilize the indices of independence presented here in order to test some of the implications developed in chapter 18 as well as less structured, but wider related hypotheses. This chapter is organized as follows: Measures of legal independence are presented in section 19.2 and used, in section 19.3, to rank central banks by overall legal independence. Data on CB governors' turnover rates is presented and discussed in section 19.4. Questionnaire-based indices of independence are described in section 19.5. The interrelationships between the various proxies of independence are examined in section 19.6. Additional dimensions of CB independence are discussed in section 19.7.

19.2 Measures of Legal Central Bank Independence and Their Coding

Besides being an essential component of actual independence, legal independence is of independent interest for several reasons. First, it suggests what is the degree of independence that legislators *meant to confer* on the CB. Second, practically all existing attempts at the systematic characterization of CB independence rely solely on legal aspects of independence (Bade and Parkin 1980; Banaian, Laney, and Willet 1983; Skanland 1984; Parkin 1987; Alesina 1988; Masciandaro and Tabellini 1988; Grilli, Masciandaro, and Tabellini 1991). Availability of an index of legal independence is therefore needed for the purpose of establishing comparability with previous studies.

There generally are substantial differences in the focus, scope, and degree of detail of various CB laws. Many of the provisions in CB charters have no direct bearing on the issue of CB independence. At times the spirit of the law and its application in practice are more important than the letter of the law. Ranking of CB charters by their degree of legal independence is therefore a difficult task involving an inescapable amount of subjective judgment.

The indices of legal aspects of CB independence presented below are constructed in the following manner: First, they are based on a limited number of narrow but relatively precise legal characteristics. Second, a code of independence is assigned to each central bank for each characteristic. In doing that, only the written information from the charters is used.

Additional information on how the law is applied is deliberately left out because it is reflected through separate indices that are discussed in sections 19.4 and 19.5. These principles make it possible to rank central banks by their degree of independence on various legal dimensions with a relatively small amount of subjective judgment and to focus on concrete details of the law rather than on a broader but more impressionistic view of it.

The legal characteristics or "variables" which are coded can be divided into four groups: (1) variables concerning the appointment, dismissal, and term of office of the chief executive officer of the bank (usually the governor); (2) variables concerning the resolution of conflicts between the executive branch and the CB and the degree of participation of the CB in the formulation of monetary policy and in the budgetary process; (3) final objectives of the CB as stated in its charter; and (4) legal restrictions on the ability of the public sector to borrow from the CB. Such restrictions take the form of various limitations on the volume, maturity, rates, and width of direct advances and of securitized lending from the CB to the public sector. These four groups of legal provisions are classified under the four following headings:

Chief executive officer: CEO

Policy formulation: PF

Final objectives: OBJ

Limitations on lending: LL

The detailed classification and codings appear in table 19.1. In coding various central banks by the degree of independence within each group of characteristics, the following criteria are used: Central banks in which the legal term of office of the CEO is longer and in which the executive branch has little legal authority in the appointment or dismissal of the governor are classified as more independent on the CEO dimension. By the same logic, central banks with wider authority to formulate monetary policy and to resist the executive branch in cases of conflict are classified as more independent on the PF dimension.

Central banks in which the only or main objective of policy (as specified in the charter) is price stability are classified as being more independent on this dimension than central banks with a number of objectives in addition to price stability. These banks are in turn classified as being more independent than banks with a large number of objectives or banks in whose

Table 19.1
Legal variables and their codings

Group	Definition of variable	Variable	Levels of independence and their meanings	Numerical codings
CEO	Term of office of CEO in years	<i>too</i>	1. <i>too</i> ≥ 8	1
			2. $8 > too \geq 6$	0.75
			3. <i>too</i> = 5	0.50
			4. <i>too</i> = 4	0.25
			5. <i>too</i> < 4	0
Who appoints the CEO?	<i>app</i>	1. CEO appointed by CB board	1	
		2. CEO appointed by council composed of members from executive and legislative branches as well as from CB board	0.75	
		3. CEO appointed by legislative branch (Congress, King)	0.50	
		4. CEO appointed by executive branch (council of ministers)	0.25	
		5. CEO appointed through decision of one or two members of executive branch (e.g., prime minister or minister of finance)	0	
		1. No provision for dismissal	1	
		2. Dismissal possible only for nonpolicy reasons (e.g., incapability or violation of law)	0.83	
Provisions for dismissal of CEO	<i>diss</i>	3. Dismissal possible and at discretion of CB board	0.67	
		4. Dismissal for policy reasons at legislative branch's discretion	0.50	
		5. Unconditional dismissal possible at legislative branch's discretion	0.33	
		6. Dismissal for policy reasons at executive branch's discretion	0.17	
		7. Unconditional dismissal possible at executive branch's discretion	0	
		1. CEO prohibited by law from holding any other office in government	1	
		2. CEO not allowed to hold any other office in government unless authorized by executive branch	0.5	
Is CEO allowed to hold another office?	<i>off</i>	3. Law does not prohibit CEO from holding another office	0	

Table 19.1 (continued)

Group	Definition of variable	Variable	Levels of independence and their meanings	Numerical codings
Policy formulations	Who formulates monetary policy?	<i>monpol</i>	1. CB alone has authority to formulate monetary policy 2. CB participates in formulation of monetary policy together with government 3. CB participates in formulation of monetary policy in an advisory capacity 4. Government alone formulates monetary policy	1 0.66 0.33 0
	Government directives and resolution of conflict	<i>conf</i>	1. CB given final authority over issues clearly defined in the law as CB objectives 2. Government has final authority only over policy issues that have not been clearly defined as CB goals or in case of conflict within CB 3. In case of conflict final decision up to a council whose members are from CB, legislative branch, and executive branch 4. Legislative branch has final authority on policy issues 5. Executive branch has final authority on policy issues, but subject to due process and possible protest by CB 6. Executive branch has unconditional authority over policy	1 0.8 0.6 0.4 0.2 0
	Is CB given an active role in the formulation of government's budget?	<i>adv</i>	1. Yes 2. No	1 0
CB objectives		<i>obj</i>	1. Price stability mentioned as the only or major goal, and in case of conflict with government CB has final authority to pursue policies aimed at achieving this goal 2. Price stability mentioned as the only goal 3. Price stability mentioned along with other objectives that do not seem to conflict with price stability (e.g., stable banking) 4. Price stability mentioned with a number of potentially conflicting goals (e.g., full employment)	1 0.8 0.6 0.4

Limitations on lending	Limitations on advances	<i>lta</i>	5. CB charter does not contain any objectives for CB	0.2
			6. Some goals appear in the charter, but price stability not one of them	0
			1. Advances to government prohibited	1
			2. Advances permitted but subject to limits in terms of absolute cash amounts or to other types of relatively strict limits (e.g., up to 15% of government revenues)	0.66
			3. Advances subject to relatively accommodative limits (e.g., advances can exceed 15% of government revenues or are specified as fractions of government expenditures)	0.33
			4. No legal limits on advances; their quantity subject to periodic negotiations between government and CB	0
		<i>lts</i>	Specification of levels identical to those for advances	
		<i>ldec</i>	1. CB controls terms and conditions of government borrowing from it	1
			2. Terms of CB lending specified in the law, or CB given legal authority to set these terms	0.66
			3. Law leaves the decision about the terms of CB lending to government to negotiations between CB and executive branch	0.33
			4. Executive branch alone decides the terms of CB lending to government and imposes them on CB	0
		<i>lwidth</i>	1. Only central government can borrow from CB	1
			2. Central and state governments as well as all political subdivisions can borrow from CB	0.66
			3. In addition to the institutions mentioned under 2 public enterprises can borrow from CB	0.33
			4. CB can lend to all of the above as well as to the private sector	0

Table 19.1 (continued)

Group	Definition of variable	Variable	Levels of independence and their meanings	Numerical codings
	Type of limit when such limit exists	<i>ltype</i>	<ol style="list-style-type: none"> 1. Limit specified as an absolute cash amount 2. Limit specified as a percentage of CB capital or other liabilities 3. Limit specified as a percentage of government revenues 4. Limit specified as a percentage of government expenditures 	<p>1 0.66 0.33 0</p>
	Maturity of loans	<i>lmat</i>	<ol style="list-style-type: none"> 1. Maturity of CB loans limited to a maximum of 6 months 2. Maturity of CB loans limited to a maximum of one year 3. Maturity of CB loans limited to a maximum of more than one year 4. No legal upper bounds on the maturity of CB loans 	<p>1 0.66 0.33 0</p>
	Restrictions on interest rates ^b	<i>lrat</i>	<ol style="list-style-type: none"> 1. Interest rate on CB loans must be at market rate 2. Interest rate on CB loans to government cannot be lower than a certain floor 3. Interest rate on CB loans cannot exceed a certain ceiling 4. No explicit legal provisions regarding the interest rate on CB loans 5. Law stipulates no interest rate charge on government's borrowing from the CB 	<p>1 0.75 0.50 0.25</p>
	Prohibition on lending in primary market	<i>lprm</i>	<ol style="list-style-type: none"> 1. CB prohibited from buying government securities in primary market 2. CB not prohibited from buying government securities in primary market 	<p>0 1 0</p>

Sources: (1) Computerized legal data files on CB charters from the Central Banking Department at the IMF, (2) Auiricht (1961, 1967), (3) Eight European central banks (1963), and (4) Effros (1982). These sources were supplemented by updates of various laws from the IMF legal library files.

a. Terms of lending concern maturity, interest, and amount of loans subject to the relevant legal limits.
 b. The rationale for the classification of this variable is that minimum rates are likely to have been devised in order to discourage borrowing at the CB while maximum rates are probably meant to facilitate borrowing at the CB. But the requirement of a minimum rate is classified below "market rates," since minimum rates, when they exist, are usually lower than market rates.

charter price stability is not mentioned as an objective at all. This classification of the "objectives" variable is designed to capture the legal mandate of the bank to single-mindedly pursue the objective of price stability. (One of the few central banks in which such an unequivocal legal mandate exists is the Bundesbank.) It does not therefore reflect (as the previous two groups of variables) the general level of independence from government. It proxies instead the legal independence of the CB to elevate the target of price stability above other objectives. In Rogoff's (1985) terminology, it measures how strong is the "conservative bias" of the CB as embodied in the law.

Similarly we classify banks in which the limitations on lending from the CB to the public sector are stricter as more independent to pursue the objective of price stability. These limitations encompass a number of more detailed variables such as separate limitations on advances and securitized lending and restrictions on maturities and on interest rates. Generally the stricter the limitation, the higher is the independence coding given to the bank on that dimension. The comparability of various types of limitations is complicated by the fact that limitations are specified in terms of different reference amounts in different countries. In a small number of countries limitations on lending are specified in absolute cash amounts and in others as a percentage of CB liabilities. The most prevalent type of limitation is formulated as a percentage of government's revenues from taxes and in a minority of cases as a percentage of government's expenditures.² The "bite" of these limitations obviously depends on the magnitudes of the reference variables. However, other things the same, absolute cash limits are more binding than limits in terms of CB liabilities which in turn seem more binding than limits in terms of government's revenues. The most accommodative limits are those specified in terms of government's expenditures. These considerations are embodied in a "type of limit" variable (*ltype*) and also influence the classification of the variables *lla* (limitation on lending—advances) and *lls* (limitations on lending—securities). Details appear in table 19.1 in the group of variables under the heading "limitations on lending."

Limitations on lending are classified as stricter, the nearer the rates paid by government to market rates and the shorter the maturities of the loans from the CB to the public sector. They are also stricter, the narrower the circle of institutions that are allowed to borrow from the CB (the variable *lwidth* in table 19.1) and the smaller the discretion of the executive branch

in deciding to whom and how much the CB will lend (the variable *ldec* in table 19.1). In addition central bank laws that prohibit the CB from buying government securities on the primary market are considered, ceteris paribus, stricter than laws that do not contain such a prohibition (the variable *lprm* in table 19.1).

Altogether sixteen different legal variables are coded using a uniform scale ranging between 0 (smallest level of independence) to 1 (highest level of independence). The number of independence levels generally varies across legal variables depending on the fineness of data on alternative legal characteristics. Let n_j be the number of independence levels of legal variable j . The range $[0, 1]$ is divided into $n_j - 1$ equal intervals yielding n_j numerical codings that correspond to the n_j levels of independence of that legal variable. Thus for $n_j = 4$, for example, the numerical codings are 0, 0.33, 0.66, and 1. In the data n_j varies from a minimum of 2 to a maximum of 7.

Table 19.1 summarizes the sixteen legal variables and the meaning of their codings. The time period considered covers the four decades, starting in 1950 and ending in 1989. It is divided into four subperiods: 1950–59, 1960–71, 1972–79, and 1980–89. They correspond to the dollar standard period, the period of convertibility with the dollar, the period of the two oil shocks, and the period of disinflation and the debt crisis. We will refer to them as subperiods 1 through 4. Legal variables are coded separately for each subperiod. Since central bank legislation changes relatively slowly the codes are, in many cases, identical across subperiods. Nevertheless, this procedure captures important legislative changes for some countries.³ Whenever the charter of a CB does not contain enough information to reliably code a particular legal variable, a NA (no account) entry is entered. The basic codings of the sixteen legal variables described in table 19.1 are summarized in appendix A to this chapter.

19.3 Aggregation of Legal Variables and Ranking of Central Banks by Legal Independence

Some of the legal variables whose codings appear in table 19.1 are defined quite narrowly. The advantage of narrowness in the definition of legal variables is that it makes it easier to objectively code them. But narrowness has its drawbacks too. First, the narrower the definition of variables, the more likely it is that there is a substantial degree of multicollinearity

among them. This makes it difficult to pinpoint the partial contribution of each legal variable to policy outcomes such as inflation or inflation variance with reasonable precision. Second, not all the laws contain information about all the legal variables. As a consequence when the legal variables appear at a high level of disaggregation any missing observation on at least one of them precludes the use of the legal variables that are available for that country and time period.

To alleviate these problems the sixteen legal variables described in table 19.1 are aggregated into eight legal variables by applying the following procedure: The four variables concerning matters such as the appointment and term of office of the governor of the CB are aggregated into a single variable *ceo* by calculating the unweighted mean of the codings of those variables. The three variables under “policy formulations” are aggregated into a new variable *pf* by computing a weighted mean of the variables in that group.⁴ The weights are 0.5 for *conf* and 0.25 for each of *monpol* and *adv*. Finally, the last four variables in the group of “limitations on lending” are aggregated into the single variable *lm* by calculating an unweighted average of those variables. This aggregation procedure produces one summary legal variable for each of the first three groups in table 19.1 and five legal variables for the “limitations on lending” group. When there is an NA entry for one or more variables within a subgroup only, the variables with meaningful entries are aggregated. In such cases the weights of the missing variables are allocated proportionally to the remaining variables within the subgroup.

To assess the overall legal independence of a CB, it is also useful to go to a second level of aggregation whose ultimate product is a *single* index of *legal independence* per country and subperiod. Two alternative indices of this type are computed. An unweighted index, calculated as a simple average of the codings of the eight variables obtained in the first round of aggregation, and a weighted index. The (subjective) weights assigned to each of the eight variables in the second case are displayed in table 19.2. We refer to the resulting overall indices of independence as *LVAU* and *LVAW*, respectively. As in the first round of aggregation the weights of legal variables with an NA entry are allocated proportionally to the legal variables with meaningful information. This procedure is applied only when the sum of the weights of the legal variables for which information is available is larger than some minimal level (0.6 for *LVAU* and 0.7 for *LVAW*). Otherwise, an NA entry is entered.

Table 19.2

Weights used in the construction of the index *LVAW* of legal CB independence

Legal variable	Weight
<i>ceo</i> (chief executive officer)	0.20
<i>pf</i> (policy formulations)	0.15
<i>obj</i> (objectives)	0.15
<i>lla</i> (limitations on lending—advances)	0.15
<i>lls</i> (limitations on lending—securitized)	0.10
<i>ldec</i> (limitations on lending—who decides)	0.10
<i>bwidth</i> (limitations on lending—width)	0.05
<i>lm</i> (limitations on lending—miscellaneous)	0.10
	1.00

The variables *LVAU* and *LVAW* are summary measures of the degree of legal independence of different central banks. Table 19.3 presents a ranking of countries during the last subperiod (1980–89) by the overall level of legal independence of their central banks as measured by *LVAU*. Table 19.4 presents similar rankings only for the subset of developed countries. Both tables also present the (geometric) average yearly rate of inflation in each country during the same period. The rankings in table 19.3 range from a maximum of 0.68 for Switzerland to a minimum of 0.10 for Poland. Among the seven countries with the highest rank, four are developed; among the seven countries with the lowest rank, six are less developed countries (LDC). Nevertheless, the median level of legal independence for the entire sample of countries, which is 0.33, is very close to the median level within the group of developed countries in table 19.4. This level is 0.31. But there is a higher concentration of developed countries at the top 10 percent and a higher concentration of developing countries at the bottom 10 percent of the distribution. The ranking by *LVAW* produces a broadly similar picture. In the overall sample the rank coefficient of correlation between *LVAU* and *LVAW* is 0.91. Table 19.4 also shows the index *LVAU* in the group of developed countries during the 1980s. The rank coefficient of correlation during that period alone is 0.90.

There are no hyperinflations among developed countries during the 1980s. The highest average rate of inflation in this group is 38 percent for Iceland followed quite distantly by New Zealand with 12 percent. But some of the countries with the highest average rates of inflation such

Table 19.3

Ranking of central banks by overall legal independence (as measured by *LVAU*) during the 1980s

Country	<i>LVAU</i> ^a	Average yearly inflation ^b	Country	<i>LVAU</i> ^a	Average yearly inflation ^b
Switzerland	0.68	3	India	0.33	9
West Germany	0.66	3	Indonesia	0.32	10
Austria	0.58	4	Britain	0.31	7
Egypt	0.53	17	Zambia	0.31	28
Greece	0.51	19	Australia	0.31	8
United States	0.51	5	South Africa	0.30	15
Chile	0.49	21	China	0.29	8
Tanzania	0.48	31	Romania	0.29	4
Ethiopia	0.47	4	Ghana	0.28	44
Denmark	0.47	7	France	0.28	7
Canada	0.46	6	Western Samoa	0.28	8
Bahamas	0.45	6	Sweden	0.27	8
Malta	0.45	3	Singapore	0.27	3
Kenya	0.44	11	Finland	0.27	7
Argentina	0.44	319	New Zealand	0.27	12
Turkey	0.44	50	Thailand	0.26	6
Peru	0.43	194	Brazil	0.26	230
Israel	0.42	105	Nepal	0.25	11
Costa Rica	0.42	25	Bolivia	0.25	230
Netherlands	0.42	3	Hungary	0.24	9
Philippines	0.42	14	Zimbabwe	0.23	13
Nicaragua	0.42	258	South Korea	0.23	8
Honduras	0.41	7	Italy	0.22	11
Zaire	0.41	58	Uruguay	0.22	56
Barbados	0.40	7	Spain	0.21	10
Ireland	0.39	9	Pakistan	0.19	7
Venezuela	0.37	21	Belgium	0.19	5
Uganda	0.37	105	Qatar	0.18	4
Luxembourg	0.37	5	Morocco	0.16	8
Botswana	0.36	11	Japan	0.16	3
Iceland	0.36	38	Panama	0.16	3
Mexico	0.36	65	Norway	0.14	8
Malaysia	0.34	4	Yugoslavia	0.13	108
Nigeria	0.33	19	Poland	0.10	43

a. The range of *LVAU* is from zero (minimal independence) to one (maximum independence).
 b. Inflation is measured as the yearly geometric average during the 1980s and is rounded to nearest full percentage.

Table 19.4

Ranking of central banks by average legal independence (as measured by *LVAU*) during the 1980s in developed countries

Country	<i>LVAU</i> ^a	Average yearly inflation ^b
Switzerland	0.68	3
West Germany	0.66	3
Austria	0.58	4
United States	0.51	5
Denmark	0.47	7
Canada	0.46	6
Netherlands	0.42	3
Ireland	0.39	9
Luxembourg	0.37	5
Iceland	0.36	38
Britain	0.31	7
Australia	0.31	8
France	0.28	7
Sweden	0.27	8
Finland	0.27	7
New Zealand	0.27	12
Italy	0.22	11
Spain	0.21	10
Belgium	0.19	5
Japan	0.16	3
Norway	0.14	8

a. The range of *LVAU* is from zero (minimal independence) to one (maximum independence).

b. Inflation is measured as the yearly geometric average during the 1980s and is rounded to the nearest full percentage.

as Argentina, Peru, and Nicaragua have rankings of legal independence above the median. On the other hand, countries such as Panama, Japan, and Belgium, with very low rates of inflation, are ranked in the lowest quartile of legal CB independence. These preliminary, somewhat impressionistic observations suggest that legal CB independence may be neither necessary nor sufficient for low inflation. This, however, is not inconsistent with the view that, other things the same, a higher degree of legal independence is conducive to lower inflation. These issues are investigated more precisely in chapter 20.

19.4 The Turnover Rate of Central Bank Governors as a Proxy for Actual Independence

As most practitioners in the area of monetary policymaking are well aware, the legal status of a central bank is only one of several elements that determines its actual independence. Although there are important variations in the degree of completeness of different CB laws, many are highly incomplete and leave a lot of room for interpretation. As a result factors such as tradition or the personalities of the governor and other high officials of the bank at least partially shape the actual level of CB independence. Even when the law is quite explicit, it may not be operational if there is a tradition or an understanding within government that things should be done in a different way. A striking example is Argentina in which the legal term of office of the governor is four years. But there is also an informal tradition that the governor of the CB is supposed to offer his resignation to the executive whenever there is a change of government or even of the finance minister. Argentinian governors invariably adhered to this tradition. As a consequence the average actual term of office of the governor in Argentina during the 1980s was about ten months. Obviously the actual degree of independence of the Argentinian CB is substantially lower than the one implied by our measures of legal independence including, in particular, the four years legal term of office.

There are no obvious indicators of actual, as opposed to legal, CB independence. This is not because the matter is not important, but because it is hard to find systematic indicators of actual independence when it diverges from legal independence. This chapter does not fully resolve this measurement issue. However, it presents two direct indicators of actual CB independence, one of which is based on the actual average term of office of CB governors in different countries. This indicator is based on the presumption that at least above some threshold, a larger turnover of CB governors indicates a lower level of CB independence.

The other indicator, or rather group of indicators, is based on responses to a questionnaire on CB independence that was sent to specialists on monetary policy and institutions in various central banks. These indices are discussed in the next section.

Table 19.5 presents the average turnover rate of Central Bank governors for over fifty countries during the forty years ending in 1989. These rates are presented separately for developing and developed countries. Within

Table 19.5
CB governors' turnover rates 1950-89 (average number of changes per annum)

Developed countries		Developing countries	
Country	Turnover rate	Country	Turnover rate
Iceland	0.03	Malaysia	0.13
Netherlands	0.05	Honduras	0.13
Denmark	0.05	Zimbabwe	0.15
Luxembourg	0.08	Barbados	0.11
Norway	0.08	Philippines	0.13
Italy	0.08	Tanzania	0.13
Britain	0.10	Israel	0.14
Canada	0.10	Nigeria	0.19
West Germany	0.10	Kenya	0.17
United States	0.13	Greece	0.18
Finland	0.13	South Africa	0.10
Belgium	0.13	Hungary	0.18
Switzerland	0.13	Lebanon	0.19
Sweden	0.15	Bahamas	0.19
Ireland	0.15	Mexico	0.15
France	0.15	Romania	0.20
New Zealand	0.15	Colombia	0.20
Japan	0.20	Thailand	0.20
Spain	0.20	Zaire	0.23
		Yugoslavia	0.23
		Panama	0.24
		Ghana	0.28
		Malta	0.28
		Venezuela	0.30
		Egypt	0.31
		India	0.33
		Peru	0.33
		Uganda	0.34
		Zambia	0.38
		Singapore	0.37
		Ethiopia	0.20
		Chile	0.45
		Botswana	0.41
		China	0.34
		Turkey	0.40
		South Korea	0.43
		Uruguay	0.48
		Costa Rica	0.58
		Argentina	0.93

each group countries are ranked from the lowest to the highest turnover rate. Turnover rates range from a minimum of 0.03 (average tenure of 33 years) in Iceland to a maximum of 0.93 (average tenure of about thirteen months) in Argentina. It is apparent that turnover rates in LDCs tend to spread into a range that has not been experienced in the developed countries (DC). The highest turnover among the DC is 0.2 (average tenure of five years) for Spain and Japan. More than half of the LDCs have turnover rates exceeding this maximum.

It may be argued that low turnover does not necessarily imply a high level of CB independence on the grounds that a relatively subservient governor will tend to stay in office longer than a governor who stands up to the executive branch. This may be true for countries with exceptionally low turnover rates such as Iceland, Denmark, and Britain.⁵ On the other hand, it is very likely that above some critical turnover rate CB independence is lower the higher the turnover rate of CB governors. One reason is that for sufficiently high turnover rates the tenure of the CB governor is shorter than that of the executive branch. This makes the governor more susceptible to influence by the executive branch and discourages him or her from trying to implement longer-term policies the lower the expected tenure. Since in most countries the electoral cycle is at least four years, it is likely that the threshold turnover is somewhere between 0.2 and 0.25 (average tenure of four to five years). In addition, for very short terms of office such as three years or less (turnover rates of 0.33 or larger), it is generally more difficult to implement long-term policies for any electoral cycle. In any case the threshold turnover will be determined (in chapter 20) by using a goodness-of-fit criterion.

Since all DCs have turnover rates below 0.2, it is not very likely that these rates are effective proxies for independence in that group of countries. On the other hand, since a majority of LDCs in the sample is characterized by turnover rates above 0.2, it is likely that governors' turnover is a meaningful proxy for independence among the LDCs.

An interesting side issue is whether actual turnover is affected by the legal term of office of the governor as stipulated in the law. To answer this question, actual turnover rates in the four subperiods were regressed on the legal terms of office and on subperiod dummies to control for possible period-specific effects on turnover. The coefficient of the term of office variable as stipulated in the law was negative and significant indicating that it has an effect on actual turnover. But the goodness of fit was low

indicating that actual turnover is affected by many other factors besides the legal term of office.

19.5 Characterization of Central Bank Independence by Answers to a Questionnaire

Responses to a questionnaire containing questions on various aspects of CB independence were secured from qualified individuals in various central banks. The questionnaire contains questions on the following five groups of issues: (1) legal aspects of CB independence, (2) actual practice when it differs from the stipulation of the law, (3) monetary policy instruments and the agencies controlling them, (4) intermediate targets and indicators, and (5) final objectives of monetary policy and their relative importance. Responses to the questionnaire were obtained for twenty-four countries. Since policymakers' thinking is usually dominated by the present and the recent past, these responses are taken to refer to the last subperiod (1980–89). An obvious drawback of the questionnaire method is that it is, to some extent, based on the subjective judgment of qualified but different individuals at various central banks. On the other hand, it is an efficient method for discovering serious divergences between actual and legal independence.

Answers to the questionnaire were used in order to code the nine questionnaire variables described in table 19.6. Only a subset of the answers was used for the codings. This was done to minimize the impact of variations in the quality of responses across questions and also because some answers are more easily translated into precise codings than others. Appendix B to this chapter reports the questions whose answers were used for the coding of variables in table 19.6. The codings appear in appendix C. Variable 1 is designed to capture the extent to which the terms of office of the governor and of the board of directors are likely to be independent from government. If their legal terms are longer than that of government, the bank is considered, *ceteris paribus*, to be more independent and the more so the larger the difference between the terms of office of the bank's officials and the term of office of general government. Banks for which the reverse is true, or for which there is evidence that some high CB officials are terminated when there is a change in government, are classified in the lowest category of independence. Variable 2 is self-explanatory. The actual coding is done by applying criteria similar to those used to classify the legal

Table 19.6
Questionnaire variables and their codings

Definition of variable	Variable name	Numerical codings
1. Tenure overlap with political authorities	<i>qto</i>	
Little overlap		1
Some overlap		0.5
Substantial overlap		0
2. Limitations on lending in practice	<i>qll</i>	
This scale measures the tightness of limitations on lending and how they have been adhered to in practice as evaluated by the respondent to the questionnaire. The scale has four points: 1, 0.66, 0.33, and 0, where 1 stands for the most binding limitations		
3. Resolution of conflict	<i>qrc</i>	
In some cases clear evidence of resolution in favor of CB		1
Everything except what is covered under the first and last items		0.5
Clear evidence of resolution in favor of government in all cases		0
4. Who determines the budget of CB?	<i>qbc</i>	
Mostly CB		1
Mixture of CB and executive or legislative branches		0.5
Mostly executive or legislative branches		0
5. Who determines the salaries of high CB officials and the allocation of CB profits?	<i>qsp</i>	
Mostly CB or law		1
Mixture of CB and executive or legislative branches		0.5
Mostly executive or legislative branches		0
Whenever the decision about salaries and the allocation of profits is not done by the same institution, the answer is coded according to the identity of the institution determining salaries		
6. Are there quantitative monetary stock targets?	<i>qst</i>	
Such targets exist and are well adhered to		1
Such targets exist and there is mixed adherence		0.66
Such targets exist and are poorly adhered to		0.33
There are no stock targets		0
7. Are there formal or informal interest rate targets?	<i>qirt</i>	
No		1
Yes		0

Table 19.6 (continued)

Definition of variable	Variable name	Numerical codings
8. What is the actual priority assigned to price stability?	<i>qpps</i>	
First priority assigned to price stability		1
First priority assigned to a fixed exchange rate		0.66
Price or exchange rate stability are among the objectives of monetary policy, but neither has first priority		0.33
No mention of price or exchange rate stability as objectives at any priority level		0
9. Does CB function as a development bank that grants credits at subsidy rates?	<i>qsc</i>	
No		1
To some extent		0.66
Yes		0.33
CB is heavily involved in granting subsidized credits to the private and public sectors		0

limitations on lending in the previous section. The lowest level of independence is assigned mostly to cases in which there are no limitations on lending and/or there is evidence that government can adjust the limits very easily in practice.

The remaining variables are self-explanatory, except perhaps for the sixth and seventh variables which focus on the existence of intermediate targets and on how they operate. The existence of stock targets is taken to indicate that the CB is freer to focus mostly on price stability and the more so the better its performance in attaining the targets. The existence of interest rate targets indicates that the CB has less freedom to focus on price stability. The codings of those variables reflect these presumptions. Variable 9 on the existence of subsidized credits from the central bank is important in some LDCs with limited private supplies of savings. In such countries the ability of the central bank to pursue price stability may be severely restricted by the fact that it has to function as a development bank. The detailed codings of individual questionnaire variables appear in the appendix to this chapter.

The questionnaire variables reflect the judgment of specialists on monetary policy. This judgment is based on legal as well as on other pertinent information. As a consequence these variables may at times overlap with some of the legal variables. But they also reflect information about actual

practice and independence that is not captured by the legal variables. For example, the legal limitations on lending may be tight but easy to adjust, or to evade, in practice. Questionnaire variable 2 is likely to detect such discrepancies.

As in the case of the legal variables, two rounds of aggregation are applied to the questionnaire variables. In the first round the fourth and the fifth variables are aggregated, with equal weights, into a single financial independence variable *qfi*. Also the sixth and seventh variables are replaced by a single unweighted average *qit* for intermediate targets. This first round of aggregation reduces the number of variables from nine to seven. In the second round of aggregation these seven variables are aggregated into two alternative overall indices of independence as reflected by the responses to the questionnaire: *QVAU* is an unweighted average of the codings of the seven variables resulting from the first round of aggregation. *QVAW* is obtained by calculating a weighted average of the same variables. The weights reflect a subjective evaluation of the relative importance of each variable's contribution to the CB ability to focus on the goal of price stability. They are summarized in table 19.7. The aggregate indices *QVAU* and *QVAW* reflect both the law and the ways it is applied in practice. Being based on subjective evaluations, they probably contain more noise than the aggregate indices *LVAU* and *LVAW* of legal CB independence. However, they are also likely to contain additional pertinent information about actual independence. Hence, as far as overall actual independence is concerned, the signal-to-noise ratio in *QVAU* and *QVAW* is not necessarily larger than this ratio for *LVAU* and *LVAW*. In

Table 19.7

Weights used in the construction of the questionnaire-based index *QVAW* of CB independence

Questionnaire variable	Weight
<i>qto</i> (tenure overlap)	0.10
<i>qll</i> (limitations on lending)	0.20
<i>qrc</i> (resolution of conflict)	0.10
<i>qfi</i> (financial independence)	0.10
<i>qit</i> (intermediate targets)	0.15
<i>qpps</i> (priority to price stability)	0.15
<i>qsc</i> (subsidized credits)	0.20
	1.00

Table 19.8
Ranking of central banks by aggregate indices of independence derived from questionnaires

Country	Ranked by <i>QVAU</i>		Country	Ranked by <i>QVAW</i>	
	<i>QVAU</i>	Average yearly inflation 1980-89 ^a		<i>QVAW</i>	Average yearly inflation 1980-89 ^a
West Germany	1.00	3	West Germany	1.00	3
Costa Rica	0.79	25	Costa Rica	0.81	25
Italy	0.76	11	Finland	0.78	7
Finland	0.75	7	Australia	0.76	8
Australia	0.73	8	Italy	0.73	11
Denmark	0.70	7	Denmark	0.73	7
Bahamas	0.69	6	Bahamas	0.71	6
Luxembourg	0.67	5	Luxembourg	0.66	5
France	0.65	7	France	0.65	7
Zaire	0.64	58	Britain	0.64	7
South Africa	0.61	15	South Africa	0.64	15
Lebanon	0.60		Zaire	0.61	58
Britain	0.60	7	Lebanon	0.59	
Uganda	0.57	105	Ireland	0.57	9
Belgium	0.53	5	Barbados	0.54	7
Barbados	0.51	7	Uganda	0.53	105
Ireland	0.51	9	Uruguay	0.49	56
Uruguay	0.49	56	Belgium	0.47	5
Turkey	0.48	50	Turkey	0.44	50
Tanzania	0.40	31	Tanzania	0.38	31
Nepal	0.30	11	Peru	0.22	194
Peru	0.23	194	Yugoslavia	0.17	108
Yugoslavia	0.18	108	Ethiopia	0.13	4
Ethiopia	0.12	4			

a. Inflation is measured as a geometric yearly average and is rounded to the nearest full percentage.

any case there is no need to choose either the legal or the questionnaire variables. To the extent that each group proxies for somewhat different dimensions of independence, both types of variables (when available) can be used to measure independence.

Table 19.8 presents a ranking of the countries for which questionnaire responses are available, using alternatively *QVAU* and *QVAW*. The indices are calculated only for countries in which there are responses for questions whose sum of weights exceeds a certain minimal percentage (70 percent for *QVAW* and 60 percent for *QVAU*). It is apparent that under both rankings Germany is at the top and Ethiopia at the bottom and that for the countries for which enough responses are available, the two rankings are very similar. As a matter of fact the rank coefficient of correlation between *QVAU* and *QVAW* is 0.99.

The median of *QVAU* occurs at 0.6 for Britain and Lebanon. The median of *QVAU* within the group of LDCs is 0.49 (for Uruguay). Thus the median level of CB independence (as measured by *QVAU*) in the group of LDCs appears to be significantly lower than this median within the group of DCs. This contrasts with the finding for legal independence. It will be recalled from tables 19.3 and 19.4 that the medians of *LVAU* in the overall sample and in the group of DCs are very close to each other.

19.6 Interrelationships between Alternative Indices of Central Bank Independence

To this point three groups of measures of CB independence have been introduced. Legal independence, CB governors' turnover rates, and independence as coded from responses to a questionnaire on CB independence.⁶ The first source reflects only the letter of the law. The second, by contrast, is based on actual developments. The third source combines both legal and actual information on CB independence but is more judgmental than the first two.

It is of some interest to examine the comovements between these groups of variables for at least two reasons. First, since they are all devised to bring out various dimensions of CB independence, a high degree of correlation among them would imply that any one group may suffice as an overall index of CB independence. If, on the other hand, the correlation is not high, there is room for usefully combining them in order to obtain better measures of overall CB independence. The second reason is related to the

Table 19.9
Correlations between legal and questionnaire-based measures of CB independence

Correlation between	All countries	Developed countries	Less developed countries
Rank coefficients of correlation			
<i>LVAU</i> and <i>QVAU</i>	0.01	0.01	0.00
<i>LVAW</i> and <i>QVAW</i>	0.04	0.33	0.06
Simple coefficients of correlation			
<i>qll</i> and <i>ll</i>	0.19		
<i>qll</i> and all the legal "limitations on lending" variables from table 19.2	0.46		

discussion in chapter 20 in which inflation is related to CB independence. If the various groups of indices are highly collinear, it will be difficult to identify the separate contribution of each to inflation. If they are not, however, there is hope for identifying the separate effect of each on inflation.

We focus first on the correlation between legal independence and overall independence as reflected in responses to the questionnaire. The rank coefficients of correlation between the summary measures of independence in the two groups are summarized in table 19.9. The table shows that the correlation between these two measures of independence for the entire group of (up to) twenty-six countries is modest. But this hides somewhat different types of correlations for developed and less developed countries. The correlation between legal provisions and questionnaire-based measures of independence is somewhat higher for the subset of DC than for the LDCs in the sample.⁷ It appears therefore that although far from being identical, legal and actual independence are more closely related in DCs than in LDCs.

The other relationship explored is between governors' turnover and legal independence. This is done by regressing average turnover in each country and subperiod alternatively on *LVAU* and *LVAW* and on subperiods' dummies to control for period-specific effects. Again this is done for all countries (over fifty of them) as well as for DCs and LDCs separately. In all regressions the coefficient of the aggregate legal variable is not significant at usual significance levels indicating that the turnover variable and the legal variables are likely to be proxying for rather different dimensions of CB independence.

The questionnaire variable *qll* incorporates information about legal limitations on lending as well as on how they are implemented in practice. The last two entries in table 19.9 show the coefficients of correlation between *qll* and between the variables that measure the tightness of legal limitations on lending. The variable *ll* is an aggregate of the last five legal variables in table 19.2 with weights that are proportional to their weights in the table. Even when the legal limitations variables are entered in disaggregated form, they contribute only 46 percent to the explanation of the variation in *qll*. This indicates that the answers to questions concerning limitations on lending generally include information beyond the information contained in legal limitations on lending alone.

Questionnaire variable *qpps* measures the relative importance given to price stability in practice as evaluated by respondents to the questionnaire. Legal variable *obj* measures the same concept as specified in the law. The correlation between these two variables is therefore a measure of the extent to which the actual and the legally specified emphasis on price stability are related to each other. A regression of *qpps* on *obj* yields a significant (at the 0.04 level) and positive coefficient.⁸ But the squared coefficient of correlation between the two variables is only 0.14. These results suggest that although the actual emphasis on price stability (as evaluated by respondents to the questionnaire) depends on the emphasis given to this objective by the law, there are substantial divergences between these two measures. It follows that *qpps* contains information beyond that contained in the definition of objectives as specified in the CB charter.

19.7 Additional Dimensions of Central Bank Independence⁹

Although the indices of CB independence presented in this chapter are probably the most comprehensive that exist on a unified basis, they do not quantify all the aspects of independence. This section discusses informally some additional dimensions. A potentially important component of independence is the quality of the bank's research department and its standing in comparison to other economic research institutions within the public sector. A governor who is backed by an absolutely and relatively strong research department carries more weight vis-à-vis the Treasury and other branches of government. The reason is probably that the governor is perceived as a relatively impartial provider of reliable information about

the economy. A possible indicator of the quality of a bank's research department is the quality of the annual report it produces.

Other things the same, independence is probably higher in countries with broad and well-developed financial markets. The reason is that the prudential supervision of financial institutions and related intricacies are almost always under the authority of the CB. The larger the financial sector, the wider is the span of authority of the CB and the areas in which it is the main or even sole representative of the public sector. This raises its power and prestige vis-à-vis the treasury and other political authorities. For example, the Bank of England probably carries more weight than what might appear from its moderate degree of legal independence (see table 19.4) because it is the main representative of government in the wide British financial sector.

In some countries such as Israel one of the official duties of the governor of the bank is to function as the economic advisor to government. This function allows the governor to periodically address parliament or the cabinet on matters like fiscal and labor market policies. Although unable to vote on these policies, the governor's official capacity as advisor may give him or her some influence in areas outside the realm of monetary policy.

In countries with fixed exchange rates that are allowed to fluctuate within a prespecified band, the width of the band affects the span of authority of the CB. The reason is that the decision about the center rate is usually made by political authorities, while the daily interventions are often left to the discretion of the bank.¹⁰ A widening of the band therefore raises the span of authority of the CB.

Provisions concerning the appointment procedures of the CB board members also affect the degree of independence from government. In general the smaller the involvement of the executive or the legislative branch in such appointments, and the longer the term in office of board members, the higher is the level of independence. In the United States, for example, the president appoints all seven members of the Board of Governors. Each governor is appointed for fourteen years, and the terms in office are staggered. Havrilesky and Gildea (1990, 1991) and Havrilesky and Schweitzer (1990) argue that the president can influence monetary policy by appointing loyal Governors to the Board. However, the staggering of board member terms (one governor terminates his or her term

every two years) substantially reduces the president's ability to pack the board (Keech and Morris 1991). In addition not all appointees are continually loyal to the president's wishes.

Independence also depends on the ability of the CB to maintain a sufficiently large volume of open market operations when needed. In general the larger the relative size of government obligations that are non-marketable, the more restricted is the ability of the CB to conduct meaningful open market operations. For example, the ability of the Bank of Israel to conduct open market operations is seriously restricted despite the fact that it holds a large amount of government securities. The reason is that these securities are not tradable and the Israeli Treasury has consistently refused to make them tradable. The effective degree of independence is also likely to be smaller, the larger the relative size of government as a borrower on capital markets. In extreme cases such as Belgium in which government is the main borrower on the capital market actual CB independence is likely to be lower than legal independence.¹¹

Appendix A: Codings of Basic Legal Variables

	Term of office, <i>too</i>				Who appoints CEO, <i>app</i>			
	1950-59	1960-71	1972-79	1980-89	1950-59	1960-71	1972-79	1980-89
Argentina	NA	NA	0.25	0.25	NA	NA	0.25	0.25
Australia	NA	0.75	0.75	0.75	NA	0.00	0.00	0.00
Austria	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00
Belgium	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00
Bahamas	NA	NA	0.50	0.50	NA	NA	0.00	0.00
Bolivia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brazil	NA	0.00	0.00	0.00	NA	0.50	0.50	0.50
Barbados	NA	NA	0.50	0.50	NA	NA	0.00	0.00
Botswana	NA	NA	0.50	0.50	NA	NA	0.00	0.00
Canada	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Switzerland	0.75	0.75	0.75	0.75	0.25	0.25	0.25	0.25
Chile	0.00	0.00	0.50	0.50	1.00	1.00	0.00	0.00
China	0.50	0.50	0.50	0.50	NA	NA	NA	NA
Colombia	NA	0.00	0.00	0.00	NA	0.75	0.75	0.75
Costa Rica	NA	NA	NA	NA	NA	1.00	1.00	1.00
West Germany	1.00	1.00	1.00	1.00	0.75	0.75	0.75	0.75
Denmark	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Egypt	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Spain	0.00	0.00	0.00	0.25	0.25	0.25	0.25	0.00
Ethiopia	NA	0.50	0.00	0.00	NA	0.25	0.25	0.25
Finland	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.25	0.25	0.25	0.25
Britain	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00
Ghana	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00
Greece	0.25	0.25	0.25	0.25	0.75	0.75	0.75	0.75
Honduras	0.75	0.75	0.75	0.75	0.00	0.00	0.00	0.00
Hungary	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25
Indonesia	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25
India	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25
Ireland	0.75	0.75	0.75	0.75	0.50	0.50	0.50	0.50
Iceland	1.00	1.00	1.00	1.00	NA	0.75	0.75	0.75
Israel	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Italy	0.00	0.00	0.00	0.00	0.75	0.75	0.75	0.75
Japan	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25
Kenya	NA	0.25	0.25	0.25	NA	0.00	0.00	0.00

	Term of office, <i>too</i>				Who appoints CEO, <i>app</i>			
	1950-59	1960-71	1972-79	1980-89	1950-59	1960-71	1972-79	1980-89
South Korea	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Lebanon	0.75	0.75	0.75	0.75	0.25	0.25	0.25	0.25
Luxembourg	NA	NA	NA	0.75	NA	NA	NA	0.25
Morocco	NA	NA	NA	NA	NA	0.25	0.25	0.25
Mexico	NA	NA	NA	NA	0.00	1.00	1.00	1.00
Malta	NA	0.50	0.50	0.50	NA	0.50	0.50	0.50
Malaysia	NA	0.50	0.50	0.50	NA	0.00	0.00	0.00
Nigeria	NA	0.50	0.50	0.50	NA	0.00	0.00	0.00
Nicaragua	NA	0.00	0.00	0.00	NA	0.00	0.00	0.00
Netherlands	0.75	0.75	0.75	0.75	0.00	0.00	0.00	0.00
Norway	0.75	0.75	0.75	0.75	0.00	0.00	0.00	0.00
Nepal	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25
New Zealand	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00
Pakistan	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25
Panama	NA	NA	NA	NA	0.25	0.25	0.25	0.25
Peru	NA	0.00	0.00	0.00	NA	1.00	1.00	1.00
Philippines	0.75	0.75	0.75	0.75	0.00	0.00	0.00	0.00
Poland	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25
Qatar	NA	NA	0.50	0.50	NA	NA	0.25	0.25
Romania	0.50	0.50	NA	NA	0.25	0.25	0.25	0.25
Singapore	NA	NA	0.25	0.25	NA	NA	0.00	0.00
Sweden	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Thailand	0.25	0.25	0.25	0.25	0.50	0.50	0.50	0.50
Turkey	0.50	0.50	0.50	0.50	0.75	0.75	0.75	0.75
Tanzania	NA	0.25	0.25	0.25	NA	0.00	0.00	0.00
Uganda	NA	0.50	0.50	0.50	NA	0.50	0.50	0.50
Uruguay	0.25	0.25	0.25	0.25	0.00	0.00	0.25	0.25
United States	0.25	0.25	0.25	0.25	0.50	0.50	0.50	0.50
Venezuela	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00
Western Samoa	NA	NA	NA	0.25	NA	NA	NA	0.25
Yugoslavia	NA	0.25	0.25	0.25	NA	0.25	0.25	0.25
South Africa	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00
Zaire	NA	NA	0.50	0.50	NA	NA	0.00	0.00
Zambia	NA	0.50	0.50	0.50	NA	0.25	0.25	0.25
Zimbabwe	0.75	0.75	0.75	0.75	0.00	0.00	0.00	0.00

Note: Codes range from 0 (minimal independence) to a maximum of 1.

	Provision for dismissal, <i>diss</i>				Another office held, <i>off</i>			
	1950-59	1960-71	1972-79	1980-89	1950-59	1960-71	1972-79	1980-89
Argentina	NA	NA	0.83	0.83	NA	NA	1.00	1.00
Australia	NA	0.83	0.83	0.83	NA	1.00	1.00	1.00
Austria	0.83	0.83	0.83	0.83	1.00	1.00	1.00	1.00
Belgium	0.00	0.00	0.00	0.00	0.50	0.50	0.50	0.50
Bahamas	NA	NA	0.83	0.83	NA	NA	0.50	0.50
Bolivia	0.83	0.83	0.83	0.83	1.00	1.00	1.00	1.00
Brazil	NA	0.00	0.00	0.00	NA	0.00	0.00	0.00
Barbados	NA	NA	0.83	0.83	NA	NA	0.00	0.00
Botswana	NA	NA	0.83	0.83	NA	NA	0.50	0.50
Canada	0.83	0.83	0.83	0.83	1.00	1.00	1.00	1.00
Switzerland	NA	NA	NA	NA	1.00	1.00	1.00	1.00
Chile	1.00	1.00	0.83	0.83	0.50	0.50	0.50	0.50
China	NA	NA	NA	NA	0.00	0.00	0.00	0.00
Colombia	NA	0.83	0.83	0.83	NA	0.00	0.00	0.00
Costa Rica	NA	0.67	0.67	0.67	NA	1.00	1.00	1.00
West Germany	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Denmark	0.33	0.33	0.33	0.33	0.00	0.00	0.00	0.00
Egypt	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.50	0.00	0.00	1.00
Ethiopia	NA	0.00	0.00	0.00	NA	0.00	0.00	0.00
Finland	NA	NA	NA	NA	0.00	0.00	0.00	0.00
France	1.00	1.00	1.00	1.00	0.50	0.50	0.50	0.50
Britain	0.83	0.83	0.83	0.83	1.00	1.00	1.00	1.00
Ghana	0.83	0.83	0.83	0.83	0.50	0.50	0.50	0.50
Greece	0.67	0.67	0.67	0.67	0.50	0.50	0.50	0.50
Honduras	0.83	0.83	0.83	0.83	1.00	1.00	1.00	1.00
Hungary	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Indonesia	0.00	0.00	0.00	0.00	0.50	0.50	0.50	0.50
India	0.83	0.83	0.83	0.83	0.50	0.50	0.50	0.50
Ireland	0.83	0.83	0.83	0.83	1.00	1.00	1.00	1.00
Iceland	NA	0.83	0.83	0.83	NA	0.50	0.50	0.50
Israel	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Italy	0.67	0.67	0.67	0.67	1.00	1.00	1.00	1.00
Japan	0.83	0.83	0.83	0.83	0.50	0.50	0.50	0.50
Kenya	NA	0.83	0.83	0.83	NA	0.50	0.50	0.50

	Provision for dismissal, <i>diss</i>				Another office held, <i>off</i>			
	1950-59	1960-71	1972-79	1980-89	1950-59	1960-71	1972-79	1980-89
South Korea	0.83	0.83	0.83	0.83	0.00	0.00	0.50	0.50
Lebanon	0.83	0.83	0.83	0.83	1.00	1.00	1.00	1.00
Luxembourg	NA	NA	NA	0.83	NA	NA	NA	0.00
Morocco	NA	0.00	0.00	0.00	NA	0.00	0.00	0.00
Mexico	0.83	0.83	0.83	0.83	1.00	1.00	1.00	1.00
Malta	NA	0.83	0.83	0.83	NA	1.00	1.00	1.00
Malaysia	NA	0.83	0.83	0.83	NA	0.00	0.00	0.00
Nigeria	NA	0.83	0.83	0.83	NA	0.50	0.50	0.50
Nicaragua	NA	0.83	0.83	0.83	NA	1.00	1.00	1.00
Netherlands	0.17	0.17	0.17	0.17	1.00	1.00	1.00	1.00
Norway	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00
Nepal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
New Zealand	0.83	0.83	0.83	0.83	0.00	1.00	1.00	1.00
Pakistan	0.83	0.83	0.83	0.83	0.50	0.50	0.50	0.50
Panama	0.83	0.83	0.83	0.83	1.00	1.00	1.00	1.00
Peru	NA	0.83	0.83	0.83	NA	1.00	1.00	1.00
Philippines	0.83	0.83	0.83	0.83	0.50	0.50	0.50	0.50
Poland	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
Qatar	NA	NA	0.83	0.83	NA	NA	0.50	0.50
Romania	1.00	1.00	NA	NA	1.00	1.00	0.00	0.00
Singapore	NA	NA	0.83	0.83	NA	NA	0.00	0.00
Sweden	NA	NA	NA	NA	0.50	0.50	0.50	0.50
Thailand	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Turkey	1.00	1.00	0.83	0.83	1.00	1.00	0.00	0.00
Tanzania	NA	0.83	0.83	0.83	NA	0.50	0.50	0.50
Uganda	NA	0.83	0.83	0.83	NA	0.50	0.50	0.50
Uruguay	NA	NA	0.83	0.83	0.50	0.50	0.00	0.00
United States	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Venezuela	NA	NA	0.83	0.83	0.00	0.00	0.50	0.50
Western Samoa	NA	NA	NA	0.83	NA	NA	NA	0.00
Yugoslavia	NA	0.83	0.83	0.83	NA	0.00	0.00	0.00
South Africa	0.83	0.83	0.83	0.83	0.50	0.50	0.50	0.50
Zaire	NA	NA	1.00	1.00	NA	NA	0.00	1.00
Zambia	NA	0.83	0.83	0.83	NA	1.00	1.00	0.50
Zimbabwe	0.00	0.00	0.00	0.00	1.00	0.50	0.50	0.50

	Who decides on lending terms, <i>ldec</i>				Width of circle of borrowers, <i>lwidth</i>			
	1950-59	1960-71	1972-79	1980-89	1950-59	1960-71	1972-79	1980-89
Argentina	NA	NA	0.33	0.33	NA	NA	1.00	1.00
Australia	NA	0.33	0.33	0.33	NA	0.00	0.00	0.00
Austria	0.33	0.33	0.33	0.33	1.00	1.00	0.33	0.33
Belgium	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Bahamas	NA	NA	0.33	0.33	NA	NA	1.00	1.00
Bolivia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brazil	NA	0.00	0.00	0.00	NA	1.00	1.00	1.00
Barbados	NA	NA	0.33	0.33	NA	NA	0.67	0.67
Botswana	NA	NA	0.33	0.33	NA	NA	0.67	0.67
Canada	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Switzerland	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00
Chile	0.67	0.67	0.67	0.67	0.00	0.00	1.00	1.00
China	0.00	0.00	0.00	0.00	NA	NA	NA	NA
Colombia	NA	0.33	0.33	0.33	NA	0.00	0.00	0.00
Costa Rica	NA	0.33	0.33	0.33	NA	0.33	0.33	0.33
West Germany	0.67	0.67	0.67	0.67	0.33	0.33	0.33	0.33
Denmark	0.67	0.67	0.67	0.67	0.00	0.00	0.00	0.00
Egypt	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00
Spain	0.33	0.00	0.00	0.00	0.00	0.33	0.33	0.33
Ethiopia	NA	NA	0.67	0.67	NA	NA	1.00	1.00
Finland	0.67	0.67	0.67	0.67	NA	NA	NA	NA
France	0.33	0.33	0.33	0.33	0.00	1.00	1.00	1.00
Britain	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Ghana	0.33	0.33	0.33	0.33	1.00	0.00	0.00	0.00
Greece	0.33	0.33	0.33	0.33	0.33	0.33	0.00	0.00
Honduras	0.67	0.67	0.67	0.67	0.33	0.33	0.33	0.33
Hungary	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.33
Indonesia	0.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00
India	0.33	0.67	0.67	0.67	0.33	0.33	0.33	0.33
Ireland	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Iceland	NA	0.33	0.33	0.33	NA	1.00	1.00	1.00
Israel	0.67	0.67	0.67	0.67	1.00	1.00	1.00	1.00
Italy	0.33	0.33	0.33	0.33	NA	NA	NA	NA
Japan	0.33	0.33	0.33	0.33	NA	NA	NA	NA
Kenya	NA	0.33	0.33	0.33	NA	0.33	0.33	0.33

	Who decides on lending terms, <i>ldec</i>				Width of circle of borrowers, <i>lwidth</i>			
	1950-59	1960-71	1972-79	1980-89	1950-59	1960-71	1972-79	1980-89
South Korea	0.33	0.33	0.33	0.33	0.00	0.00	0.00	0.00
Lebanon	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Luxembourg	NA	NA	NA	0.33	NA	NA	NA	1.00
Morocco	NA	0.00	0.00	0.00	NA	0.33	0.33	0.33
Mexico	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00
Malta	NA	0.33	0.33	0.33	NA	1.00	1.00	1.00
Malaysia	NA	0.67	0.67	0.67	NA	0.00	0.00	0.00
Nigeria	NA	0.33	0.33	0.33	NA	0.00	0.00	0.00
Nicaragua	NA	0.67	0.67	0.67	NA	0.00	0.00	0.00
Netherlands	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Norway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nepal	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00
New Zealand	0.00	0.00	0.00	0.00	0.33	1.00	1.00	1.00
Pakistan	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.33
Panama	0.00	0.00	0.00	0.00	0.33	0.33	0.00	0.00
Peru	NA	0.67	0.67	0.67	NA	0.33	0.33	0.33
Philippines	0.33	0.33	0.33	0.33	0.67	0.67	0.67	0.67
Poland	0.33	0.33	0.33	0.33	0.00	0.00	0.00	0.00
Qatar	NA	NA	0.00	0.00	NA	NA	0.33	0.33
Romania	0.67	0.67	0.67	0.67	0.00	0.00	0.00	0.00
Singapore	NA	NA	0.33	0.33	NA	NA	0.00	0.00
Sweden	0.67	0.67	0.67	0.67	0.00	0.00	0.00	0.00
Thailand	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Turkey	0.33	0.33	0.33	0.33	0.00	0.00	0.33	0.33
Tanzania	NA	0.33	0.33	0.33	NA	1.00	1.00	1.00
Uganda	NA	0.33	0.33	0.33	NA	0.33	0.33	0.33
Uruguay	0.33	0.33	0.67	0.67	0.33	0.33	0.00	0.00
United States	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00
Venezuela	0.67	0.67	0.67	0.67	1.00	1.00	0.00	0.00
Western Samoa	NA	NA	NA	0.33	NA	NA	NA	0.00
Yugoslavia	NA	0.00	0.00	0.00	NA	0.00	0.00	0.00
South Africa	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00
Zaire	NA	NA	0.33	0.33	NA	NA	0.33	0.33
Zambia	NA	0.00	0.00	0.00	NA	0.33	0.33	0.33
Zimbabwe	0.00	0.00	0.00	0.00	0.67	0.67	0.67	0.67

	Limit on interest rate, <i>lint</i>				Lending in primary market, <i>lprim</i>			
	1950-59	1960-71	1972-79	1980-89	1950-59	1960-71	1972-79	1980-89
Argentina	NA	NA	0.50	0.50	NA	NA	0.00	0.00
Australia	NA	1.00	1.00	1.00	NA	0.00	0.00	0.00
Austria	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Belgium	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00
Bahamas	NA	NA	0.25	0.25	NA	NA	0.00	0.00
Bolivia	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Brazil	NA	0.25	0.25	0.25	NA	0.00	0.00	0.00
Barbados	NA	NA	0.25	0.25	NA	NA	0.00	0.00
Botswana	NA	NA	0.25	0.25	NA	NA	0.00	0.00
Canada	0.75	0.75	0.75	0.75	0.00	0.00	0.00	0.00
Switzerland	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Chile	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
China	0.25	0.25	0.25	0.25	1.00	1.00	1.00	1.00
Colombia	NA	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Costa Rica	NA	0.25	0.25	0.25	NA	0.00	0.00	0.00
West Germany	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Denmark	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Egypt	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethiopia	NA	0.25	0.50	0.50	NA	0.00	0.00	0.00
Finland	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
France	0.00	0.00	NA	NA	0.00	0.00	0.00	0.00
Britain	0.25	0.75	0.75	0.75	0.00	0.00	0.00	0.00
Ghana	0.75	0.50	0.50	0.50	0.00	0.00	0.00	0.00
Greece	0.75	0.75	0.75	0.75	0.00	0.00	0.00	0.00
Honduras	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Hungary	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Indonesia	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
India	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Ireland	0.75	0.75	0.75	0.75	0.00	0.00	0.00	0.00
Iceland	NA	0.25	0.25	0.25	NA	0.00	0.00	0.00
Israel	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Italy	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Japan	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Kenya	NA	0.75	0.75	0.75	NA	0.00	0.00	0.00

	Limit on interest rate, <i>lint</i>				Lending in primary market, <i>lprim</i>			
	1950-59	1960-71	1972-79	1980-89	1950-59	1960-71	1972-79	1980-89
South Korea	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Lebanon	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Luxembourg	NA	NA	NA	0.25	NA	NA	NA	0.00
Morocco	NA	0.25	0.25	0.25	NA	0.00	0.00	0.00
Mexico	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Malta	NA	0.25	0.25	0.25	NA	0.00	0.00	0.00
Malaysia	NA	0.25	0.25	0.25	NA	0.00	0.00	0.00
Nigeria	NA	0.75	0.75	0.75	NA	0.00	0.00	0.00
Nicaragua	NA	0.50	0.50	0.50	NA	0.00	0.00	0.00
Netherlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Norway	0.25	0.25	0.50	0.50	0.00	0.00	0.00	0.00
Nepal	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
New Zealand	0.75	0.50	0.50	0.50	0.00	0.00	0.00	0.00
Pakistan	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Panama	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Peru	NA	0.25	0.25	0.25	NA	0.00	0.00	0.00
Philippines	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Poland	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Qatar	NA	NA	0.25	0.25	NA	NA	0.00	0.00
Romania	0.00	0.00	0.25	0.25	0.00	0.00	0.00	0.00
Singapore	NA	NA	0.25	0.25	NA	NA	0.00	0.00
Sweden	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Thailand	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Turkey	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Tanzania	NA	0.75	0.75	0.75	NA	0.00	0.00	0.00
Uganda	NA	0.75	0.75	0.75	NA	0.00	0.00	0.00
Uruguay	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
United States	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Venezuela	0.25	0.25	0.50	0.50	0.00	0.00	0.00	0.00
Western Samoa	NA	NA	NA	0.25	NA	NA	NA	0.00
Yugoslavia	NA	0.25	0.25	0.25	NA	0.00	0.00	0.00
South Africa	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00
Zaire	NA	NA	0.75	0.75	NA	NA	0.00	0.00
Zambia	NA	0.75	0.75	0.75	NA	0.00	0.00	0.00
Zimbabwe	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00

Appendix B: Relevant Parts of the Questionnaire on Central Bank Independence

This part of the appendix presents the introduction to the questionnaire and only the questions that have been used for the coding of questionnaire variables. As in the full questionnaire these questions are classified by areas. The symbol appearing to the right of a question indicates what is the questionnaire variable (in table 19.6) for which the answer to that question provides the material for coding that questionnaire variable. Questions are numbered as in the full questionnaire.

The purpose of this questionnaire is to provide guidance in identifying various parameters of central bank independence and the main objectives of monetary policy. The questionnaire refers to the following areas: (I) formal independence as expressed in the central bank's charter and/or other laws and ordinances, (II) the actual practice whenever it differs from the stipulation of the law, (III) identification of monetary policy instruments and of the governmental agency that controls them, (IV) identification of intermediate targets and indicators of monetary policy, (V) identification of final objectives, and (VI) background questions on the financial structure.

In case a particular question is not relevant to your country please explain why. In case there are issues concerning central bank independence and monetary policy that have not been addressed in the questionnaire please flush them out.

- I. *Legal aspects of central bank independence.*
2. Are the terms of office of the high officials of the CB independent from the term of office of the central government?—*qto*
3. Is the Treasury or the central government allowed to borrow directly from the CB?—*qll*
4. Is there a legal limit on the nominal amount of government borrowings from CB?—*qll*
6. Are there provisions in the law for the resolution of policy conflicts between the CB and the executive branch?—*grc*
7. Who determines the budget of the CB?—*qbc*
8. Who determines the salaries of high officials of the bank and the allocation of its profits?—*qsp*

- II. *Actual practice when it differs from the stipulation of the law.*
3. Is the resolution of policy conflicts between the CB and the executive branch usually done informally or by appealing to the law? Please elaborate.—*grc*

III. *Monetary policy instrument and the agencies controlling them.—qsc*

Consider the following list of instruments: open market operations, the discount rate, reserve requirements, credit ceilings, selective direct or indirect credits from the CB at subsidy rates, interest rate ceilings, exchange rate policy, quantitative restrictions on capital flows, surcharges on capital flows, and other instruments if relevant. In each case state whether the instrument exists and if it does identify the agency controlling it. A ranking of the instruments by the frequency of their use would be helpful.

IV. *Intermediate targets and indicators.*

1. Are there quantitative monetary stock targets?—*qst*
6. Are there formal or informal interest rate targets?—*qirt*

V. *Final objectives of monetary Policy.—qpps*

Please rank the following objectives according to their importance in determining the course of monetary policy (if you believe that the ranking was different in different subperiods, give the ranking for each subperiod): price stability, a high level of employment, extraction of revenue from seigniorage, strong export markets, equilibrium in the current account of the balance of payments, maintenance of a sufficient level of foreign exchange reserves, anticyclical policy, low real rates of interest, low nominal rates of interest, low variability of real or nominal rates, maintenance of a fixed parity with other currencies.

If you feel that this framework is too simplistic to characterize the final objectives of policy in your country please elaborate. References on basic sources concerning the final objectives in your country would be helpful.

Appendix C: Codings of Basic Questionnaire Variables

	<i>qto</i>	<i>qll</i>	<i>qrc</i>	<i>qcb</i>	<i>qsp</i>	<i>qst</i>	<i>qirt</i>	<i>qpps</i>	<i>qsc</i>
Australia	1.00	0.67	0.00	1.00	0.50	0.33	1.00	1.00	1.00
Belgium	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.67	NA
Bahamas	0.50	0.67	0.50	1.00	1.00	0.00	1.00	0.67	1.00
Barbados	0.50	0.67	0.00	1.00	0.50	0.00	0.00	1.00	0.67
Chile	NA	NA	NA	NA	NA	NA	NA	1.00	NA
Costa Rica	0.50	0.67	0.50	1.00	1.00	0.67	1.00	1.00	1.00
West Germany	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Denmark	1.00	1.00	0.50	0.50	1.00	0.00	0.00	0.67	1.00
Ethiopia	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.33	0.00
Finland	1.00	1.00	1.00	0.50	0.00	0.00	NA	1.00	1.00
France	0.50	0.33	0.50	0.50	1.00	0.67	1.00	1.00	0.67
Britain	0.50	0.33	0.00	0.50	NA	0.67	1.00	1.00	1.00
Ireland	0.50	0.33	0.00	0.50	0.00	0.00	1.00	1.00	1.00
Italy	1.00	0.00	0.50	1.00	1.00	0.67	1.00	1.00	1.00
Lebanon	0.50	0.33	0.50	1.00	1.00	0.00	1.00	0.33	1.00
Luxembourg	0.50	0.33	NA	1.00	1.00	0.00	1.00	0.67	1.00
Nepal	0.00	0.00	0.50	1.00	1.00	0.00	NA	NA	NA
New Zealand	NA	0.00	NA	NA	NA	0.00	NA	NA	1.00
Peru	0.00	0.00	0.00	1.00	0.50	0.33	0.00	0.33	0.33
Turkey	0.50	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.33
Tanzania	0.50	0.33	0.50	1.00	0.00	0.33	1.00	0.00	0.33
Uganda	0.50	0.33	0.50	1.00	1.00	0.33	NA	1.00	0.33
Uruguay	0.50	0.33	0.50	1.00	0.50	0.00	NA	0.33	1.00
Yugoslavia	NA	0.00	0.00	0.50	0.00	0.33	1.00	NA	0.00
South Africa	0.50	0.33	0.50	1.00	0.00	0.67	1.00	NA	1.00
Zaire	0.50	0.33	0.50	1.00	1.00	0.67	1.00	1.00	0.33

Note: Definitions of variables appear in table 19.6. Codes range from 0 (minimal independence) to a maximum of 1.

20 Inflation and Central Bank Independence

20.1 Introduction

This chapter presents various tests of the hypothesis that countries with more independent central banks have more stable currencies or lower rates of inflation. The tests are based on regressions of the rate of depreciation in the value of money d as the rate of inflation π on the various indices of CB independence presented in chapter 19. Since the legal and questionnaire variables are all coded in a way that assigns a higher numerical code to a variable the higher the level of independence, the hypothesis implies that the effect of each of these variables on inflation should be negative. But the effect of central banks governors' turnover, at least above some threshold, is predicted to be positive.

The hypothesis that inflation should be negatively related to the level of CB independence has been developed in chapter 18. It is a consequence of either (or both) of the two following underlying elements: a stronger degree of time preference on the part of political authorities in comparison to that of the CB, and/or relatively higher concern of the CB for price stability against the background of private information about its independence. In addition there also are cross-country variations in the extent to which the CB is given an explicit mandate to pursue price stability at the expense of other objectives. The variable *obj* is meant to capture the extent to which such a mandate is made explicit in the legal structure underlying the activity of the CB. For a given level of independence from the political authorities as measured by the other variables, a more focused legal mandate to pursue price stability is expected to result in a lower rate of inflation. But this is not because the CB is independent to do what it pleases. Rather, it is because the CB is directed by law to focus on price stability more than on other objectives, and vice versa. Thus the variable *obj* is a measure of the relative importance assigned by the CB to price stability. In terms of the model in section 18.3 the higher the *obj*, the lower is the relative focus of actual policy on objectives other than price stability and the lower therefore is the rate of inflation under discretion even for a given level of independence.¹

The importance assigned to price stability in practice may obviously deviate from its specification in the law. Questionnaire variable *qpps*, which measures the actual as opposed to legal priority, assigned to price stability is designed to detect such cases. This variable becomes more important, the larger the divergence between the priority assigned to price