Appendix
Explanatory Notes and Data Sources

Area 1:Size of Government

A. Government consumption

i. Government consumption without interest payments

This component is measured as general government consumption spending as a percentage of total consumption. The rating for this component, as with many of the following components, is designed to mirror the actual distribution of the raw data but on a 0-to-10 scale. The rating is equal to: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. The V_i is the country's actual government consumption as a proportion of total consumption, while the V_{max} and V_{min} are set at 40% and 6%, respectively. The 1990 data were used to derive the maximum and minimum values for this component as well as most other components to follow. Countries with a larger proportion of government expenditures receive lower ratings.

ii. Government consumption with interest payments

This component is measured as general government consumption spending plus net interest payments on public debt as a percentage of total consumption plus interest payments. Interest payments will not enter the size of government area unless they are inserted here. The rating for this component, as with many of the following components, is designed to mirror the actual distribution of the raw data but on a 0-to-10 scale. The rating is equal to: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. The V_i is the country's actual government consumption plus interest payments as a proportion of total consumption, while the V_{max} and V_{min} are set at 40% and 6%, respectively. The 1990 data were used to derive the maximum and minimum values for this component as well as most other components to follow. Countries with a larger proportion of government expenditures receive lower ratings.

Sources: World Bank, *World Development Indicators*; International Monetary Fund, *International Financial Statistics*; United Nations National Accounts.

B. Transfers and subsidies

This component is measured as general government transfers and subsidies as a share of GDP. The rating for this component is equal to: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. The V_i is the country's ratio of transfers and subsidies to GDP, while the V_{max} and V_{min} values are set at 37.2% and 0.5%, respectively. The formula will generate lower ratings for countries with larger transfer sectors.

When the size of a country's transfer sector approaches that of the country with the largest transfer sector during the 1990 benchmark year, the rating of the country will approach 0.

Sources: International Monetary Fund, *Government Finance Statistics Yearbook*; World Bank, *World Development Indicators*; International Monetary Fund, *International Financial Statistics*; United Nations National Accounts; European Union, *eurostat*.

C. Government investment

Data on government investment as a share of total investment are used to construct the 0-to-10 ratings. Countries with more government investment as a share of total investment receive lower ratings. The rating for this component is equal to: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. The V_i is the country's ratio of government investment to total investment, while the V_{max} and V_{min} values are set at 50% and 15%, respectively.

Sources: International Monetary Fund, *Investment and Capital Stock Dataset*; World Bank, *World Development Indicators*; Organisation for Economic Co-operation and Development, *OECD Data.*

D. Top marginal tax rate

i. Top marginal income tax rate

Countries with higher marginal tax rates that take effect at lower income thresholds received lower ratings based on the matrix below. The income threshold data are converted from local currency to 1983 US dollars (using exchange rates and the US Consumer Price Index). These figures include sub-national rates if applicable.

ii. Top marginal income and payroll tax rates

Countries with higher marginal income and payroll (wage) tax rates that take effect at lower income thresholds received lower ratings based on the matrix below. The income threshold

Table 1: Income Threshold at Which the Top Marginal Rate Applies (1983 US$)

Top Marginal Tax Rate	<$25,000	$25,000 - <$50,000	$50,000 - <$150,000	<$150,000 +
<21%	10	10	10	10
21% – <26%	9	9	10	10
26% – <31%	8	8	9	9
31% – <36%	7	7	8	9
36% – <41%	5	6	7	8
41% – <46%	4	5	6	7
46% – <51%	3	4	5	5
51% – <56%	2	3	4	4
56% – <61%	1	2	3	3
61% – <66%	0	1	2	2
66% – <70%	0	0	1	1
70%+	0	0	0	0

data are converted from local currency to 1983 US dollars (using exchange rates and the US Consumer Price Index). These figures include sub-national rates if applicable.

Sources: PricewaterhouseCoopers, *Worldwide Tax Summaries Online*; PricewaterhouseCoopers, *Individual Taxes: A Worldwide Summary* (various issues); Ernst & Young, *Worldwide Personal Tax and Immigration Guide* (various issues); Deloitte International Tax Source, *Guide to Fiscal Information*: Key Economies in Africa (various issues).

E. State ownership of assets

This component is based on ratings from the *Varieties of Democracy* (V-Dem) data on State Ownership of the Economy, which "gauges the degree to which the state owns and controls capital (including land) in the industrial, agricultural, and service sectors. It does not measure the extent of government revenue and expenditure as a share of total output; indeed, it is quite common for states with expansive fiscal policies to exercise little direct control (and virtually no ownership) over the economy." We use the original scale (*osp) data from V-Dem for this variable and for all V-Dem-based variables to follow. The rating is equal to: $(V_i - V_{min}) / (V_{max} - V_{min}) \times 10$. The V_i is the country's state ownership score, while the V_{max} and V_{min} are set at 4.0 and 0, respectively. Countries with greater government ownership of assets get lower scores.

Source: V-Dem Institute, *Varieties of Democracy*, <www.v-dem.net>.

Area 2: Legal System and Property Rights

Note: The ratings for Area 2 are adjusted to reflect inequalities in the legal treatment of women using a Gender Disparity Index (GDI) provided annually by Rosemarie Fike. The primary data used in the GDI are from the World Bank's *Women, Business and the Law* reports. For additional details, see Rosemarie Fike (2018), *Impact of Economic Freedom and Women's Well-Being*, <https://www.fraserinstitute.org/studies/impact-of-economic-freedom-and-womens-well-being>.

A. Judicial independence

This component is based on three sources. (a) The first source of this component is from the *Global Competitiveness Report* question: "Is the judiciary in your country independent from political influences of members of government, citizens, or firms? No—heavily influenced (= 1) or Yes—entirely independent (= 7)". The question's wording has varied slightly over the years. All variables from the *Global Competitiveness Report* were converted from the original 1-to-7 scale to a 0-to–10 scale using this formula: $EFW_i = ((GCR_i - 1) \div 6) \times 10$. (b) The second source is a collection of questions from the V-Dem dataset, namely: Judicial Purges, Government Attacks on the Judiciary, Court Packing, High Court Independence, and Low Court Independence. Each of the V-Dem variables is individually rated using the formula $(V_i - V_{min}) / (V_{max} - V_{min}) \times 10$. The V_i is the country's V-Dem score according to V-Dem. For Judicial Purges, Government Attacks on the Judiciary, High Court Independence, and Low Court Independence, V_{max} and V_{min} were set at 4.0 and 0, respectively. For Court Packing, V_{max} and V_{min} were set at 3.0 and 0, respectively. All five scores are then averaged. (c) The third data source is based on *Update, A Global Measure of Judicial Independence, 1900-2015*

(Staton, Linzer, Reenock, and Holsinger, 2019). This data source scores on a 0-to-1 scale, so it was multiplied by 10 to place it on the scale of the other variables. The final rating is the average of whichever of these sources are available.

Sources: World Economic Forum, *Global Competitiveness Report*; V-Dem Institute, *Varieties of Democracy*, <www.v-dem.net>; Jeffrey Staton, Drew Linzer, Christopher Reenock, and Jordan Holsinger (2019), *Update, A Global Measure of Judicial Independence, 1900-2015* (Harvard Dataverse, V1), <https://doi.org/10.7910/DVN/NFXWUO>.

B. Impartial courts

This component is based on four sources. (a) The first source is the *Global Competitiveness Report* question: "The legal framework in your country for private businesses to settle disputes and challenge the legality of government actions and/or regulations is inefficient and subject to manipulation (= 1) or is efficient and follows a clear, neutral process (= 7)". The question's wording has varied slightly over the years. (b) The second source of this component is Judicial Corrupt Decision from the V-Dem dataset. The rating is equal to: $(V_i - V_{min}) / (V_{max} - V_{min}) \times 10$. The V_i is the country's Judicial Corrupt Decisions Score, while the V_{max} and V_{min} are set at 4.0 and 0, respectively. (c) The third source is the Rule of Law indicator found in the *Worldwide Governance Indicators*. The formula used to calculate the 0-to-10 ratings is: $(V_i - V_{min}) / (V_{max} - V_{min}) \times 10$. V_i represents the component value. The values for V_{max} and V_{min} are set at 2.5 and −2.5, respectively. Countries with values outside the V_{max} and V_{min} range received ratings of either 0 or 10, accordingly. (d) The fourth source is the "Transparency and the fairness of the legal system" indicator from the Economist Intelligence Unit (EIU). The original scale is 1-to-5, so the rating formula for data from the EIU is: $EFW_i = ((EIU_i - 1) \div 4) \times 10$. The final rating is the average of whichever of these sources are available.

Sources: World Economic Forum, *Global Competitiveness Report*; World Bank, *Worldwide Governance Indicators*; V-Dem Institute, *Varieties of Democracy*, <www.v-dem.net>; Economist Intelligence Unit, *Business Environment Rankings*.

C. Property rights

This component is based on three sources. (a) The first source is the *Global Competitiveness Report* question: "Property rights, including over financial assets, are poorly defined and not protected by law (= 1) or are clearly defined and well protected by law (= 7)". (b) The second source is Property Rights and Rule-Based Governance from *Country Policy and Institutional Assessment* (CPIA) data from the World Bank. This has been scaled to the Legal System and Property Rights data via regression. (c) The third source is the "Degree to which private property rights are guaranteed and protected" indicator from the Economist Intelligence Unit. The final rating is the average of whichever of these sources are available.

Sources: World Economic Forum, *Global Competitiveness Report*; World Bank, *Country Policy and Institutional Assessment*; Economist Intelligence Unit, *Business Environment Rankings.*

D. Military interference

This component is based on the *International Country Risk Guide* Political Risk Component G, Military in Politics: "A measure of the military's involvement in politics. Since the military is not elected, involvement, even at a peripheral level, diminishes democratic accountability. Military involvement might stem from an external or internal threat, be symptomatic of underlying difficulties, or be a full-scale military takeover. Over the long term, a system of military government will almost certainly diminish effective governmental functioning, become corrupt, and create an uneasy environment for foreign businesses". Originally on a 0-to-6 scale, the rating is algebraically converted to a 0-to-10 scale.

Source: PRS Group, *International Country Risk Guide*.

E.Integrity of the legal system

This component is based on two sources. (a) The first source is the *International Country Risk Guide* Political Risk Component I for Law and Order: "Two measures comprising one risk component. Each subcomponent equals half of the total. The 'law' subcomponent assesses the strength and impartiality of the legal system, and the 'order' subcomponent assesses popular observance of the law". Originally on a 0-to-6 scale, the rating is algebraically converted to a 0-to-10 scale. (b) The second source is Judicial Accountability, Compliance with the High Court, Judicial Review, Transparent Laws with Predictable Enforcement, and Access to Justice for Men from the V-Dem dataset. (An adjustment for the area as a whole is made later to account uniformly for gender disparities.) Each of the V-Dem variables is individually rated using the formula $(V_i - V_{min}) / (V_{max} - V_{min}) \times 10$. V_i is the country's V-Dem score according to V-Dem, and V_{max} and V_{min} are set at 4.0 and 0, respectively. The five measures from V-Dem are then averaged. The final rating is the average of whichever of these sources are available.

Sources: PRS Group, *International Country Risk Guide*; V-Dem Institute, *Varieties of Democracy*, <www.v-dem.net>.

F. Contracts

This component is based on three sources. (a) The first source uses the World Bank's *Doing Business* estimates for the time and money required to collect a debt. The debt is assumed to equal 200% of the country's per-capita income where the plaintiff has complied with the contract and judicial judgment is rendered in his favor. 0-to-10 ratings are constructed for (1) the time cost (measured in number of calendar days required from the moment the lawsuit is filed until payment); and (2) the monetary cost of the case (measured as a percentage of the debt). These two ratings are then averaged to arrive at the final rating for this component. The formula used to calculate the 0-to-10 ratings is: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the time or money cost value. The values for V_{max} and V_{min} are set at 725 days/82.3% and 62 days/0%, respectively. Countries with values outside the range from V_{max} to V_{min} received ratings of either 0 or 10, accordingly. (b) The second source is the "Contract

Viability/Expropriation" data from the PRS Group's *International Country Risk Guide*. The formula used to calculate the 0-to-10 ratings is: $(V_i - V_{min}) / (V_{max} - V_{min}) \times 10$. V_i represents the component value. The values for V_{max} and V_{min} are set at 4 and 0.5, which corresponds to the range of the variable. (c) The third source is the "Efficiency of the legal system" indicator from the Economist Intelligence Unit. The final rating is the average of whichever of these sources are available.

Sources: World Bank, *Doing Business*; Business Environment Risk Intelligence, *Historical Ratings Research Package*; Economist Intelligence Unit, *Business Environment Rankings*.

G. Real property

This component is based on the World Bank's *Doing Business* data on the time measured in days and monetary costs required to transfer ownership of property that includes land and a warehouse. 0-to-10 ratings are constructed for (1) the time cost (measured in the number of calendar days required to transfer ownership); and (2) the monetary cost of transferring ownership (measured as a percentage of the property value). These two ratings are then averaged to arrive at the final rating for this component. The formula used to calculate the 0-to-10 ratings is: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the time or money cost value. The values for V_{max} and V_{min} are set at 265 days/15% and 0 days/0%, respectively. Countries with values outside the range from V_{max} to V_{min} received ratings of either 0 or 10, accordingly.

Source: World Bank, *Doing Business*.

H. Police and crime

This component is based on two sources. (a) The first source is the *Global Competitiveness Report* question: "To what extent can police services be relied upon to enforce law and order in your country? (1 = Cannot be relied upon at all; 7 = Can be completely relied upon)". (b) The second source is the "Impact of crime" indicator from the Economist Intelligence Unit. The final rating is the average of whichever of these sources are available.

Sources: World Economic Forum, *Global Competitiveness Report*; Economist Intelligence Unit, *Business Environment Rankings*.

Area 3: Sound Money

A. Money growth

This component measures the average annual growth of the money supply in the last five years minus average annual growth of real GDP in the last 10 years. Countries where growth of the money supply greatly exceeds growth of real output receive lower ratings. The broad money supply (basically what used to be called M2) is used to measure the money supply. The rating is equal to: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the average annual growth rate of the money supply during the last five years adjusted for the growth of real GDP during the previous 10 years. The values for V_{min} and V_{max} are set at 0% and 50%, respectively. Therefore, if the adjusted growth rate of the money supply during the last five years is 0%, indicating that money growth is equal to the long-term growth of real output, the formula generates a rating of 10. Ratings decline as the adjusted growth of the money supply increases toward 50%. When adjusted annual money growth is equal to (or greater than) 50%, a rating of 0 results.

Sources: World Bank, *World Development Indicators*; International Monetary Fund, *International Financial Statistics*; United Nations National Accounts.

B. Standard deviation of inflation

This component measures the standard deviation of the inflation rate over the last five years. Generally, the GDP deflator is used as the measure of inflation for this component. When these data are unavailable, the Consumer Price Index is used. The following formula is used to determine the 0-to-10 scale rating for each country: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the country's standard deviation of the annual rate of inflation during the last five years. The values for V_{min} and V_{max} are set at 0% and 25%, respectively. This procedure will allocate the highest ratings to the countries with the least variation in the annual rate of inflation. A perfect 10 results when there is no variation in the rate of inflation over the five-year period. Ratings will decline toward 0 as the standard deviation of the inflation rate approaches 25% annually.

Sources: World Bank, *World Development Indicators*; International Monetary Fund, *International Financial Statistics.*

C.Inflation: most recent year

Generally, the Consumer Price Index is used as the measure of inflation for this component as it is often available before the GDP deflator is available. When these data are unavailable, the GDP deflator inflation rate is used. The 0-to-10 country ratings are derived by the following formula: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the rate of inflation during the most recent year. The values for V_{min} and V_{max} are set at 0% and 25%, respectively: the lower the rate of inflation, the higher the rating. Countries that achieve perfect price stability earn a rating of 10. As the current annual inflation rate moves towards 25%, the rating for this component moves toward 0. A 0 rating is assigned to all countries with an inflation rate of 25% or more.

Sources: World Bank, *World Development Indicators*; International Monetary Fund, *International Financial Statistics.*

D.Foreign currency bank accounts

When foreign-currency bank accounts are permissible without *any* restrictions both domestically and abroad, the rating is 10; when these accounts are restricted, the rating is 0. If foreign currency bank accounts were permissible domestically but not abroad (or vice versa), the rating is 5.

Source: International Monetary Fund, *Annual Report on Exchange Arrangements and Exchange Restrictions.*

Area 4: Freedom to Trade Internationally

A. Tariffs

i. Trade tax revenue

This subcomponent measures the amount of tax on international trade as a share of exports and imports. The formula used to calculate the ratings for this subcomponent is: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the revenue derived from taxes on international trade as a share of the trade sector. The values for V_{min} and V_{max} are set at 0% and 15%, respectively. This formula leads to lower ratings as the average tax rate on international trade increases. Countries with no specific taxes on international trade earn a perfect 10. As the revenues from these taxes rise toward 15% of international trade, ratings decline toward 0.

Sources: International Monetary Fund, *Government Finance Statistics Yearbook*; International Monetary Fund, *International Financial Statistics*.

ii. Mean tariff rate

This subcomponent is based on the unweighted mean of tariff rates. The formula used to calculate the 0-to-10 rating for each country is: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the country's mean tariff rate. The values for V_{min} and V_{max} are set at 0% and 50%, respectively. This formula will allocate a rating of 10 to countries that do not impose tariffs. As the mean tariff rate increases, countries are assigned lower ratings. The rating will decline toward 0 as the mean tariff rate approaches 50%. (Note that, except for two or three extreme observations, all countries have mean tariff rates within this range from 0% to 50%.)

Source: World Trade Organization, *World Tariff Profiles*.

iii. Standard deviation of tariff rates

Compared to a uniform tariff, wide variations in tariff rates indicate greater efforts towards central planning of the economy's production and consumption patterns. Thus, countries with a greater variation in their tariff rates are given lower ratings. The formula used to calculate the 0-to-10 ratings for this component is: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the standard deviation of the country's tariff rates. The values for V_{min} and V_{max} are set at 0% and 25%, respectively. This formula will allocate a rating of 10 to countries that impose a uniform tariff. As the standard deviation of tariff rates increases towards 25%, ratings decline toward 0.

Source: World Trade Organization, *World Tariff Profiles*.

B. Regulatory trade barriers

i. Non-tariff trade barriers

This subcomponent is based on two sources. (a) The first source is the *Global Competitiveness Report* survey question: "In your country, tariff and non-tariff barriers significantly reduce the ability of imported goods to compete in the domestic market. 1–7 (best)". The question's wording has varied slightly over the years. (b) The second source is the "Tariff and non-tariff barriers" indicator from the Economist Intelligence Unit. The final rating is the average of whichever of these sources are available. Note that, notwithstanding the subcomponent's title, this indicator captures both tariff and non-tariff barriers.

Sources: World Economic Forum, *Global Competitiveness Report*; Economist Intelligence Unit, *Business Environment Rankings.*

ii. Costs of importing and exporting

This subcomponent is based on the World Bank's *Doing Business* data on the time (i.e., non-money) cost of procedures required to import a full 20-foot container of dry goods that contains no hazardous or military items. Countries where it takes longer to import or export are given lower ratings. 0-to-10 ratings are constructed for (1) the time cost (in hours) associated with border compliance and documentary compliance when exporting; and (2) the time cost (in hours) associated with border compliance and documentary compliance when importing. These two ratings are then averaged to arrive at the final rating for this subcomponent. The formula used to calculate the 0-to-10 ratings is: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the time-cost value. The values for V_{max} and V_{min} are set, respectively, at 228.38 and 0 hours for exporting; and 338.00 hours and 0 hours for importing. Countries with values outside the V_{max} and V_{min} range receive ratings of either 0 or 10, accordingly.

Source: World Bank, *Doing Business.*

C. Black-market exchange rates

This component is based on the percentage difference between the official and the parallel (black-market) exchange rate. The formula used to calculate the 0-to-10 ratings for this component is the following: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i is the country's black-market exchange-rate premium. The values for V_{min} and V_{max} are set at 0% and 50%, respectively. This formula will allocate a rating of 10 to countries without a black-market exchange rate; that is, those with a domestic currency that is fully convertible without restrictions. When exchange-rate controls are present and a black market exists, the ratings will decline toward 0 as the black-market premium increases toward 50%. A 0 rating is given when the black-market premium is equal to, or greater than, 50%.

Source: *MRI Bankers' Guide to Foreign Currency.*

D. Controls of the movement of capital and people

i. Financial openness

This subcomponent is based on two sources. (a) The first source is the Chinn-Ito Index of *de jure* financial openness. This index is composed of a series of dummy variables that "codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions*." This data source scores on a continuous scale from 0-to-1, so it is multiplied by 10 to place it on the 0-to-10 scale.

(b) The second source is the "Capital account liberalization" indicator from the Economist Intelligence Unit.

Sources: Menzie Chinn and Hiro Ito (2006), What Matters for Financial Development? Capital Controls, Institutions, and Interactions, *Journal of Development Economics* 81, 1: 163–191; Menzi Chinn and Hiro Ito (2008), A New Measure of Financial Openness, *Journal of Comparative Policy Analysis* 10, 3: 309–322; see also <http://web.pdx.edu/~ito/Chinn-Ito_website.htm>; Economist Intelligence Unit, *Business Environment Rankings*.

ii. Capital controls

The International Monetary Fund reports on up to 13 types of international capital controls. The zero-to-10 rating is the percentage of capital controls not levied as a share of the total number of capital controls listed, multiplied by 10.

Source: International Monetary Fund, *Annual Report on Exchange Arrangements and Exchange Restrictions*.

iii. Freedom of foreigners to visit

This component measures the percentage of countries for which a country requires a visa from foreign visitors. It reflects the freedom of foreigners to travel to this country for tourist and short-term business purposes. The formula used to calculate the zero-to-10 ratings is: $(V_i - V_{min}) / (V_{max} - V_{min}) \times 10$. V_i represents the component value. The values for V_{max} and V_{min} were set at 47.2 (1 standard deviation above average) and 0. Countries with values outside the range between V_{max} and V_{min} received ratings of either 0 or 10, accordingly.

Source: Robert Lawson and Jayme Lemke (2012), Travel Visas, *Public Choice* 154, 1-2: 17–36; IATI, <https://www.iata.org/>; authors' calculations.

iv. Protection of foreign assets

This subcomponent is based on two sources. (a) The first source is the *Global Competitiveness Report* survey questions on "Prevalence of foreign ownership" and "Business impact of rules on FDI". (b) The second source is the "Risk of expropriation of foreign assets" from the Economist Intelligence Unit. The final rating is the average of whichever of these sources are available.

Sources: World Economic Forum, *Global Competitiveness Report*; World Bank, *Worldwide Governance Indicators*; Economist Intelligence Unit, *Business Environment Rankings*.

Area 5: Regulation

A. Credit market regulation

i. Ownership of banks

Data on the percentage of bank deposits held in privately owned banks are used to construct rating intervals. Countries with larger shares of privately held deposits received higher ratings. When privately held deposits total between 95% and 100%, countries are given a rating of 10. When private deposits constitute between 75% and 95% of the total, a rating of 8 is assigned. When private deposits are between 40% and 75% of the total, the rating is 5. When private deposits total between 10% and 40%, countries received a rating of 2. A 0 rating is assigned when private deposits are 10% or less of the total.

Sources: Anginer, D., A. Can Bertay, R. Cull, A. Demirgüç-Kunt, and D.S. Mare (2019), *Bank Regulation and Supervision Ten Years after the Global Financial Crisis*, Policy Research Working Paper, World Bank; World Bank, *Bank Regulation and Supervision Survey*; James R. Barth, Gerard Caprio, and Ross Levine (2006), *Rethinking Bank Regulation: Till Angels Govern*, Cambridge University Press.

ii. Private sector credit

This subcomponent measures the extent of government borrowing relative to private-sector borrowing. If the data are available, this subcomponent is calculated as the government fiscal deficit as a share of gross saving. The formula used to derive the country ratings for this subcomponent is $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i is the [absolute value of the] the ratio of deficit to gross savings, and the values for V_{max} and V_{min} are set at 100% and 0%, respectively. The formula allocates higher ratings as the deficit gets smaller relative to gross saving.

If the deficit data are not available, the component is instead based on the share of private credit relative to total credit extended in the banking sector. Thus, the formula used to derive the country ratings for this subcomponent is $(V_i - V_{min}) / (V_{max} - V_{min}) \times 10$. V_i is the share of the country's total domestic credit allocated to the private sector and the values for V_{max} and V_{min} are set at 99.9% and 10.0%, respectively. The formula allocates higher ratings as the share of credit extended to the private sector increases.

Sources: World Bank, *World Development Indicators*; World Economic Forum, *Global Competitiveness Report*; International Monetary Fund, *International Financial Statistics*.

iii. Interest rate controls / negative real interest rates

Countries with interest rates determined by the market, stable monetary policy, and reasonable real-deposit and lending-rate spreads received higher ratings. When interest rates are determined primarily by market forces as evidenced by reasonable deposit and lending-rate spreads, and when real interest rates are positive, countries are given a rating of 10. When interest rates are primarily market-determined but the real rates are sometimes slightly negative (less than 5%) or the differential between the deposit and lending rates is large (8% or more), countries received a rating of 8. When the real deposit or lending rate is persistently negative by a single-digit amount or the differential between them is regulated by the government, countries are rated at 6. When the deposit and lending rates are fixed by the government and the real rates are often negative by single-digit amounts, countries are assigned a rating of 4. When the real deposit or lending rate is persistently negative by a double-digit amount, countries received a rating of 2. A 0 rating is assigned when the deposit and lending rates are fixed by the government and real rates are persistently negative by double-digit amounts or hyperinflation has virtually eliminated the credit market.

Sources: World Bank, *World Development Indicators*; International Monetary Fund, *International Financial Statistics*; CIA, *The World Factbook*.

B.Labor market regulation

i. Labor regulations and minimum wage

This subcomponent is based on three sources. (a) The first source is the *CBR Labour Regulation Index*, which includes three variables concerning (1) "Annual leave entitlements"; (2) "Public holiday entitlements"; and (3) "Overtime premia." The original data is on a [0,1] scale, which is flipped to reflect that these restrictions reflect lesser freedom. They are then averaged together and multiplied by 10. (b) The second source is the "Employing Workers" section of the World Bank's *Doing Business* and uses the following data: (1) whether fixed-term contracts are prohibited for permanent tasks; (2) the maximum cumulative duration of fixed-term contracts; and (3) the ratio of the minimum wage for a trainee or first-time employee to the average value added per worker. Countries with restrictions on fixed-term contracts, restrictions on the duration of fixed-term contracts, and/or higher minimum wages receive lower ratings. (c) The third source is the "Wage regulation" indicator from the Economist Intelligence Unit. The *CBR Labour Regulation Index* is treated as the preferred data source, and if it is unavailable, the average of the *Doing Business* data and the Economist Intelligence Unit data are used.

Sources: Centre for Business Research, *CBR Labour Regulation Index*; World Bank, *Doing Business*; Economist Intelligence Unit, *Business Environment Rankings.*

ii. Hiring and firing regulations

This subcomponent is based on four sources. (a) The first source is the *CBR Labour Regulation Index*, which includes seven variables concerning (1) "The law as opposed to the contracting parties, determines the legal status of the worker"; (2) "Part-time workers have the right to equal treatment with full-time workers"; (3) "Fixed-term contracts are allowed only for work of limited duration"; (4) "Fixed-term workers have the right to equal treatment with permanent workers"; (5) "Maximum duration of fixed-term contracts"; (6) "Agency work is prohibited of strictly controlled"; and (7) "Agency workers have the right to equal treatment with permanent workers of the user undertaking." The original data is on a [0,1] scale, which is flipped to reflect that these restrictions reflect lesser freedom. They are then averaged together and multiplied by 10. (b) The second source is the *Structural Reform Database* variable, Valid Grounds, which "captures the freedom of the employer in deciding when to dismiss workers and which workers to dismiss." This variable scale on a [0,1] and is multiplied by 10. (c) The third source is the *Global Competitiveness Report* question: "The hiring and firing of workers is impeded by regulations (= 1) or flexibly determined by employers (= 7)". The question's wording has varied over the years. (d) The fourth source is the "Restrictiveness of labour laws" indicator from the Economist Intelligence Unit. Data from the *CBR Labour Regulation Index* and the *Structural Reform Database* area treated as preferred, and averaged together if both are available. If neither is available, then the average of data from the *Global Competitiveness Report* and the Economist Intelligence unit is used.

Sources: Center for Business Research, *CBR Labour Regulation Index*; International Monetary Fund, *Structural Reform Database*; World Economic Forum, *Global Competitiveness Report*; Economist Intelligence Unit, *Business Environment Rankings.*

iii. Flexible wage determination

This subcomponent is based on three sources. (a) The first source is the *CBR Labour Regulation Index*, which includes 17 variables concerning (1) “Priority in re-employment”; (2) “Right to unionisation”; (3) “Right to collective bargaining”; (4) “Duty to bargain”; (5) “Extension of collective agreements”; (6) “Closed shops”; (7) “Codetermination: board membership”; (8) “Codetermination and information/consultation of workers”; (9) “Unofficial industrial action”; (10) “Political industrial action”; (11) “Secondary industrial action”; (12) “Lockouts”; (13) “Right to industrial action”; (14) “Waiting period prior to industrial action”; (15) “Peace obligation”; (16) “Compulsory conciliation or arbitration”; and (17) “Replacement of striking workers.” The original data is on a [0,1] scale, which is flipped to reflect that these restrictions reflect lesser freedom. They are then averaged together and multiplied by 10. (b) The second source is the *Structural Reform Database*, which includes the variable, Procedural Inconvenience, which “includes provisions such as consultation with workers’ representatives and third-party approval.” This variable is on a [0,1] scale and is multiplied by 10. (c) The third source is the *Global Competitiveness Report* question: “Flexibility of wage determination, 1–7 (best)”. In earlier years, the question is “Wages in your country are set by a centralized bargaining process (= 1) or up to each individual company (= 7)”. Data from the *CBR Labour Regulation Index* and the *Structural Reform Database* area treated as preferred, and averaged together if both are available. If neither is available, then data from the *Global Competitiveness Report* is used.

Sources: Center for Business Research, *CBR Labour Regulation Index*, International Monetary Fund, *Structural Reform Database*, World Economic Forum, *Global Competitiveness Report*.

iv. Hours regulations

This subcomponent is based on two sources. (a) The first source is the *CBR Labour Regulation Index*, which includes four variables concerning (1) “Weekend working”; (2) “Limits to overtime working”; (3) “Duration of the normal working week”; and (4) “Maximum daily working time.” The original data is on a [0,1] scale, which is flipped to reflect that these restrictions reflect lesser freedom. They are then averaged together and multiplied by 10. (b) The second source is based on the Employing Labor section in the World Bank’s *Doing Business*; it uses the following five components: (1) whether there are restrictions on night work; (2) whether there are restrictions on holiday work; (3) whether the length of the work week can be 5.5 days or longer; (4) whether there are restrictions on overtime work; and (5) whether the average paid annual leave is 21 working days or more. For each question, when the regulations apply, a score of 1 is given. If there are no restrictions, the economy receives a score of 0. The 0-to-10 rating is based on how many of these regulations are in place: zero regulations results in a rating of 10; one regulation results in a rating of 8; and so on. For countries where the *CBR Regulation Index* is available, it is used, and when it is unavailable, *Doing Business* is used.

Sources: Center for Business Research, *CBR Labour Regulation Index*, World Bank, *Doing Business*.

v. Costs of worker dismissal

This subcomponent is based on three sources. (a) The first source is the *CBR Labour Regulation Index*, which includes nine variables concerning (1) "The cost of dismissing part-time workers is equal in proportionate terms to the cost of dismissing full-time workers"; (2) "Legally mandated notice period"; (3) "Legally mandated redundancy compensation"; (4) "Minimum qualifying period of service for normal case of unjust dismissal"; (5) "Law imposes procedural constraints on dismissal"; (6) "Law imposes substantive constraints on dismissal"; (7) "Reinstatement normal remedy for unfair dismissal"; (8) "Notification of dismissal"; and (9) "Redundancy selection." The original data is on a [0,1] scale, which is flipped to reflect that these restrictions reflect lesser freedom. They are then averaged together and multiplied by 10. (b) The second source is the *Structural Reform Database*, which includes three variables, (1) "Firing costs," which "consists of minimum notice periods and severance penalties"; (2) "Redress measures (in case of unfair dismissal)," which "concerns provisions such as the possibility for the worker being reinstated or to receive compensation following an unfair dismissal"; and (3) "Additional requirements for collective dismissals," which "accounts for additional restrictions imposed to the employer when dismissing a large number of workers for economic reasons." These variables are on a [0,1] scale and are multiplied by 10. The first and second variables are included normally, but to reflect the stacking nature of the third variable, it is multiplied by the second and then divided by 10 to put it back on the 0-to-10 scale. The three of these variables are then averaged. (c) The third source is the World Bank's *Doing Business* data on the cost of the advance-notice requirements, severance payments, and penalties due when dismissing a redundant worker with 10-years tenure. The formula used to calculate the 0-to-10 ratings is: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the dismissal cost (measured in weeks of wages). The values for V_{max} and V_{min} are set at 58 weeks and 0 weeks, respectively. Countries with values outside the V_{max} and V_{min} range received ratings of either 0 or 10, accordingly. Data from the *CBR Labour Regulation Index* and the *Structural Reform Database* area treated as preferred, and averaged together if both are available. If neither is available, then data from the *Doing Business* report is used.

Sources: Center for Business Research, *CBR Labour Regulation Index*, International Monetary Fund, *Structural Reform Database*, World Bank, *Doing Business*.

vi. Conscription

Data on the use and duration of military conscription are used to construct rating intervals. Countries with longer conscription periods received lower ratings. A rating of 10 is assigned to countries without military conscription. When length of conscription is six months or less, countries are given a rating of 5. When length of conscription is more than six months but not more than 12 months, countries are rated at 3. When length of conscription is more than 12 months but not more than 18 months, countries are assigned a rating of 1. When conscription periods exceeded 18 months, countries are rated 0. If conscription is present but apparently not strictly enforced or the length of service could not be determined, the country is given a rating of 3. In cases where it is clear conscription is never used, even though it may be possible, a rating of 10 is given. If a country's mandated national service includes clear non-military options, the country is given a rating of 5.

Sources: International Institute for Strategic Studies, *The Military Balance*; War Resisters International, *World Survey of Conscription and Conscientious Objection to Military Service*; additional online sources used as necessary.

vii. Foreign labor

This subcomponent is based on two sources. (a) The first source is the *Global Competitiveness Report* question: "To what extent does labour regulation in your country limit the ability to hire foreign labour? (1 = Very much limits hiring foreign labour; 7 = Does not limit hiring foreign labour at all)". The question's wording has varied over the years. (b) The second source is the "Hiring of foreign nationals" indicator from the Economist Intelligence Unit. The final rating is the average of whichever of these sources are available.

Sources: World Economic Forum, *Global Competitiveness Report*; Economist Intelligence Unit, *Business Environment Rankings*.

C. Business regulation

i. Regulatory burden

This subcomponent is based on the *Global Competitiveness Report* question on the "Burden of government regulation, 1–7 (best)". The question's wording has varied slightly over the years.

Source: World Economic Forum, *Global Competitiveness Report*.

ii. Bureaucracy costs

This subcomponent is based on the "Regulatory Burden Risk Ratings" from IHS Markit, which measures "[t]he risk that normal business operations become more costly due to the regulatory environment. This includes regulatory compliance and bureaucratic inefficiency and/or opacity. Regulatory burdens vary across sectors so scoring should give greater weight to sectors contributing the most to the economy". The raw scores range, roughly, from 0 to 7, with higher values indicating greater risk. The formula used to calculate the 0-to-10 ratings is: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i is the country's Regulatory Burden rating, while the V_{max} and V_{min} are set at 5 and 0.5, respectively.

Source: IHS Markit.

iii. Impartial public administration

This subcomponent is based on the "Rigorous and Impartial Public Admin-istration" data from the V-Dem dataset. If nepotism, cronyism, and discrimi-nation are widespread in the application of public administration, countries receive a lower score. The rating is equal to: $(V_i - V_{min}) / (V_{max} - V_{min}) \times 10$. The V_i is the country's impartial administration score, while the V_{max} and V_{min} are set at 4.0 and 0, respectively.

Source: V-Dem Institute, *Varieties of Democracy*, <www.v-dem.net>.

iv. Tax compliance

This subcomponent is based on two sources. (a) The first source is the World Bank's *Doing Business* data on the time required per year for a business to prepare, file, and pay taxes on corporate income, value added or sales taxes, and taxes on labor. The formula used to calculate the 0-to-10 ratings is: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the time cost (measured in hours) of tax compliance. The values for V_{max} and V_{min} are set at 892 hours and 0 hours, respectively. Countries with values outside the V_{max} and V_{min} range received ratings of either 0 or 10, accordingly. (b) The second source is the "Tax complexity" indicator from the Economist Intelligence Unit. The final rating is the average of whichever of these sources are available.

Sources: World Bank, *Doing Business*; Economist Intelligence Unit, *Business Environment Rankings*.

D. Freedom to compete

i. Market openness

This subcomponent is based on two sources. (a) The first source is the World Bank's *Doing Business* data on the amount of time and money it takes to start a new limited-liability business. Countries where it takes longer or is costlier to start a new business are given lower ratings. 0-to-10 ratings are constructed for three variables: (1) time (measured in days) necessary to comply with regulations when starting a limited liability company; (2) money costs of the fees paid to regulatory authorities (measured as a share of per-capita income); and (3) minimum capital requirements, that is, funds that must be deposited into a company bank account (measured as a share of per-capita income). These three ratings are then averaged to arrive at the final rating for this subcomponent. The formula used to calculate the 0-to-10 ratings is: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the variable value. The values for V_{max} and V_{min} are set at 104 days/317%/1,017% and 0 days/0%/0%, respectively. Countries with values outside the V_{max} and V_{min} range received ratings of either 0 or 10, accordingly. (b) The second source are the "Freedom of existing businesses to compete" and "Level of government regulation and impact on private business" indicators from the Economist Intelligence Unit. The latter indicator is based heavily on regulations related to starting a business. The final rating is the average of whichever of these sources are available.

Sources: World Bank, *Doing Business*; Economist Intelligence Unit, *Business Environment Rankings*.

ii. Business permits

This subcomponent is based on the World Bank's *Doing Business* data on the time in days and monetary costs required to obtain a license to construct a standard warehouse. 0-to-10 ratings are constructed for (1) the time cost (measured in number of calendar days required to obtain a license) and (2) the monetary cost of obtaining the license (measured as a share of per-capita income). These two ratings are then averaged to arrive at the final rating for this subcomponent. The formula used to calculate the 0-to-10 ratings is: $(V_{max} - V_i) / (V_{max} - V_{min}) \times 10$. V_i represents the time or money cost value. The values for V_{max} and V_{min} are set at 363 days/2,763%/56 days and 0 days/0%/0%, respectively. Countries with values outside the V_{max} and V_{min} range received ratings of either 0 or 10, accordingly.

Source: World Bank, *Doing Business*.

iii. Distortion of business environment

This subcomponent is based on the "Price controls" and "State control" indicators from the Economist Intelligence Unit.

Source: Economist Intelligence Unit, *Business Environment Rankings*.