

## PART I: INTRODUCTION

### 1. Introduction

Recent global turmoil has shown how countries' often-underappreciated economic fundamentals can translate into prolonged economic slowdowns. Weaknesses in banking sectors, fiscal and/or debt burdens and low growth potential are just some of the fundamentals that are important to monitor. For example, the oversupply of credit to the eurozone in the aftermath of the global financial crisis allowed already high levels of public debt to balloon to unsustainable levels.

These and other imbalances were underestimated by policy makers, investors and credit-rating agencies alike. Although plenty of research has been written on the reasons for the 2007-08 global financial crisis and its aftermath, and credit-rating agencies are reviewing their models, neither rating agencies nor market participants have produced an alternative model that captures countries' economic risks in a sufficiently comprehensive and objective fashion.

Why is this so? Because the models for analyzing country risk currently in the market rely on the subjective judgment of analysts rather than systematic, quantitative analysis. These models are unable to ensure consistency and comparability across either time or countries and are prone to human bias.

The Roubini Country Insights team has been working since 2007 on a systematic, computable tool that addresses these analytical weaknesses: The Country Insights Model assesses sovereign risk and investment attractiveness across 174 countries by taking the most holistic approach among cross-country models known to date. Country Insights does not incorporate any subjectivity or expert judgment. Rather, Country Insights employs a totally consistent and systematic approach, based on a set of standardized heuristic algorithms that are computed automatically, without any human bias or intervention.

In Part I, we discuss the design of the Model and issues around scoring and historical data. Part II provides detailed descriptions of the factors and their scoring. The annexes that follow provide detailed descriptions of the factors, sub-factors and variables that make up the Model.

### 2. What Is the Country Insights Model?

The Country Insights Model is a comprehensive quantitative tool for assessing country and sovereign risk by computing scores for a country's risk of external and domestic financial shocks and its ability to grow. At Country Insights' core is a rigorous approach to assessing macroeconomic and financial-sector risks and growth potential, which is further supported by an assessment of the quality of political institutions, political risk and social inclusion to provide an in-depth view of a country's investment attractiveness and overall socioeconomic strength. All of this is systematically implemented through heuristic algorithms that transparently produce quantitative scores. The heuristic algorithms in the Country Insights Model transform standard, publicly available data about countries into risk scores by applying a predefined series of computations, without any human intervention. These computations in turn are derived from established academic and financial research. This makes it easy to understand what is driving the Model's conclusions. The Country Insights team has found that this approach offers predictive ability, analytical transparency and flexibility.

The Model ranks countries in a consistent and transparent fashion, which enables policy makers and investors to assess the relative weaknesses of developed, emerging and frontier economies with greater ease and confidence. It identifies potential patterns of economic and social weakness or strength, either within geographic regions or across specific areas of economic risk (e.g., external vulnerabilities, overall debt and structural problems). The Model can be used to improve research, to provide a customized risk dashboard, to develop trading strategies and to benchmark and improve government policy.

### 3. How Does Country Insights Work?

The Country Insights Country Strength Score clearly displays information on the economic vulnerabilities and strengths of individual countries across a selection of 25 critical economic, political and social factors, grouped into four “pillars” that can be further decomposed into 72 subfactors for more in-depth analysis. Each country receives a score that is scaled from 0 to 10 for comparability across countries, with 0 being the worst and 10 the best.

The Country Strength Score is arrived at by aggregating the scores of 25 individual factors, which in turn are made up of subfactor scores, all scaled from 0 to 10. The factors are weighted equally within each pillar, and each of the pillars respectively receives equal weight in the country score. However, the score for the Growth and Adaptability Pillar reflects the GDP-adjusted simple average of the growth factors. This enables the score both to reflect room for “catching up” in less wealthy economies and allows it not to be distorted by the residual institutional and infrastructure legacy of past economic growth.<sup>1</sup> The scoring algorithms and aggregation methods are completely systematic and automated, and involve no human intervention, judgment or bias.

The Investment Attractive Score is the simple average of the scores of the first three pillars:

- External adjustment capacity;
- Institutional robustness;
- Growth and adaptability.

The Investment Attractiveness Score has been published since November 2009.

Figure 1 below shows the factor composition of the Country Insights Model, and Figure 2 shows the bottom-up logic of how a pillar score is generated, using the example of External Adjustment Capacity. The accompanying tables give a more detailed description of the factors and subfactors and what data are used for each of the factors.

<sup>1</sup> For example, Greece scores more strongly than Uganda on individual growth factors. However, this reflects past development and EU transfers, not a successful growth model. After adjusting for GDP per capita, it becomes clear that Greece significantly lags the statistical expectation for a country at ~\$27,000 GDP per capita, while Uganda significantly outperforms the statistical expectation for a country at ~\$500 GDP per capita. Given the catching-up effect, this indicates Uganda is likely to grow much more strongly than Greece, so Uganda accordingly receives a higher growth-pillar score than Greece.

Figure 1: Structure of Country Insights Model

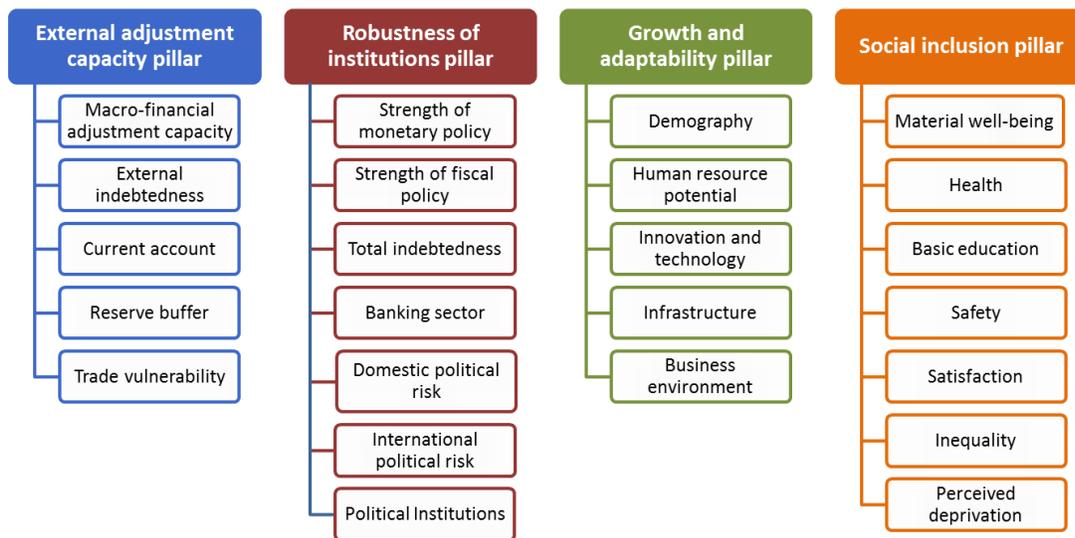
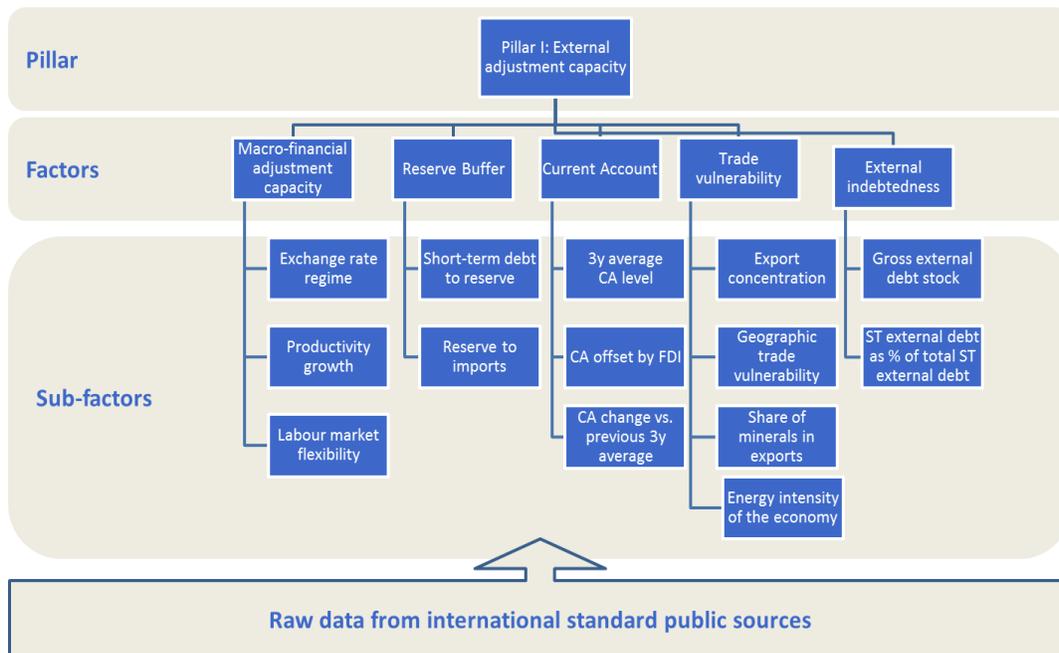


Figure 2: Structure of Pillar I: External Adjustment Capacity



## 4. Scoring Methods

Country Insights utilizes three main types of algorithms to process the data:

- Normalization to the scale of 0-10 for the data that is already provided in a scaled form (e.g., from 0 to 100, or a rank);
- Computes a score based on the country's percentile ranking relative to other countries in the dataset;
- Computes a score based on the both the current reading of the data and the historical trend of the data, which reflects the positive or negative dynamics in specific variables.

## 5. Data Selection and Quality Control

The Country Insights Model is based on cross-country datasets from globally recognized data sources—such as the IMF and World Bank—and does not use individual country sources to ensure consistency in terms of definitions of variables and data quality. This consistency is necessary for the algorithms to process the data systematically to compute scores.

Obviously, however, any worldwide cross-country data will be prone to quality problems. First, data on many countries may be missing. Second, different datasets will cover different periods with a different release frequency. Third, many international datasets ultimately comprise data collected by individual national agencies, and thus can suffer from inconsistencies in both definition and collection. We apply the following steps in selecting and quality-screening the data used in Country Insights:

1. We eliminate data series where many country data points are missing;
2. We conduct an assessment of whether the data make sense, including by doing detailed research into individual countries that appear to be outliers and by corroborating one source against another, and eliminating the data series that appear to be less reasonable or consistent;
3. We treat the inevitable problem of missing years or quarters by designing our scoring algorithms to use the latest available period, to avoid “holes” in factor scores;
4. The density of the data (each of the 25 factors comprises several variables) means we are still able to produce a comprehensive picture of a country's economic and socio-political situation when data is missing or incorrect. Thus, despite Greece supplying incorrect data about its foreign debt, Country Insights captured Greece as being one of the weakest economies in the world due to its imprudent policy record elsewhere in the economy;
5. We corroborate data with multiple sources. For example, in the case of regulatory quality data, we use both World Economic Forum data and the World Bank Doing Business dataset and, for infrastructure, we use data from four different datasets, which include hard data (e.g., number of mobile phones per capita), performance data (e.g., shipment times) and survey data (e.g., rail and railroad quality).

Approximately one-third of the data is released on a quarterly basis and is thus updated in the Country Insights' dataset. The remainder of the data is released annually. However, because release schedules for annual data vary, a subset of the annual variables is updated each quarter. Meanwhile, revisions to historical data are incorporated

each quarter to improve the accuracy of variables that are scored based on dynamics. To facilitate back-testing, we capture a point-in-time dataset each quarter, showing the actual data and revisions available when the quarterly Country Insights scores are released.

At the time of the quarterly release, we conduct quality checks on each of the sub-factor scores. We also conduct an analysis of the largest moves across countries, which, as well as being part of the analytical process, serve as a data-quality check.

## Part II: Factors and Scoring

The Country Insights Model is based on the innovation that the attractiveness and resilience of a country can be measured along four dimensions:

1. External adjustment capacity;
2. Institutional robustness;
3. Adaptability and strength of the medium-term growth model;
4. The extent to which economic benefits are shared across society.

The approach is unique because it recognizes the importance of a country's adjustment capacity. It is also dynamic, as it avoids the use of analyst forecasts, which are prone to upward or downward revisions as financial and economic conditions change.

### 1. External Adjustment Capacity

The external adjustment capacity of a country captures the interplay of macro-financial linkages deemed crucial for a country to recover quickly from adverse external shocks. It is a means to assess the adjustment linkages between the macro-economy and the financial system and the mechanisms implied by country-specific linkages.

#### *Example Scenario for Illustrative Purposes:*

*Suppose an asset-price shock takes place—for example, an exogenous adverse exchange rate shock coupled with a risk premium shock due to unfavorable global market conditions. The balance sheet valuation channel may work as follows:*

- a) *We may see a rise in domestic interest rates and a risk premium shock through a fall in asset prices. These would trigger an instantaneous deterioration in the balance sheets of the public sector (if FX and floating interest rate) and the nonfinancial private sector (through the sector's unhedged foreign debt exposure and the decline in asset prices).*
- b) *A deterioration in the non-financial private sector would lower fiscal revenue (raise public debt), leading to a deterioration in bank balance sheets through a rise in household and corporate non-performing loans, leading to a decline in the value of banks assets and an increase in implicit government guarantees. Public-sector distress could be transmitted back to the financial system (banking sector holding large government assets, which again feeds back to government sectors through a further rise in implicit government guarantees, further lowering government assets. Thus, the linkages between the*

*public and financial sectors can escalate quickly. Following the initial exchange rate depreciation, note that the negative shock to corporate balance sheets (currency depreciations causing negative shocks to firms' values), firms with currency mismatches and foreign currency liabilities demand more foreign currency for hedging purposes and the increased aggregate demand of all firms exerts further pressure on the exchange rate.*

- c) *Via feedback effects. Linkages are from balance sheet deterioration in all sectors (and especially the cumulative effect on the public debt) back to risk premium and hence to the exchange and interest rates.*

### 1.1. Macro-Financial External Adjustment Capacity

This variable examines the scope of the country's external adjustment capacity in terms of the linkages between the macro-economy and the financial system. It is based on the interplay of three variables: (i) the exchange rate, (ii) productivity growth and (iii) labor cost flexibility. The external adjustment capacity variable is based on the fact that the exchange rate regime matters in the short run in the presence of nominal rigidities. As a result, vulnerability to adjustment risk will be impacted by the flexibility of the exchange rate regime.

In the presence of nominal rigidities, the choice of exchange rate regime plays a paramount role. Under a floating exchange rate, any combination of price and nominal exchange rate can yield the same real appreciation, while in the fixed exchange rate system adjustment will necessarily occur through a higher inflation rate. In a world of flexible prices, monetary policy would have no impact, but when nominal rigidities are present, monetary policy has an impact on the real economy in the short run through a slower price-adjustment mechanism.

### 1.2. External Indebtedness

External indebtedness is measured using gross external debt stock as a share of GDP and short-term public debt as a share of total public debt, which was added to gauge the maturity structure of public debt, where high reliance on short-term debt increases the risk of default in the event of external or domestic shocks.

### 1.3. External Reserves Buffer

The external reserves variable takes into account the importance of capital flows to financial stability and the potentially severe cash-flow and balance-sheet effects that can be caused by sharp swings in exchange and interest rates. Higher liquidity can significantly decrease a country's vulnerability to external shocks, particularly in the face of weak domestic fundamentals. It assesses reserves relative to imports and short-term external debt, both of which have proven useful in past crises for assessing the adequacy of a country's reserves (IMF, 2003 and 2007). This factor provides a measure of a country's short-term liquidity capacity or short-term resilience when hit by an adverse financial shock. Most developed economies have very low FX reserve adequacy ratios; however, their ability to issue debt in their own currency, as well as easier access to the Fed's swap facilities (as was shown during the crisis), makes reserves less relevant. For the eurozone economies, the lack of independent monetary policy also makes reserves irrelevant. We therefore switch off the FX reserve buffer factor for the EZ members, Australia, Canada, Hong Kong, Japan, New Zealand, Norway, Singapore, Switzerland, the UK and the U.S.

## 1.4. Current Account Balance

This factor includes three subfactors: Three-year average current account level, change in the current account versus the three-year average level and current account offset by FDI. We remove FDI from the current account deficit to try to remove stable capital inflows, leaving (primarily) portfolio investment, which could more easily leave the country. This enables us to identify the part of the current account balance that is financed by potentially more volatile sources, including portfolio investment, the reserve account and other investment. In turn, it enables us to identify cases where the current account deficit appears to be stable, but the financing structure of the current account is eroding, increasing the risk of economic crisis and capital outflows.

Page | 7

## 1.5. Trade Vulnerability

Country Insights measures four distinct types of trade vulnerability: Export concentration, dependence on mineral and hydrocarbon exports and vulnerability to energy price shocks.

1. **Export concentration:** A more diversified economy with a range of exports is more resilient to economic shocks because it is less likely to experience sharp demand shocks. This subfactor assesses the diversity of the economy's exports.
2. **Geographic trade exposure:** This evaluates global trade linkages in combination with Country Insights' measure of sovereign risk, the Sovereign Risk Index (SRI), to get a global picture of each country's exposure—through exports—to risky countries. This Geographic Trade Exposure subfactor is scored based on measurements of first- and second-order exposure to risk. First-order exposure is calculated using the SRI score of each country's trade partners, weighted by the country's export exposure to those partners. For example, the first-order exposure score of a country like Mexico, which exports predominantly to its NAFTA partners, is driven primarily by the SRI scores of the U.S. and Canada. Second-order exposure is designed to calculate the relative riskiness of the trade partners of a country's trade partners. Using Mexico as an example again, that country's second-order exposure looks predominantly at the riskiness of the trade partners of the U.S. and Canada which, in addition to the other NAFTA members, mostly comprises the remaining G20 economies. This is the first risk metric of its kind in the country risk space.
3. **Share of minerals (including oil and gas) in exports:** Countries that are dependent on natural resource exports are vulnerable to economic volatility stemming from international commodity price volatility.
4. **Energy intensity of the economy:** Countries with high levels of energy intensity will be relatively more impacted by rising energy prices.

# 2. Pillar II: Institutional Robustness

Institutional robustness refers to the ability of economic institutions to withstand or react quickly to adverse external shocks, and thereby ensure long-term economic growth. Institutional robustness captures indicators that reflect both financial stability and political stability. These incorporate indicators for fiscal and financial supervisory policy and respective anchors relevant in the medium to long run, and indicators reflecting long-term political stability, including indexes of political stability and governance. It defines a country's institutions broadly, to encompass not only political and monetary institutions, but also the banking system and its supervisory institutions. Where possible,

it assesses these institutions by using actual outputs of successful policy (e.g., low inflation, high capital adequacy) rather than states' policies (e.g., inflation targets and banking regulations).

## 2.1. Strength/Resilience of the Monetary Policy Anchor

This indicator captures the strength of monetary policy, with higher scores indicating a stronger monetary policy anchor. The credibility of the monetary policy regime is proxied using CPI-based inflation as well as a measure of inflation volatility. Sound monetary policy keeps inflation in check and less volatile. High and volatile inflation can distort price signals and divert resources away from more productive investments.

## 2.2. Strength/Resilience of the Fiscal Policy Anchor

This indicator captures the strength of fiscal policy. It includes three subfactors: Government debt levels, government debt dynamics and fiscal balances. Three tests are used to assess government debt dynamics: Whether debt is below 40% of GDP, whether the government is reducing its debt and whether government debt levels have been broadly stable over time. This last test is particularly important to assess whether fiscal institutions have demonstrated a consistent ability to deliver policy.

## 2.3. Total Indebtedness

Country Insights provides a consistent estimate of the total debt load of the economy, including private and public debt and external and domestic debt. This measure allows Country Insights to show the total implicit liabilities of the economy, which, as shown in Ireland and Iceland in 2008, can become public liabilities during a crisis. This estimate was designed to exclude several classes of debt that would distort its accuracy, namely:

- Short-term debt related to central banking operations, including Target 2 balances. These liabilities are not included because they are highly volatile and technical in nature. Both the size of these liabilities and how they are measured varies considerably between countries, depending on how the central bank carries out short-term payment operations with other central banks;
- Short-term lending between domestic banks. This lending is similarly technical in nature, highly volatile, and related to the national design of the interbank payments system;
- Intercompany debt and the debt component of FDI. The choice of structuring FDI as debt or equity is often driven by tax considerations. Foreign investors may also choose to accrue debt claims on their local affiliates to delay repatriating profits and paying tax on them in their home country.

Because Country Insights is the first model to estimate total indebtedness on a global scale, we have been unable to externally verify the accuracy of these estimates. Since constructing the total indebtedness indicator, however, these estimates have been validated by independent estimates of total debt in China (Credit Suisse), the eurozone (McKinsey) and the U.S. (Fed fund flows).

In addition to the actual level of total debt, the total indebtedness factor also reflects the structure of total debt. In particular, Country Insights identifies and penalizes countries where debt is disproportionately domestic. This is in order to reflect two specific risks. On the one hand, consider Japan. Japan has a very high level of public debt, but, because this is financed by domestic pensions, it has very little external debt. However, as Japan's population continues to age and retire, the government will be forced to finance itself in external markets and could experience very sharp repricing risk. On the other hand, consider Spain in the mid-2000s. Spain's external borrowing rose sharply,

but its domestic indebtedness also rose, reflecting the fact that complex financing structures, especially in corporates, were leading to each euro of external borrowing being lent on through the domestic economy several times. This increased the likelihood of financial instability, as it increased the risk that small corporate defaults would cascade through holding company structures and bank balance sheets.

## 2.4. Banking System

The health of the banking system is crucial in identifying financing risk. The banking factor consists of four subfactors:

1. Bank capital adequacy ratio;
2. International claims on the banking sector, which reflects the banking system's reliance on international wholesale finance and, thus, its vulnerability to a global credit crunch;
3. Loan-to-deposit ratio;
4. Change in private credit-to-GDP: Country Insights assesses whether the current growth rate of private credit as a share of GDP is healthy as a function of the level of private indebtedness. This allows the model to take account of the fact that economies with very little private credit need to expand credit provision to drive economic growth, while those with worryingly high levels of private credit need to contract credit to restore balance sheets and avoid the risk of a banking crisis.

## 2.5. Domestic Political Risk

1. Domestic crimes, consisting of:
  - Quality of police services;
  - Incarceration rates.
2. Terrorism risk, as measured by frequency of events, number of casualties and injuries from terrorist attacks.
3. The stock and flow of outbound refugees.
4. WGI Political Stability and Absence of Violence.

## 2.6. International Political Risk

Political risk of neighboring countries, as measured by a simple average of neighbors' domestic political risk score and political institution score. A country's neighbors are those sharing land and/or maritime borders with the country of interest.

## 2.7. Political Institutions

1. WGI government effectiveness.
2. WGI voice and accountability.
3. WGI rule of law.
4. WGI control of corruption.
5. Political rights (Freedom House).

6. Minimum of the following scores:
  - Income inequality (from Pillar IV);
  - Discrimination against minorities (from Pillar IV).

## 3. Pillar III: Adaptability and Strength of Medium-Term Growth

This pillar looks at the adaptability of the real economy and covers indicators for the business environment, which address the typical needs and concerns of foreign investors, the ability of the real economy to absorb foreign inflows in a productive manner and the ability of the real economy to react to shocks. This assesses not only how strong the real economy is today, but how likely it is to remain strong in the future and, particularly, its ability to remain strong in several different macro scenarios.

Developing countries typically grow faster than developed countries. This effect is often attributed to economic convergence or a “catching up effect,” a hypothesis that says that productivity gains occur faster in developing countries as, inter alia, they are able to replicate efficiencies in developed markets. Similarly, developed countries will score well in some areas, particularly infrastructure, which reflects the effect of the wealth generated during past economic growth.

To capture catching up and remove the wealth effect, Pillar III identifies those countries best positioned to catch up. Instead of looking at the absolute level of the outputs measured in Pillar III, Country Insights looks at them compared with what one would statistically expect for a country at that level of development. This adjustment of Pillar III scores to reflect GDP per capita captures the advantages and disadvantages that countries have created for themselves in achieving dynamic and flexible economies that are well positioned for growth.

### 3.1. Demography

1. **Demographic burden:** This measures the burden of supporting retirees by using the ratio of population aged 65 and over to employment. We have chosen to use the demographic burden (elderly per worker) rather than the support ratio (children and elderly per worker) because the support ratio fails to distinguish between a society with an aging, shrinking workforce and one where demographic growth is driving an expansion of the workforce.
2. **Demographic dividend:** This measures the demographic dividend, adjusted for growth potential. A country with a high ratio will have a large labor force in five years. When falling, this shows a worsening demographic burden. An economy with a high demographic dividend ratio only receives a high score if the rest of the third pillar is doing well, suggesting the economy will be able to create jobs for a growing workforce.

### 3.2. Human Resource Potential

1. **Labor force participation rate (employees 15+ as percentage of economically active 15+):** This measures the proportion of a country’s working-age population that engages actively in the labor market, either by working or looking for work; and provides an indication of the relative size of the supply of labor available to engage in the production of goods and services. It can be used as a measure of the size and

composition of a country's human resources, for making projections about the future supply of labor and for financial planning around social security systems.

2. **Employment (15+)-to-working-age population (15-65) ratio:** This is an indicator of the ability of an economy to create employment and of how much of the population of a country is contributing to the production of goods and services. We use the ratio of employment-to-working-age population rather than the unemployment rate to reflect the fact that the unemployment rate is distorted by unemployment policies. In an economic downturn, for example, generous social welfare in Western Europe causes unemployment rolls to grow, whereas in the U.S. those without jobs tend to leave the workforce when they lose their eligibility for unemployment benefits.
3. **Education:** This is a measure of human skills, based on the following variables: Enrollment in secondary and tertiary education and the quality of math and sciences education.
4. **Rigidity of employment:** This indicator assesses the flexibility of the labor market in terms of cost aspects. It is based on the methodology used by the rigidity of employment index provided by the World Bank, but is calculated by Country Insights to ensure consistency and timeliness.
5. **Labor productivity growth:** This reflects labor productivity growth.

### 3.3. Innovation and Technology

1. **Average score of high-tech exports and license fee receipts:** An economy can export its innovation in two ways: By producing high-tech goods and exporting them and by licensing its intellectual property for use overseas. This subfactor takes account of both types of exports of innovation.
2. **Internet users per 100 people.**
3. **Employment in knowledge-intensive sectors.**
4. **University industry collaboration.**

### 3.4. Infrastructure

To produce a single, comprehensive measure of infrastructure quality, Country Insights includes both hard and soft data on infrastructure. The soft data comprise surveys to assess the quality of particular infrastructures. The hard data include data on provision (e.g., telephone lines per capita), data on usage (e.g., internet users per capita) and data on performance (e.g., days of inland transportation to move a container to a port for export).

1. **Telecoms infrastructure:** Whether an economy favors landlines or mobile phones is largely a reflection of when it built its telephony infrastructure. As such, economies that have developed more recently tend to favor mobile phones, while the developed economies of the OECD have a relative bias toward landlines. As such, Country Insights uses a unique measure, telecoms density, which includes both mobile phones and landlines.
2. **Internet:**
  - Fixed broadband provision;
  - Internet users per 100 people.
3. **Electricity infrastructure quality.**

4. Cost (in time and money) of getting connected to the electricity grid.
5. Transport:
  - Quality of roads;
  - Quality of railways;
  - Quality of ports;
  - Quality of air transport infrastructure;
  - Days of inland transportation to move a container of ceramics from a warehouse in the largest business city to the most accessible port for export.

### 3.5. Business Environment

1. Ease of starting a business: This indicator assesses the bureaucratic and legal hurdles an entrepreneur must overcome to incorporate and register a new firm.
2. Dealing with construction permits: This indicator tracks the procedures, time and costs to build a warehouse, including obtaining necessary licenses and permits, completing required notifications and inspections and obtaining utility connections. The main indicators include: (i) procedures to build a warehouse, (ii) average time spend during each procedure and (iii) official cost of each procedure.
3. Ease of international trade: Consisting of:
  - Ease of exporting: This indicator identifies the bureaucratic and legal hurdles an entrepreneur must overcome to trade across borders;
  - World Bank International Logistics Performance Index: This indicator provides survey-based evaluations of a country's logistic performance in six areas by its trading partners—logistics professionals working outside the country. We exclude infrastructure from the index.
4. Resolving insolvency: This indicator identifies weaknesses in existing bankruptcy law and the main administrative bottlenecks in the bankruptcy process. The main indicator includes: (i) average time to close a business, (ii) average cost of bankruptcy proceedings and (iii) recovery rate.
5. WEF ease of getting credit without collateral: This measures the ease of obtaining a bank loan in a country with only a good business plan and no collateral.
6. Intellectual property rights protection.
7. Protection of minority shareholders.
8. Efficacy of corporate boards.
9. World Bank World Governance Indicators: Overall regulatory quality.

## 4. Pillar IV: Social Inclusion

The full range of social inclusion problems is not captured by simple income measures of poverty. As such, we have chosen to adopt a capabilities-based approach to poverty. Drawing on Amartya Sen,<sup>2</sup> we understand poverty not simply in terms of levels of income, but also in terms of the nature of a person's life. Someone with a low income is not necessarily poor if they have the ability to live a reasonably safe and secure life, a stable place in their community and the ability to improve their lot in life. On the other hand, drawing on Ted Gurr's<sup>3</sup> concept of relative deprivation, someone with a higher level of income whose basic needs are not met is poor, just as someone who feels that they receive an inequitable share of the society's wealth may be poor, and someone whose wealth is falling relative to that of their society may be poorer still. Taking such an approach to poverty, we understand poverty reduction not simply as increasing the level of income of the poor, but more broadly as increasing the human abilities of the poor and ensuring that they have the opportunity to secure a rewarding job and livelihood.

To reflect this complexity, we have constructed a measure of social inclusion that takes inspiration from the Multidimensional Poverty Index, developed by the Oxford Poverty and Human Development Initiative (OPHI) and adopted by the United Nations Development Program (UNDP) for its Human Development Report. Our approach differs from those of OPHI and UNDP in that it combines subjective measures to assess relative deprivation. Our social inclusion index includes:

- Absolute measures of socio-economic capability (material well-being, health, basic education and safety);
- Income-based and social measures of inequality (income inequality, discrimination against minorities, gender inequality and urban-rural inequality);
- Subjective measures of life satisfaction; and
- Measures of perceived deprivation, which seek to understand the difference between how people see their situation and absolute measures of capability.

### 4.1. Material Well-Being

1. Vulnerable employment (% of employed people working in unpaid employment or as own-account workers).
2. Access to improved services:
  - Percentage of overall population with access to improved water supply;
  - Percentage of overall population with access to improved sanitation services (e.g., a public sewer).
3. Passenger cars (per 1,000 people).

<sup>2</sup> Sen, A. (1999) *Development as Freedom*.

<sup>3</sup> Gurr, T. (1970) *Why Men Rebel*.

## 4.2. Health

1. Maternal mortality.
2. Under five mortality: In countries with low mortality, we assess the level of mortality. In countries with high mortality, we place more emphasis on the country's success in reducing mortality.
3. Infant (0-1) mortality: In countries with low mortality, we assess the level of mortality. In countries with high mortality, we place more emphasis on the country's success in reducing mortality.
4. Measles.
5. Life expectancy at birth.
6. Prevalence of undernourishment.

## 4.3. Basic Education

1. Expected years of schooling.
2. Adult literacy rate.
3. Adjusted net enrollment rate, primary (% of primary school age children).
4. Dropout rates from school.

## 4.4. Safety

1. Quality of police service
2. Homicide rate.
3. Violent crimes

## 4.5. Inequality

1. Income inequality measured as the poorest quintile's share of national income.
2. Gender inequality:
  - Sex ratio at birth;
  - Gender difference in literacy;
  - Gender difference in higher education;
  - Gender labor force participation;
  - Gender difference in workplace.
3. Inequality in the quality of service between urban and rural areas:
  - Rural access to improved water supply over urban access;
  - Rural access to improved sanitation over urban access.
4. Minorities inequality:

- Size of the minorities population;
- Intensity of legal discrimination;
- Perception of minorities discrimination.

## 4.6. Life Satisfaction

All life satisfaction measures are from the Gallup World Poll.

1. Overall life satisfaction.
2. Job satisfaction.
3. Satisfaction with standard of living
4. Satisfaction that one leads a purposeful life.
5. Satisfaction that one is treated with respect.
6. Satisfaction with one's social support network.
7. Did one have a negative experience the previous day.
8. Satisfaction with one's community.
9. Satisfaction with one's personal health.

## 4.7. Perceived Deprivation

To assess whether a population feels society is delivering for them, perceived deprivation measures the difference between Country Insights' objective results on health, living standards, safety and education and the populace's satisfaction with what society offers in these areas. In a society that scores above 5, such as Denmark, people believe that their lives are better than they objectively are on an international comparative basis. By contrast, in a society that scores below 5, such as Ukraine, people believe that their lives are worse than they objectively are on an international comparative basis. High scores on perceived deprivation suggest a cohesive society. By contrast, low scores on perceived deprivation suggest a lack of wider trust in society, which can lead to political instability and an unwillingness to support governance institutions (e.g., by paying tax).

1. Health perception-reality gap.
2. Standard of living perception-reality gap.
3. Safety perception-reality gap.
4. Education perception-reality gap.

### [Contact the Roubini Country Insights Team](#)

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