FINANCIAL OPENNESS

Our broad measure of financial openness incorporates controls and/or restrictions on both current and capital account transactions. It is constructed as the simple arithmetic average of quantitative measures of degree of controls or restrictions on 27 individual transactions related to import payments, export proceeds, invisible transactions, and capital account transactions as shown in table A5.1. This classification is based on the International Monetary Fund's annual report on *Exchange Arrangements and Exchange Restrictions*.

The scoring draws on the methodology developed by Quinn and Inclan (1997). It is based on a five-tiered scale that ranges from 0 to 2 for each item, indicating the degree of openness (0 highly controlled, 2 highly liberal) defined as follows:[1]

- 0.0 Laws and/or regulations that impose quantitative or other regulatory restrictions on a particular transaction, such as licenses or reserve requirements, that completely forbid such economic transactions.
- 0.5 Laws and/or regulations that impose quantitative or other regulatory restrictions on a particular transaction, such as licenses or reserve requirements that partially forbid such economic transactions.
- 1.0 Laws and/or regulations requiring the particular transaction to be approved by the authorities or subjecting it to heavy taxes when applicable, whether in the form of multiple currency practices or other taxes.
- 1.5 Laws and/or regulations requiring the particular transaction to be registered, but not necessarily approved, by the authorities and also taxed when applicable.
- 2.0 No regulations requiring the particular transaction to be approved or registered with authorities and free of taxation when applicable.

Table A5.1. International Transactions

Category	*Type of transaction*
Imports and import payments	Foreign exchange budget
	Financing requirements for imports
	Documentation requirements for release of foreign exchange for imports
	Import licenses and other nontariff measures
	Import taxes and/or tariffs
	State import monopoly
Exports and export proceeds	Repatriation requirements
	Financing requirements
	Documentation requirements
	Export licenses
	Export taxes
Payments for invisible transactions and current transfers	Controls on these payments
Proceeds from invisible transactions and current transfers	Repatriation requirements
	Restrictions on use of funds
Capital account transactions	Capital market securities
	Money market instruments
	Collective investment securities
	Derivatives and other instruments
	Commercial credits
	Financial credits
	Guarantees, sureties, and financial backup facilities
	Direct investment
	Liquidation of direct investment
	Real estate transactions
	Personal capital movements
	Commercial banks and other credit institutions
	Institutional investors

Source: IMF (1998).

Applying this coding methodology, the estimated financial openness index ranges from 1.93 for Ireland and Luxembourg to 1.12 for Ethiopia (see table A5.2).

A more narrowly defined index, which captures the degree of openness to capital account transactions, can be arrived at in a similar manner. The narrow index uses only the 13 transactions listed in the capital account transactions category in table A5.1.

Table A5.2. Financial Openness Index, Selected Countries, 1997

Open		*Largely open*		*Partially closed*		*Largely closed*	
Country	*Index*	*Country*	*Index*	*Country*	*Index*	*Country*	*Index*
Argentina	1.78	Croatia	1.54	Bahamas, The	1.36	Bangladesh	1.21
Australia	1.77	Ecuador	1.54	Belize	1.44	Barbados	1.28
Austria	1.92	Honduras	1.56	Benin	1.48	Bhutan	1.19
Bahrain	1.73	Israel	1.59	Botswana	1.48	Brazil	1.19
Belgium	1.88	Mongolia	1.56	Bulgaria	1.46	Ethiopia	1.12
Bolivia	1.79	Philippines	1.59	Burkina Faso	1.49	India	1.20
Canada	1.92	Poland	1.54	Burundi	1.39	Malawi	1.26
Denmark	1.92	Slovak Republic	1.58	Cameroon	1.41	Malaysia	1.34
Egypt, Arab Rep. of	1.81	Slovenia	1.50	Cape Verde	1.39	Morocco	1.27
El Salvador	1.91	Turkey	1.52	Chile	1.43	Pakistan	1.31
Estonia	1.88			China	1.37	Syrian Arab Rep.	1.20
Finland	1.83			Colombia	1.38		
France	1.73			Congo, Dem. Rep. of	1.42		
Germany	1.84			Costa Rica	1.48		
Greece	1.91			Czech Republic	1.48		
Guatemala	1.73			Dominican Republic	1.49		
Guyana	1.72			Ghana	1.43		
Iceland	1.74			Hungary	1.49		
Ireland	1.93			Indonesia	1.46		
Italy	1.84			Korea, Rep. of	1.42		
Jamaica	1.76			Lesotho	1.41		
Japan	1.73			Mali	1.49		
Kuwait	1.77			Malta	1.40		
Latvia	1.88			Moldova	1.46		
Lithuania	1.85			Mozambique	1.41		
Luxembourg	1.93			Namibia	1.33		
Mauritius	1.82			Papua New Guinea	1.36		
Mexico	1.69			Romania	1.48		
Netherlands	1.87			Russian Federation	1.43		
New Zealand	1.90			South Africa	1.44		
Nicaragua	1.82			Sri Lanka	1.43		
Norway	1.83			Thailand	1.46		
Panama	1.90			Tunisia	1.39		
Paraguay	1.81			Ukraine	1.36		
Peru	1.90						
Portugal	1.84						
Singapore	1.78						
Spain	1.82						
Sweden	1.86						
Switzerland	1.88						
Trinidad and Tobago	1.67						

(table continues on following page)

Table A5.2 continued

Open		Largely open		Partially closed		Largely closed	
Country	*Index*	*Country*	*Index*	*Country*	*Index*	*Country*	*Index*
United Kingdom	1.86						
United States	1.85						
Uruguay	1.77						
Venezuela, RB	1.84						
Zambia	1.79						

Note: Open: none or minimal regulation for outward and inward transactions and a generally nondiscriminatory environment. Largely open: some regulations are exercised on outward or inward transactions with the need for documentary support but without the need for government approval. Partially closed: regulation and government approval is required for outward and inward transactions and usually granted. Largely closed: substantial restrictions and government approval is required and seldom granted for outward and inward transactions.

Source: Author estimate.

Note on Country Vulnerability and Volatility Measures

The vulnerability classification is based on our estimates of volatility in private capital flows, based on the following forecasting equation:

$$(A5.1)\quad KF_{it} = \alpha_i + \beta_i KF_{i(t-1)} + u_{it}$$

where KF_{it} denotes total net private capital flows for country i in year t and u_{it} denotes the error term.

Volatility in country i is defined as

$$(A5.2)\quad V_i = \frac{S(u_{it})}{GDP_{i,\,1996}}$$

where $S(u_{it})$ is the ordinary least squares estimate of the standard error of the residuals in equation (A5.1) using time series data from 1975 to 1996. See table A5.3 for the index.

Note on Gross Domestic Product Gaps

The present values of the difference between the potential GDP, extrapolated on the basis of historical growth rates of the real economy (1980–96) and the actual or estimated GDP from 1997 through 1999, is calculated as the economic cost due to the financial crisis. The present value was calculated to 1996 values using a real discount rate of 3 percent per year. Expressed as a percentage of the stock of debt in 1996, the estimated costs of the crises were 81 percent for Malaysia, 97 percent for Indonesia, 128 percent for Thailand, and 291 percent for Korea. A similar computation for Brazil yields an estimate of 21 percent. Note that for Korea, the debt stock figure used is for 1997.

Table A5.3. Developing Countries Classified by Degree of Volatility to Private Foreign Capital Flows

Highly volatile		*Volatile*		*Moderately volatile*		*Least volatile*	
Country	*Index*	*Country*	*Index*	*Country*	*Index*	*Country*	*Index*
Jamaica	3.23	Mexico	1.54	Colombia	0.99	Uganda	0.63
Gabon	2.93	Ecuador	1.50	Tunisia	0.98	Brazil	0.60
Nigeria	2.07	Kenya	1.49	Indonesia	0.95	Paraguay	0.58
Venezuela, RB	2.04	Nicaragua	1.48	Turkey	0.93	China	0.54
Malaysia	1.97	Bolivia	1.44	Argentina	0.91	Sri Lanka	0.46
Jordan	1.82	Chile	1.38	Costa Rica	0.85	Pakistan	0.44
Panama	1.79	Ethiopia	1.31	Uruguay	0.83	Guatemala	0.43
Cameroon	1.60	Philippines	1.27	Egypt, Arab Rep. of	0.74	Dominican Republic	0.39
Zambia	1.59	Honduras	1.04	Tanzania	0.72	India	0.38
Zimbabwe	1.59	Thailand	1.01	Morocco	0.64	El Salvador	0.32
						Nepal	0.29
						Bangladesh	0.10

Sources: World Bank (1999c); authors' computations.

Note on the Binomial Logit Model

The binomial *logit* model is used to estimate the impact of the independent variables on the likelihood that a country would fall in the high democracy-high financial openness category. In this model, the dependent variable is defined by a dichotomous random variable y, which takes the value of 1 if country *i* belongs to the high democracy-high financial openness category, and 0 if it does not. This is given by

$$y_i = p_i + e_i,$$

where p is the probability that a given country belongs in the high democracy-high financial openness category, and specified as $p = F(\mathbf{a}'\mathbf{x})$, where $\boldsymbol{x}$ is a vector of independent variables, $\boldsymbol{a}$ is the corresponding vector of coefficients, $F(\mathbf{a}'\mathbf{x})$ is the cumulative distribution function, and e_i is an error term assumed to follow the Bernoulli distribution.

Expressing the probability for the i-th observation via the *logit* model, we will obtain

$$F(\mathbf{a}'\mathbf{x}_i) = \frac{\exp(\mathbf{a}'\mathbf{x}_i)}{1 + \exp(\mathbf{a}'\mathbf{x}_i)}.$$

Subsequently, the *logit* transformation would yield:

$$\log \frac{p_i}{1 - p_i} = \mathbf{a}'\mathbf{x}_i.$$

In this chapter we focus on the explanatory variables defined as

- Log of total social expenses as a percentage of GDP (average 1990–96) (x_1)
- Log of GDP per capita, current U.S. dollars (average 1990–96) (x_2).

This binomial model was estimated by the maximum likelihood method using cross-country data for a sample of 67 countries for which consistent data on the two explanatory variables were available. Computationally, we obtained the maximum likelihood using the Newton-Raphson algorithm, which utilized the STATA *logit* procedure. The results were generated after five iterations. The estimated results are reported in the text in table 5.3. The results indicate that both per capita income and the ratio of social expenditures to GDP have a statistically significant impact in explaining the likelihood that a country falls into the high-high category. The model also performs well in predicting the percentage of countries that are correctly classified as belonging to the high-democracy high-financial openness group, that is, out of 27 countries in the high-high group, 19 were correctly predicted to be in that group (based on the threshold probability of 0.5), thus producing a 70.37 percent correct classification rate.

Summary Statistics for Variables Used in Chapter 5

Several statistical analyses were performed during the course of this chapter. Table A5.4 provides summary statistics of the main variables and their sources. Relationships between these variables are explored in figure A5.1 and table A5.5.

Notes

1. For some countries where data on certain transactions were unavailable, average values of 1 were assigned.

Table A5.4. Summary Statistics for Selected Industrial and Developing Countries

Variables	*Mean*	*Standard deviation*	*Minimum*	*Maximum*	*Number of countries*
Political rights	3.42	2.18	1.00	7.00	123
Civil liberties	3.09	1.73	1.00	7.00	138
Capital account openness	15.39	3.62	8.50	22.00	97
Financial openness	38.21	6.48	21.50	48.50	99
Transfer payments	3.09	3.09	0.001	13.84	68
Social expenditure	17.82	11.77	3.35	49.11	51
Trade openness	70.60	45.90	15.21	378.67	141
Income per capita	5,803.00	8,645.00	91.59	37,198.00	68

Note: Political rights, from *Freedom in the World*, 1998, published by the Freedom House; a country grants its citizens *political rights* when it permits them to form political parties that represent a significant range of voter choice and whose leaders can openly compete for and be elected to positions of power in government.

Civil liberties, from *Freedom in the World*, 1998, published by the Freedom House; a country upholds its citizens' *civil liberties* when it respects and protects their religious, ethnic, economic, linguistic, and other rights, including gender and family rights, personal freedoms, and freedoms of the press, belief, and association.

Capital account openness is a measure of the degree of controls and/or restrictions applying to only capital account transactions (13 transactions as classified by the IMF AREAER) and are defined in table A5.1.

Financial openness is a broader measure incorporating controls and/or restrictions on both current and capital account transactions (see table A5.1).

Transfer payments, Government Financial Statistics: Average of central, state, and local expenditure as percentage of GDP. Transfers to other levels of national government, 1991–97; countries with the minimum for this variable are: Chile, Costa Rica, Dominican Republic, Greece, Ireland, Lesotho, Panama, Sri Lanka, and Thailand. Demark has the maximum value for this variable.

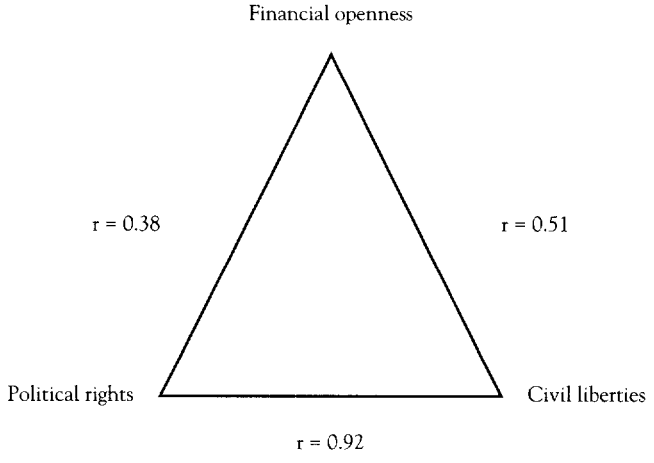
Social expenditure, Government Financial Statistics and UNESCO: Average of central, state, and local expenditure as percentage of GDP, 1991–97; Pakistan has the minimum for this variable. Denmark has the maximum value for this variable.

Trade openness, World Development Indicators: Average trade as percentage of GDP, 1980s.

Income per capita, average income per capita, 1990–97; in the sample of countries the minimum is US$91.60 for Mozambique and the maximum of US$37,199 for Switzerland.

Sources: Freedom House (1998); IMF (1999, various issues); UNESCO (1998); World Bank (1999f).

Figure A 5.1. Correlations of Financial Openness with Political Rights and Civil Liberties



Note: The estimated correlation coefficients are statistically significant at 1 percent (based on the z-test).
Source: Author's computations.

Table A5.5. The Relationship among Financial Openness, Democracy, and Social Expenditure

Variables	*Financial openness*	*Capital openness*	*Political rights*	*Civil liberties*	*Trade openness*	*Social expenditure*	*Transfer payments*	*Income per capita*
Financial openness	1.00							
Capital account openness	0.91	1.00						
Political rights	–0.32*	0.22*	1.00					
Civil liberties	–0.55*	0.46**	0.91*	1.00				
Trade openness	0.18	0.21*	–0.06	–0.14	1.00			
Social expenditure	0.52*	0.42**	–0.72*	–0.74*	0.28**	1.00		
Transfer payments	0.23	0.17	–0.19	–0.21	–0.14	0.31**	1.00	
Income per capita	0.52*	0.44**	–0.54*	–0.68*	0.29*	0.67*	0.26	1.00

* Significant at the 0.01 level of confidence.
** Significant at the 0.05 level of confidence.
Sources: Based on data from Freedom House (1998); IMF (1999, various years); UNESCO (1998); World Bank (1999f); see table A5.4 for variable explanation.