The background features a complex, abstract geometric pattern of overlapping lines and planes, creating a sense of depth and perspective. A prominent vertical white bar runs through the center of the composition. The overall color palette is monochromatic, consisting of various shades of gray and black.

COUNTRY RISK PREMIUMS

**WHAT WE KNOW
AND WHY THEY
ARE NOT
WORKING WELL**

Finance for Peace Initiative

The Finance for Peace Initiative is part of Interpeace's five-year 2021-2026 strategy which calls for Interpeace to seek systemic change in how peacebuilding is financed and how private and public economic development supports peace.

Authors

Jèrèmy Boccanfuso

Tommaso Sonno

Vincenzo Scrutinio

Davide Zufacchi

Contents

1	Executive Summary	7
2	Country Risk Premiums: what we know	9
2.1	Geographic risk premiums	10
2.2	Market-based measures	14
2.3	Survey-based measures	19
3	Country Risk Premiums: why they are not working well	28
3.1	Default Rate - Descriptives	28
3.2	Survey Based - Descriptives	34
3.3	Default Rate vs Survey Based	41
3.4	Risk determinants	49
3.5	CRPs and risk determinants	66
	References	82
	Appendix	85

List of Figures

1	CRP Default Rate - Map	29
2	CRP Default Rate - Density	31
3	CRP Default Rate - Trend	32
4	CRP Default Rate - Box plot	33
5	CRP Survey Based - Map	35
6	CRP Survey Based - Density	37
7	CRP Survey Based - Trend	38
8	CRP Survey Based - Box plot	39
9	Default vs Survey - Average by region	42
10	Default vs Survey - Scatter	43
11	Default vs Survey - Scatter poor countries	44
12	Default vs Survey - Difference	45
13	Risk determinants - Classification	51
14	Fundamental determinants - GDP per capita	53
15	Density - Democracy Index	55
16	Fundamental determinants - Violent Deaths	59
17	Density - Government Debt	61
18	Proximate determinants - Easy Doing Business Index	63
19	Proximate determinants - Strength Property Rights	64
20	Correlations CRP Default Rate - fundamental determinants	67
21	Correlations CRP Default Rate - proximate determinants	71
22	CRP reaction to deaths for violence	78

23	Egypt	81
24	Ukraine	81
25	Lebanon	81
A1	Fundamental determinants - Democracy Index	85
A2	Fundamental determinants - Corruption Perception Index	85
A3	Density - Corruption Perception Index	86
A4	Fundamental determinants - Life Expectancy	86
A5	Density - Life Expectancy	87
A6	Fundamental determinants - Internet share	87
A7	Density - Internet share	88
A8	Density - Violent Deaths	88
A9	Proximate determinants - Government Debt	89
A10	Density - Easy Doing Business Index	89
A11	Proximate determinants - Loss Theft/Vandalism	90
A12	Density - Loss Theft/Vandalism	90
A13	Density - Strength Property Rights	91
A14	Correlations CRP Survey Rate - fundamental determinants	92
A15	Correlations CRP Survey Based - proximate determinants	93
A16	CRP reaction to ACLED events	94
A17	CRP reaction to loss due to theft/vandalism	94

List of Tables

1 Default vs Survey 47

2 Fraction Variance Explained (R^2) by determinant - CRP Default Rate 73

3 Fraction Variance Explained (R^2) by determinant - CRP Survey Based 74

4 Correlations 76

1 Executive Summary

Economic risk may vary in different countries due to differences in economic environments (market frictions, fiscal and monetary regimes, etc.), political structure, and stage of economic development. For this reason, one may face different risks when investing in different countries. The additional return demanded to compensate the higher risk associated with investing in a specific country is called Country Risk Premium (CRP). In this report, organised in two parts, we study this measure of geographical risk.

The first part describes what we know about CRPs. The existing literature struggles to provide a good measure of these premiums, since an univocal and objective definition of country risk premiums is absent. Two main approaches are presented. The first relies on markets' data (historical or not) to derive a risk premium. The most common measures are based on the corresponding sovereign risk. In particular, sovereign bond spreads (the difference between the rate of interest at which a national government can borrow versus the borrowing rate of a 'safe' government). The idea behind this approach is that the extra risk of investing in a country is similar to the extra risk of lending to its government. The main limitation of this approach, as we highlight in the second part of the report as well, is that investing in a company may have little to do with the risk of lending money to its government. The second approach, instead, obtains a measure of risk by directly asking professionals an assessment of this premium. By doing so, one avoids the challenge of data collection which limits the market-based approach. Nevertheless, also this approach presents some limitations, e.g. surveys measures depend on the identity of respondents, the size of the sample, sample selection, and little is known on how interviewed individuals get the estimates reported.

The second part of the report studies why country risk premiums are not working particularly well in measuring risks for investors. We analyze the performance of two CRPs, one market based and another survey based. To start with, we study their geographical distribution, trends over time, and relationship with GDP per capita. Then, we compare them, in order to understand whether risk is perceived in similar ways by the market and by experts answering surveys. Our results indicate that the two risk measures are similar in levels. If a country A is riskier than a country B with one methodology, it is likely that it would be the same with the other method as well. Moreover, they are quite similar for relatively richer countries. However, they differ substantially when turning to poorer countries, exactly where a risk assessment is more difficult but, remarkably, more important. Moreover, the two methodologies provide significantly different results if we are interested in understanding the evolution of risk over time in a given country. Finally, we look at how both indexes correlate with major risk determinants at the country level. We show that both risk measures rank consistently countries with respect to their risk determinants. Riskier countries have higher premiums. However, they are not particularly good risk measures for investors. Indeed, they do not react in a consistent way to risk deviations from the country mean. When a country becomes riskier, they do not necessarily increase, and vice-versa. This is because both indexes are measuring something different than the risk faced by an individual when investing in a foreign country. They are strongly related the debt repayment risk of the country. Indeed, they react in a consistent way to deviations from the average of debt's size, and this determinant explains a good portion of their variation.

As a result, we underline the need for a new risk measure, specifically built to measure the private investment risk.

2 Country Risk Premiums: what we know

The conventional wisdom that riskier investments should be compensated by higher expected returns than safer investments is intuitive, and implies that expected returns are key drivers of investment decisions and portfolio allocations. The difficulty remains in properly measuring the risk associated to an investment, and finding a method to convert this risk into an appropriate expected return on this investment, i.e., to price risk. This consideration leads practitioners and scholars to decompose expected returns into various premiums, that is, increases in expected returns that are meant to compensate for investment specific risks. When investing in a risky portfolio of assets, a risk averse investor will demand a higher expected return than the one he could obtain by investing in a risk-free asset. Consequently, the expected return on any risky investment can be decomposed as the sum of the risk-free rate and a *risk premium* to compensate for investment specific risks.

In this note, we focus our discussion on one risk factor and its pricing: the risk related to the country location of an investment opportunity. Indeed, as the nature in terms of sector of an investment, for example, determines a certain degree of risk, the location of an investment exposes investors to specific risks, which, in turn, may require an additional compensation. Analyzing the premium induced by the geographic location of two otherwise identical assets is of the utmost importance as this premium drives international investment decisions and, ultimately, the worldwide allocation of capital. To illustrate what we mean by *geographic risk*, consider a company based in Frankfurt deciding whether to set up a new plant. Should this company use different hurdle rates (or costs of capital) depending on whether the new plant is localized in Berlin or Munich, Germany or Italy, Europe or Africa? Obviously, there is an induced currency risk

in the latter case which could lead to different hurdle rates. Nevertheless, even controlling for the currency risk, should the answer remain affirmative? Answering positively to this question would imply that there is a geographic risk (within national borders, a monetary union and/or worldwide) and that this risk must be priced on the market with a premium.

2.1 Geographic risk premiums

The notion of geographic risk makes sense only if this term encompasses *fundamental determinants of risk* which correlate with geographic locations. A determinant of geographic risk which matters for markets is, unsurprisingly, economic risk. Location-specific economic risk may refer to differences in economic environments (market frictions, fiscal and monetary regimes, etc.) and stages of economic development. For instance, emerging markets are generally characterized by much larger variations in economic growth than more mature markets. Similarly, emerging market equities often show greater reactions from both positive and negative news. For instance, following the 2008 banking crisis, equity markets in the United States and Western Europe drop by about 25%-30%, while the crisis led to drops of 50% or greater in many emerging markets. The same phenomenon was visible again after the COVID market crisis in 2020, with emerging markets suffering more than developed economies (Damodaran, 2022a).

Nevertheless, the determinants of geographic risk are not restricted to economic factors and, more generally, can be collected in three categories: economic, commercial, and political risks. According to Clark (2018), a non-exhaustive list of these geographic risks include: war, foreign occupation, civil war, revolution, riots, disorders, politically motivated debt default, renegotiation, expropriation, natural calamities, depression or severe recession, economic mismanage-

ment, devaluation or depreciation of currencies. At the time of this writing, the top five geopolitical risks that are at the center of attention of markets (according to the global BlackRock Geopolitical Risk Indicator) include the US-China relations, Cyberattacks, Russia invasion of Ukraine, potential terrorist attacks, and emerging markets political crisis deriving from the conflict in Ukraine. As it can be seen, only a small subset of these risks is attributable to economic factors, while international and non-international armed conflicts are recurrently cited.

Having established that companies, and more generally investors exposed to geographically diversified portfolios, face various geographic risks, a more challenging and debated question emerges: Should this geographic risk be compensated by higher expected returns on investments, and, if at all, by how much?

The Capital Asset Pricing Model (CAPM), an econometric model relating the investment return to the risk-free return and other sources of risk, serves as a basis to answer this type of questions, both in theory and in practice. At its core there is the notion that diversifiable risk should not be priced by the market and does not require higher expected returns for investors to be willing to invest. At first sight, the geographic risk associated to an asset location – as the most idiosyncratic risks faced by companies – seems to be exactly the type of risk that could be diversified away by international investors. This realization has led to the emergence of a Global CAPM used to price international assets in a fully integrated financial world. According to the latter, only global/worldwide risk, that is by definition independent of location, should be priced. Then, the expected returns on any asset simply depend on the extent to which this asset is exposed to global risk (this measure of exposition to global risk is called β in the literature),

that is to what extent the return of the assets follows the worldwide economic cycle and other asset returns. Assets should guarantee higher returns if they amplify the returns of the reference market, while they should have a lower return if they provide insurance against market fluctuations.

The Global CAPM requires international financial markets to be perfectly integrated. That is, all investors must face the same investment opportunities regardless of their trading location. While it is true that markets are getting more integrated worldwide, investors' preferences (e.g. home-bias), and financial and institutional frictions could still prevent a full integration of financial markets. There is a large empirical literature aiming at measuring whether financial markets are fully integrated or segmented (Pukthuanthong & Roll, 2009; Bekaert & Mehli, 2019). The consensus is that 'while we observe decreased levels of segmentation in many countries, the level of segmentation remains significant in emerging markets' (Bekaert, Harvey, Lundblad, & Siegel, 2011, abstract). Moreover, the Global CAPM seems to be of little practical use when applied to less mature markets, and it often requires the addition of ad-hoc fixes for these settings. For instance, Damodaran (2022a) illustrates that this approach can lead to lower expected returns (lower β s) for major companies in emerging economies than in developed economies.

Instead, when markets are fully segmented, one should rely on Local CAPMs to price assets. That is, investors have to bear location-specific risks and expected returns on any asset depend on its exposure to this non-diversifiable local risk (again, as measured by β) and a local risk-free rate. Undoubtedly, the assumption of fully segmented markets is not a better description of the world than the assumption of perfect integration. Hence, the notion of an International CAPM

has emerged more recently. Intuitively, it aims to propose a bridge between the Global and Local CAPMs to capture the imperfect integration of financial markets in emerging economies. Roggi, Giannozzi, and Baglioni (2017) and Fiorese (2022) provide excellent reviews of the literature on these CAPM models. At the core of this approach is the idea that, because of imperfect integration, it is not possible to completely diversify away local risks. Consequently, when investing in less financially integrated regions of the world, investors require a premium on top of the expected returns from the Global CAPM. While there is no consensus on how to best incorporate this geographic risk, nor on how to measure it, this literature agrees on the necessity to extend the Global CAPM to account for a country risk premium. This distinction has little effect for the valuations of assets exchanged in mature markets such as the US (Dolde, Giaccotto, Mishra, & O'Brien, 2011; Krapl & O'Brien, 2016), but it matters a great deal for less mature markets in emerging economies (Karolyi & Stulz, 2003; García-Sánchez, Preve, & Sarria-Allende, 2010). The notion of country risk premium coincides with our notion of geographic risk if one accepts that national borders are the correct length of analysis for this local risk.

In sum, geographic risk encompasses various fundamental determinants of risks faced by investors. Since financial markets, especially in emerging economies, are not fully integrated worldwide, there are good reasons to believe that this geographic risk cannot be fully diversified away. Consequently, investors are most likely to require a geographic premium that depends on the location of an asset. So far, these premiums are measured at the country level, thus implicitly defining geographic risk with respect to national frontiers. In the following, we discuss different approaches that have been used to measure country risk premiums. We differentiate between market-based and survey measures.

2.2 Market-based measures

We review three market-based measures of country risk premiums (CRPs) for equities. The first is based on historical data on observed returns. The second relies on sovereign risk. The latter is the most widely used method in practice, and it is one of the methods that we retain in our empirical analysis. Both methods aim at providing normative estimates of CRP, thus answering the question of what should be the value of country risk premiums. Conversely, the third method takes a more positive approach and aims at deducing expected returns from the observed behavior of investors, thus answering the question of how investors value CRPs. In this respect, this third method shares similarities with the survey measures that we discuss in the next section.

Historical returns

As we have previously mentioned, risk premiums are equal to the difference between the expected returns on a portfolio of risky assets and a risk-free asset. Therefore, one can be tempted to rely on historical data on the difference between stock and bond returns to estimate the risk premium in a given country, assuming that bond returns are a good proxy for risk-free returns. Doing this estimation for various countries, and comparing the estimated country-specific risk premiums, permits to retrieve CRPs for these countries. Hence, historical data on stock and bond returns could offer a natural and transparent measure to compute CRPs.

However, in practice, this approach can hardly be implemented to estimate CRPs, especially in emerging markets. First, estimates are sensitive to the definition of the variables used. Damodaran (2022b) provides an extensive discussion and further illustrates that estimated risk

premiums based on treasury bill or bond returns, two measures of risk-free returns, differ substantially in the US. Second, and more importantly, an estimation of expected premiums requires long and relatively stable time-series on stocks and bonds. While such data are available for major developed economies, this is not the case for emerging economies for which we often only have short and volatile time-series.¹ Again using an illustrative example, Damodaran (2022a) finds that using available data for some emerging countries over a 25 years window leads to the largely disputable conclusion that there is no statistically significant risk premium in most of these countries. Finally, another concern from relying on historical data is that, at best, these estimates are only informative about the past. Consequently, these estimates might be of little use to assess risk forward, especially in developing economies which are, by definition, on a transitional dynamics and their economic situation might change substantially even over a short period of times.

Sovereign risk

When trying to assess what should be the value of country risk premiums, one has to face a fundamental limit of the existing literature: there is no univocal and objective definition of CRP. Nevertheless, the literature has settled on using sovereign bond spreads – the difference between the rate of interest at which a national government can borrow versus the borrowing rate of a ‘safe’ government, usually the US – as a proxy for country risk premiums (Goedhart & Haden, 2003; García-Sánchez et al., 2010; Koller, Goedhart, Wessels, et al., 2010; Damodaran, 2022a).

1. The 2022 DMS Database (Dimson, Marsh, & Staunton, 2022) provides the most comprehensive attempt to retrieve long-run historical returns and premiums. The database covers 90 countries. The time span for these countries varies widely, between 13 to 122 years. Among the emerging markets included in the database, most belong in the DMS35-90 category. This category has the narrower coverage with 13 to 47 years of data and no information on bill or bond returns.

Under this choice, it is assumed that the extra risk of investing in an emerging market is similar to the extra risk of lending to its government.² At the same time, this same literature recognizes the limitation of this approach as investing in a company may have little to do with the risk of lending money to its government.³ There is an active line of research aiming to overcome this limitation, but no consensus has emerged yet.⁴

A further difficulty in assessing risk from sovereign bond spreads is that comparing yields on bonds issued by a given country to those of a ‘safe’ country makes sense only if both are issued in the same currency. That is, only bonds issued in dollars or euros, for which the ‘safe’ countries are generally chosen to be the US or Germany respectively, can be used to estimate CRP. Otherwise, it is impossible to compare interest rates across bonds in different currencies. However, many emerging countries issue bonds in local currencies.

Despite these caveats, the sovereign risk method is the main approach to estimate country risk premiums. This is largely attributable to the work of Damodaran (2022a) who runs a dataset of country risk premiums estimated from sovereign bond spreads. The dataset is updated yearly and includes more than 150 countries in 2022. This is the most prominent reference in the literature on country risk premiums, and one of the two datasets that we use in our empirical

-
2. Andrade (2009) provides a rationale for this approach when sovereign yield spreads carry information about the likelihood of an increase in a country systematic macroeconomic risk.
 3. “The country risk premium approach does have a fundamental flaw: there is no systematic methodology to calculate a precise country risk premium. [...] As a substitute, the country risk premium is sometimes set at the spread of the local government debt rate over the risk-free rate – but that is reasonable only if the quality of local government debt service is perfectly correlated with returns on corporate investments.’ (Goedhart & Haden, 2003, p.11)
 4. For instance, Roggi et al. (2017) review more than a dozen fixes found in the literature and propose 7 new ones.

application. We briefly summarize how his data are constructed in the following.

To overcome the problem related to bonds issued in local currencies, Damodaran (2022a) relies on sovereign Credit Default Swap (CDS), instead of bonds, as they are priced in major currencies. In this regard, Credit Default Swap have the advantage of allowing to compute country risk premiums for a broader set of countries than would be possible using bonds.

Credit Default Swap (CDS) markets allow investors to buy an insurance against default in a security. As a result, the price of sovereign CDS for a given country represents a constant assessment of the price of the government default risk in this country. The difference between the price of a sovereign CDS to that of the US sovereign CDS provides an estimation of a country risk premium. Some countries do not have sovereign CDS. For these countries, Damodaran (2022a) relies on Moody's (or Standard and Poor's) sovereign rating to infer the country risk premium from the average price of sovereign CDS with similar rating.

Behavior of investors

Given the absence of univocal and objective definition of CRP, perhaps it makes sense to infer CRPs directly from investors' behavior. That is, we can infer how much additional expected returns investors ask when investing in a given country, instead of trying to assess what should be the value of CRPs. Looking at investors' behavior has the further advantage that it is not based on historical data and, therefore, provides forward-looking estimates which are continuously updated.

When markets are correctly priced, we can infer CRPs from this inverse approach, that is to

say by looking at stock prices in each country. By correctly priced, it is meant that investors use a ‘correct’ model for stock valuation. Then, taking this ‘correct’ valuation model allows to decompose the value of a stock, which is observable on the market, between its observable components, e.g., cash flows and expected growth, and the unobservable component that we are estimating: investors’ expected returns. Using valuations of stocks in many countries, we can retrieve investors’ expected returns in each of these countries and infer countries risk premiums from differences in these expected returns with respect to a risk free asset across countries. Damodaran (2022a) and Fiorese (2022) present a simple example of how to implement this estimation method to compute CRPs in emerging markets.

These methods of estimation, referred to as inverse-optimal approaches in Economics, are common. While very useful and popular, they suffer from a common limitation: they require to correctly model how investors price assets across countries. In the next section, we discuss a related approach which has the main advantage of not requiring to make a guess about investors’ valuation model. It consists in directly surveying investors and asking them to report the country risk premiums that they use in their valuations. Since major actors on financial markets are likely to rely on complex and heterogeneous valuation models, the method just described is unlikely to provide comparable cross country measures and it might generate ad-hoc CRP which heavily depend on the underlying behavior of investors. As a consequence, we believe that elucidating investors’ CRP directly from surveys is more likely to provide accurate estimates, although also these measures are characterized by several important limitation as we discuss in Section 2.3.

2.3 Survey-based measures

Market based measures of country risk might be challenging to obtain due to lack of data or might capture only imperfectly country risk. In view of these limitations, institutions and practitioners might rely on different measures obtained by directly asking professionals about an assessment of the premium which should be reasonably required to invest in particular locations. The aggregation of the answers in a summary indicator can then be used as an educated evaluation of the risks involved in investing in a country and as a reference point for the CRP.

Surveys usually involve members of the business and intellectual community who have experience in the evaluation of risk and can, thereby, provide insider information in how the markets and the profession perceive a particular country. Investors, managers and academics in the field of evaluation routinely assess the riskiness of potential investments and are likely to have at least some views on the attractiveness of investments in several countries. Survey based measure for economic prospect or risk have a long history in finance: for instance, the index on confidence in the US stock market developed by Shiller reports investors' sentiment since 1987 and it is one of the first examples on how surveys can be used to monitor investors' views.⁵ More recently authors such as Pablo Fernández from the IESE Business School and his coauthors have run extensive surveys of professionals and academics on the level of the returns which should be required to invest across a wide range of countries.

Experts can usually provide two different types of information. First, they can provide a score

5. Data for this index are freely accessible on the Yale website at <https://som.yale.edu/centers/international-center-for-finance/data/stock-market-confidence-indices/united-states>

in a given interval which expresses their evaluation about the general riskiness of the country. This can be based on available indicators, on models or on their personal perception. Second, they can provide a direct measure of the country risk premium by reporting the minimum level of return which should be required for investing in a specific country. We now turn on each of these two possibilities. In each case, we provide a short description of the methodology and then highlight possible criticalities in their use.

Country Risk Scores

Country scores provide an intuitive way to look at a country riskiness. Given a possible range of values, countries are assigned a score identifying their level of risk, according to the criteria of the specific measure, and this score can then be used to identify riskier countries for which investors should demand higher returns.

These kind of indicators can derive from quantitative or qualitative assessment of the country stance. An egregious example of this is the country risk classification by the OECD, which is based on a mix of the two. The OECD develops an index of country riskiness in relation to official export credit. Indeed, international transactions such as exports expose firms to additional risks and might prevent them to be involved in such activities. To alleviate such concerns, government agencies provide support to firms with various services to shield exporting firms from these risks. Official export credits are a specific kind of service provided by government Export Credit Agencies (ECA), which aim at allowing foreign importers of domestic goods to delay their payment thanks to credit, guarantees or other kind of support. To assess the riskiness of foreign buyers, the OECD organizes meetings of experts from member countries several times

per year. The experts then develop an index score for the risk of the country based on two main sets of tools: a quantitative model based on credit experience from survey participants for a given country and a set of financial indicators; a qualitative assessment which integrates additional aspects and information which are not considered in the model. The resulting classification assigns lower scores to less risky credit partners. For instance, in the October 2022 classification, Singapore is classified as a country with an extremely low credit risk (score 0) while Sierra Leone is classified as a country with high risk (score 7, the maximum level assigned in the data).⁶ It is worth stressing that this classification does not concern sovereign risk, but focuses on a specific type of credit transaction. Indeed, importing firms are a subgroup of the population of firms in a country and they might show a different level of risk with respect to the average firm in the economy.

This kind of classification can be useful since it offers a very clear way of identifying countries characterized by higher risk. However, it presents several drawbacks:

- First, the aggregation of different indicators in a single number can often be a challenging task as it implies a certain number of assumptions and possibly arbitrary decisions. Since there are often limited information on how the index is exactly constructed, the classification might not always fits the needs of other users. In addition, it might not provide a clear description of how it consider certain types of risks which might be relevant for external users.
- Second, this classification of countries provides an ordinal measure in the sense that it allows users to identify countries with higher risk. However, there is no clear way to

6. Available at <https://www.oecd.org/trade/topics/export-credits/documents/cre-crc-current-english.pdf>

map this classification directly into the level of the premium which should be used for investments or credits towards that country. For example, the Democratic Republic of the Congo and Cuba are both rated as 7 in the OECD October 2022 classification but it is not clear whether the same level of guarantees or interest rate should be used when dealing with firms from those countries.

- Third, although several classifications of countries in terms of risks can be obtained, e.g., the PRG (Political Risk Group) provides an alternative country risk assessment based on the aggregation of measures for economic and political risks, it is difficult to compare measures from different providers. These risk measures are not standardized and providers follow different methodologies and scoring systems, thus making it difficult to derive a summary measure by aggregating different indicators.

Because of these limitations, it remains a very challenging task to rely on these classifications in an operational way, although they can still provide useful information to users for a first screening of countries.

Direct measures of Country Risk Premium

Another possibility is to ask practitioners and academics to quantify CRP across countries. This can be done in various ways such as online surveys, mails, focus groups, etc. By collecting direct information on risk premiums, final users of these surveys can get an operational measure which can be readily used in other contexts. The possibility to obtain a clear quantitative measure about CRP makes this tool particularly appealing from a practical perspective.

This methodology has been used in the past to collect information on risk premiums in relation to equities and, more recently, it has been extended to country risk. Welch (2000), for instance, runs a survey of 226 financial economists to whom he asked information about the equity risk premium. Similarly, Graham and Harvey (2018) have been running surveys on equity risk premium among CFO for about 10 years. Pablo Fernández, Isabel Fernandez Acín and coauthors have been running a survey of CRP starting since 2008. Fernández, Aguirreamalloa, and Acín (2015) reported market risk premiums across countries for 82 countries. In the latest update of their work (Fernandez, García, & F Acín, 2022), they obtained information on market risk premiums for 95 countries. This last survey draws information from 1,642 answers obtained by May 2022 out of a total of 15,000 questionnaires sent. The survey questions do not explicitly mention a list of countries to be considered, thus leaving respondents free to provide information about all the countries used in their valuations. Ultimately, the 95 countries that were included in the final report were those for which more than five answers were collected. This work shows that the premium required to invest across countries varies dramatically, ranging from as low as 5,3% for Andorra up to 34% for Ukraine. However, respondents to the survey might report substantially different valuations also for the same country: values reported for Ghana, for example, show a minimum risk premium of 9,6% and a maximum close to 30%. In other cases, reported values were much less volatile, as, for example, in the case of Austria, for which the market risk premium ranges from 4% up to 9%.

This methodology is appealing for at least three reasons.

- First, it provides a measure of risk premium which is very direct and it offers a clear reference for final users.

- Second, the results stem from the opinions and ideas of practitioners in the field who might have first-hand experience and insight on investment in different countries.
- Finally, this measure might be able to better deliver ideas about what should be the premium for future investments rather than past investments. This is an important advantage with respect to market based measure with historical data described in Section 2.2.

Despite these notable advantages, survey based CRP also suffer from several shortcoming which might make these measures unreliable. Damodaran (2022b) identifies several weaknesses of survey on equity risk premium, which can also be extended to surveys measuring CRP:

- First, surveys measures are different depending on the identity of the respondent and on how the question is asked. In the case of equity, institutional investors seem to have lower and more stable requests in terms of premium than individual investors. This might also relate to the fact that different groups of investors have different investment strategies and might have in mind different kind of investments while answering the survey. This should be accounted for when using these measures and having disaggregated information by type of respondent would be extremely valuable. In addition, the framing of the questions might generate differential answers and attitudes as it is common with surveys also in other fields such as medicine (Dunsch, Evans, Macis, & Wang, 2018).
- Second, even with homogeneous investors, answers depend on the characteristics of individuals answering the survey. Indeed, characteristics such as gender matters in many dimensions of economic activity, as it testified by an extensive economic literature. Using data from retail banking in Finland, Halko, Kaustia, and Alanko (2012), for example, find

that men and women have different willingness to allocate portfolios in stocks and being exposed to market risk. This suggest that also when considering on whether to invest in countries, men and women might report different level of required risk premiums in line with their differential risk aversion, i.e. willingness to take on risk.

- Third, respondents to surveys could be a selected subset of the population of interest. Non response is a common problem in surveys where often a large share of the individuals who were contacted refuse to provide information or to answer to the survey. This appears to be problematic also for CRP surveys. Fernandez et al. (2022) received only about 1,650 valid responses out of more than 15,000 analysts, managers and finance professors they contacted, thus about 89% of the individuals surveyed did not provide any estimate about CRP. Of course, not all individuals connected to financial markets have interests in all countries, especially in the case of smaller developing economies, so the low response rate might, at least partially, be generated by a genuine ignorance concerning the requested CRP. However, some individuals might be less inclined to answers based on preferences and characteristics. Consider a manager of a large fund and a manager of a smaller fund, for example. The amount of work assigned to these two individuals and their opportunity cost of collecting the required information and answering the survey will be different. As a consequence, the manager of a larger fund might be less inclined to answer to the survey due to a higher work burden. This would lead to the unfortunate outcome that the most sophisticated and knowledgeable investor might not provide her opinion on CRP and the final outcome of the survey will be a less accurate assessment of this important measure. Although no evidence is at the moment available in this sense concerning financial surveys, this remains a plausible risk which would benefit from additional research from academics

in this field.

- Fourth, the sample over which the final measure of CRP is measured might be too small to be informative. This problem is partially connected to non response and it relates to the fact that not all investors have information or are willing to answer about all countries in the survey which leads to very few answers for countries which might be useful for the final user of the CRP. The survey by Fernandez et al. (2022) shows that answers are much more frequent for larger economies where more investors are active. The authors collect, for example, 1,591 estimates for the US and 283 for Germany whereas they only have 6 valid answers for smaller countries such as Ghana and Vietnam. The smaller number of data points over which estimates are computed generate higher uncertainty, which might make these estimates less reliable for practical use.
- Finally, little is known of how interviewed individuals get the numbers reported in the survey. In at least several cases, they might rely on market based measures described in the Section 2.2. In this case, some of them might be relying on less reliable methods or they might report their reference measures with errors, which would actually make more convenient to use the best available market based measure directly. If, instead, they are relying on their personal experience or analysis, they might be unwilling to report the result of the work of the company, which provides them with competitive advantage in the market, and make it available to the public for free. This, again, could generate adverse selection in reporting which would lead to only the worse quality estimates being reported in the survey.

All balanced, despite the attractiveness of surveys for collecting information on desired CRP,

these many concerns call for caution in their use, especially for smaller and less developed economies. Indeed, these shortcomings contribute to make this tool not very reliable and additional and larger scale surveys might be needed in order to achieve usable measures of CRP.

Conclusions

Some conclusions emerge from this review of the literature on country risk premiums:

1. The concept of country risk encompasses fundamental determinants of economic, commercial and political risk which vary from one country to another;
2. Since financial markets are not perfectly integrated, investors demand higher premiums when investing in riskier countries. These premiums can be large, especially in emerging economies;
3. Given the absence of univocal and objective definition of country risk premiums, the literature struggles to provide a good measure for these premiums;
4. Reviewing market and survey based measures of country risk premiums, two standard approaches consist in
 - (a) Measuring country risk premium from sovereign default risk;
 - (b) Asking professionals and academics to directly report the country risk premiums that they use.

Both approaches suffer from well-recognized caveats discussed in details in the previous sections.

3 Country Risk Premiums: why they are not working well

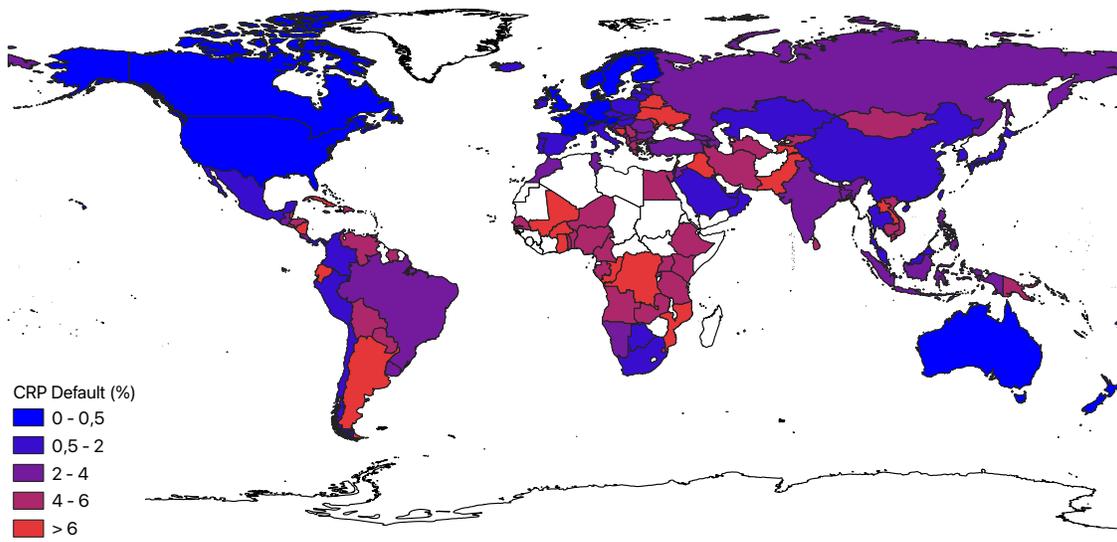
In this section, we analyze the performance of the country risk premium indexes. First, we provide descriptive statistics about two main indexes, one based on the default rate on government bonds and the other based on expert surveys. In particular, we study their geographical distribution, trends over time, and relationship with GDP per capita of different countries. Second, we compare these two CRPs indexes. Our goal in this comparison is to understand whether risk is perceived in similar ways by the market and by experts answering surveys. Third, we look at how both indexes correlate with major risk determinants at the country level. We first define two broad categories of risk, long-run ones, called fundamental, and medium-short run, called proximate. Then, we explore how the two CRPs relates to risk measures within these two categories. By doing so, we try to understand which risk is the major driver of these assessments, and their implicit composition. To conclude, we focus on one risk determinant: violence. We study how CRPs react to violent events, both on average and using three cases of major conflict events in recent history.

3.1 Default Rate - Descriptives

The first CRP index we analyse is the default based country risk premium computed by Damodaran (2003). To estimate the long term country risk premium, the author starts with the country rating from Moody's and estimate the default spread for that rating (with respect to US country bonds) over treasure bond rate. Therefore, the resulting rate can be considered as a measure of how expensive it is for a country to produce debt relative to the US. As such, this is intended to

be a measure of systematic risk of a country.⁷ We observe these rates for approximately 20 years (2000 to 2020), for several countries. However, notice that this information is not available for all countries in all periods. Instead, the country coverage expands over time. To ease the exposition, we will refer to this measure of country risk as “CRP Default Rate” or “CRP based on default rate” or “market based CRP”, indefinitely. The geographical distribution of this CRP is summarized in Figure 1.

Figure 1: CRP Default Rate - Map



Notes: This figure presents the geographical distribution of average CRP default rate.

The geographical coverage of this measure is particularly good. At least a one-year information for this index for almost all countries on the planet is available. Few countries are missing, especially in Africa. We have no information for Madagascar, Somalia, Sudan, as well as other Saharan countries.

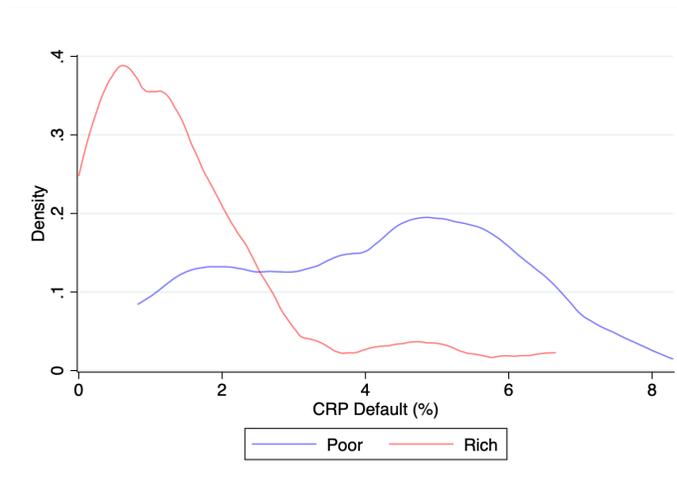
7. We download these rates directly from Prof. Damodaran website: <https://pages.stern.nyu.edu/~adamodar/>

As expected, the average CRP is exactly zero in US. This is mechanical, being this a relative risk measure with respect to itself. Also comes with no surprise that Canada, Australia, and many European Countries enjoy very low default CRPs as well. In the “second-tier”, there are multiple *not-so-anymore* emerging countries such as China, Mexico, and Saudi Arabia. However, we can find in this category also countries with a high debt to GDP ratio, such as Italy and Japan, and developed countries in relatively poorer areas such as Chile and South Africa. The middle tier of country risk premiums is populated by a large heterogeneity of different realities. On the one hand, we have countries on a strong development path, such as India, Indonesia, and Vietnam. On the other, relatively richer ones with instability issues (Russia, Brazil, Turkey, among the others). Many countries in sub-Saharan Africa have CRPs ranging from 4 to 5 % (e.g. Angola, Zambia, Niger). The same can be said for relatively poorer areas in South America, such as Venezuela, Bolivia, and Paraguay. Interestingly, Greece belongs to this category as well. This is probably due to the harsh economic problems this country had to face during the great depression. To conclude, in the last tier we find countries with large instability problems (such as the Democratic Republic of Congo, Mali, and Ukraine), or a long history of financial problems (such as Argentina).

From this brief description, it looks like this default based CRP is tightly linked with the economic prosperity of the country. To further corroborate this hypothesis, we look at the distribution of this measure separately for rich and poor countries. In particular, we define a state to be poor if its average GDP per capita is lower than the world average. Of course, this is far from being a perfect categorization. Nevertheless, it is still particularly informative about whether there

is any systematically difference in distribution between the two categories. Results are summarized in Figure 2.

Figure 2: CRP Default Rate - Density



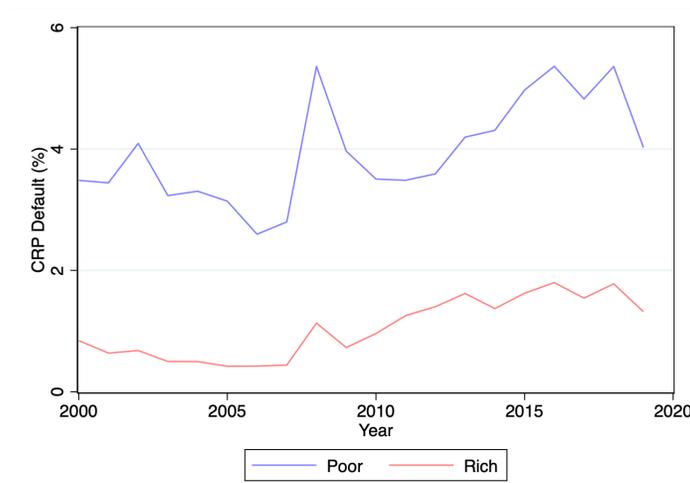
Notes: This figure presents the distribution of the Default based CRPs for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower than the world average.

The distribution for rich countries (in red) is particularly left-skewed, with an average of approximately 1%. Very few countries have CRPs higher than 2.5%. Nevertheless, there is a pretty long right tail. These are relatively rich countries, such as Greece that, nevertheless, have a particularly large debt ratio and are then considered riskier by the market. The distribution for poor countries (in blue) is structurally different. As clear from the picture, there is substantial heterogeneity across poor countries in their market based risk. Some countries are perceived safer than relatively richer ones, such as Kazakhstan. Indeed, there is a considerable overlap between the two curves. Others, instead, are considered riskier. However, it is worth mentioning that very few countries are strictly riskier than any other in the previous category. Instead, the mass

of countries in relatively higher rates is larger for this group. We can conclude that there is a significantly difference between poor and rich countries in their country risk premiums. Nevertheless, there is also substantial heterogeneity in both groups. As a result, the two distributions are different, but there is a large overlap between them.

Then, we explore trends over time of the average CRP (Figure 3). The average CRP for poor countries is approximately 3% higher than the one for rich countries in all periods, as expected. Nevertheless, time trends between the two categories are quite similar. In both curves, it is easy to notice the sharp increase during the great depression, together with a steady increase in the last 10 years. Nevertheless, the average CRP for poor countries seems to be more volatile over time. This is clear when one thinks about this group as composed by relatively more unstable countries, hence more vulnerable to worldwide shocks.

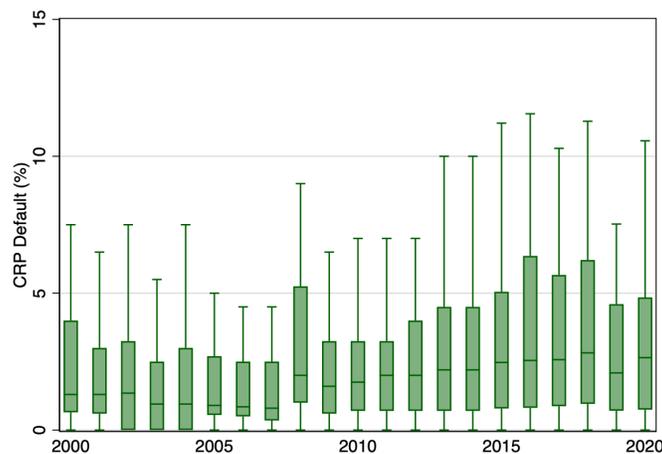
Figure 3: CRP Default Rate - Trend



Notes: This figure presents time trends of the Default based CRPs for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower than the world average.

As noted in Figure 3, there seems to be a general increase in CRPs over the last 10 years. Where does this increase come from? To answer this question, we plot the distribution of the market based CRP over time in Figure 4. This figure is called boxplot, and it is a summary of the whole distribution. In particular, the first segment indicates the 5% percentile of the distribution. The first segment of the box, the 25% percentile of the distribution. The line splitting the box in two represents the value of the median. The upper segment of the box indicates the 75% percentile, and the last segment the 95% percentile. As one can see, this increasing phenomenon seems to involve all countries. Indeed, almost all the percentiles are rising in the last 10 years. This is also consistent with this phenomenon being evident in both poor and rich countries in Figure 3.

Figure 4: CRP Default Rate - Box plot



Notes: This figure presents the boxplot of Default based CRPs over time.

3.2 Survey Based - Descriptives

Let's now turn to the second CRP measure: the one based on expert surveys. In this case, we take the series of risk measures collected by Fernandez et al. (2020) and their previous work. They sent a short email to finance and economics professors, analysts and managers of companies obtained from previous correspondence, papers and websites of companies and universities, asking them about the Risk-Free Rate (RF) and the Market Risk Premium (MRP) used "to calculate the required return to equity in different countries". As a result of this process, they obtain different measures of how risky these experts think different countries are. Then, they published these measures in different reports, one for each year.

We collected all rates for the time period from 2011 to 2020. Then, we transformed the obtained list of rates to obtain a comparable CRP to the default one. We know that:

$$\text{Market Risk Premium}_{c,t} = \text{Base premium}_t + \text{Country Risk Premium}_{c,t} \quad (1)$$

where t indicates a time period, and c a country. Moreover, by construction, the default CRP for US is equal to zero in all periods. Therefore, we are able to retrieve the Base premium, conditional on this being fixed for all countries, by directly imposing a zero country risk premium for the US economy. Hence:

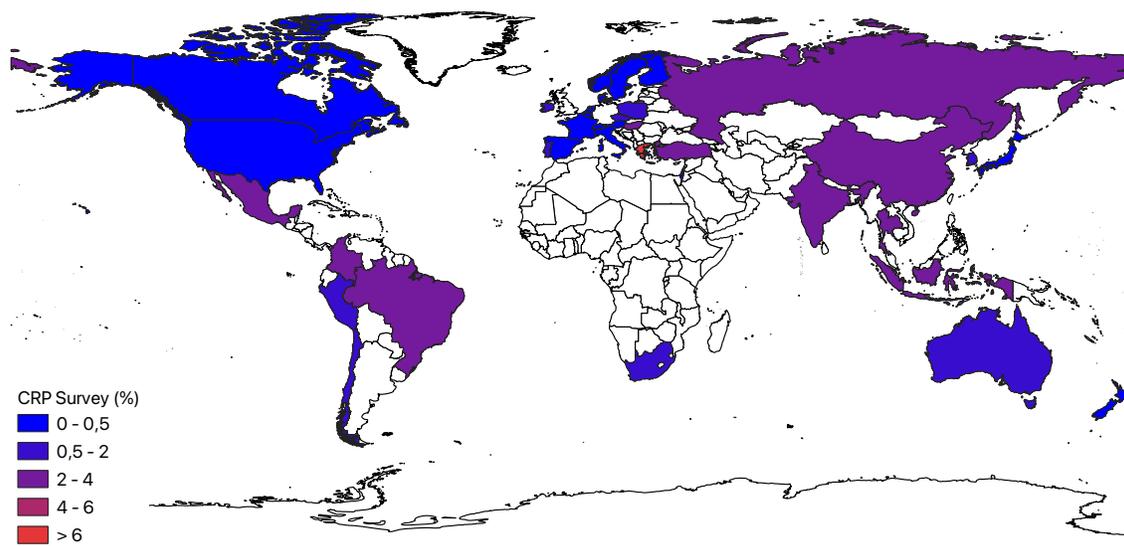
$$\text{Market Risk Premium}_{US,t} = \text{Base premium}_t$$

Then, by using this list of year dependent base premiums, we use equation (1) to compute comparable CRPs based on the expert surveys:

$$\text{Country Risk Premium}_{c,t} = \text{Market Risk Premium}_{c,t} - \text{Market Risk Premium}_{US,t}$$

By following this procedure, we obtain a measure of how expensive is to invest in a risk-free asset of a specific country relative than in the US. Hence, a comparable risk measure to the Default Based CRPs. We will refer to this risk measure as “survey based CRP”, “expert based CRP” or “Survey CRP”.

Figure 5: CRP Survey Based - Map



Notes: This figure presents the geographical distribution of average CRP survey based rate over time.

In Figure 5, we plot the average geographical distribution of this risk measure, as we did in Figure 1. To ease the comparison between the two, we use the same color code as in the previous map. The first thing to mention is that we have information about this risk measure for a quite limited group of countries with respect to the previous one. Indeed, the survey based CRP is available only for approximately 23% of the countries. Moreover, this selection is not random. In particular, relatively poorer countries are systematically less covered by this alternative measure of risk. This is expected, being this one based on a survey, and not on public

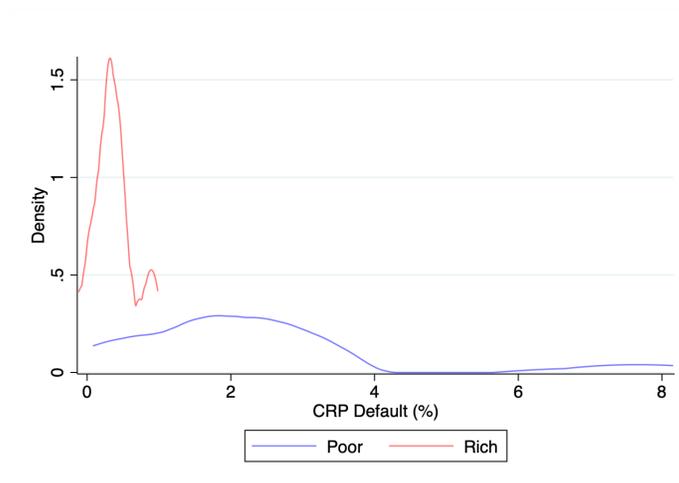
available information. The consequence of this is that we will have to pay particular attention in comparing these measures only for countries in which both measures of risk are present. Indeed, if we did not proceed in this way, we would have systematically lower survey based CRPs, given the different risk composition of these last ones.

Difference between the two are not only limited to the coverage. The survey based measure seems to be much less dispersed than the previous one, especially on the right-tail of the distribution. Indeed, countries that were categorized in different groups, are now gathered in the same category. Brazil, Mexico, China, India, Russia, Indonesia, all these countries have a survey based CRP between 2% and 4%. The only country in the last tier for this risk measure is Greece, which is surprising. As expected, US, Canada, France, as well as other European countries have CRPs close to 0. As with the market based risk measure, Japan is in the second-tier group, probably due to its very high debt to GDP ratio. However, Australia is in the same category for this measure as well. Instead, Italy is surprisingly in the first-tier. Another determinant that may have influenced this different classification is the different time-span considered. Indeed, recall that in Figure 1 we took the average over the whole period from 2000 to 2020, while, in Figure 5, we restrict the sample to years between 2010 and 2020. Nevertheless, this consideration is not entirely sufficient to explain all the differences in classification described above.

As in the previous subsection, we then turn to analyse the distribution of this risk measure by group of countries. In particular, in Figure 7 we plot two distributions, one for rich countries and one for poor ones. We define a state to be poor if its average GDP per capita is lower than the world average. Notice that the classification is dependent on whether we have information

about their Survey CRP. Therefore, the same country which was classified as poor in Figure 2 can be here classified as rich, and vice-versa. This was necessary given the sample composition of Survey CRP. As explained above, we have information about Survey CRP only for relatively richer countries. Therefore, if we had ranked the nations following the previous distribution, we would not have any state in the poor category. As a result, when interpreting these results, keep in mind that we are talking about *relatively* poorer/richer countries, in particular relatively to the average country in which any survey based risk measure is available.

Figure 6: CRP Survey Based - Density

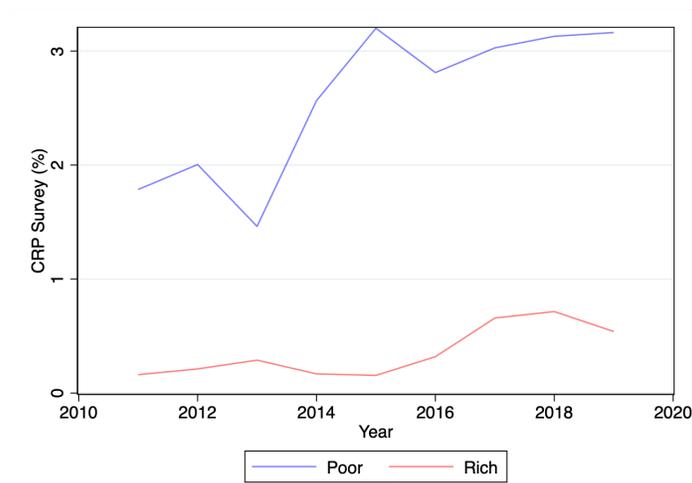


Notes: This figure presents the distribution of the Survey based CRPs for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower than the total average.

Despite all the differences, results from Figure 7 are quite comparable to the ones of Figure 2. First, CRPs' distributions of poor and rich countries are significantly different. The latter one is very left-skewed, even more than in the previous scenario (probably due to the further selection),

and centered around 0.5%. The distribution for poor countries is much more dispersed, with an average of 3%, and a very long right-tail. Second, although different, there is substantial overlap between the two distributions. Therefore, *on average*, rich and poor countries have very different Survey CRPs. However, there are relatively poorer countries which are considered safer than relative richer ones, and vice-versa.

Figure 7: CRP Survey Based - Trend

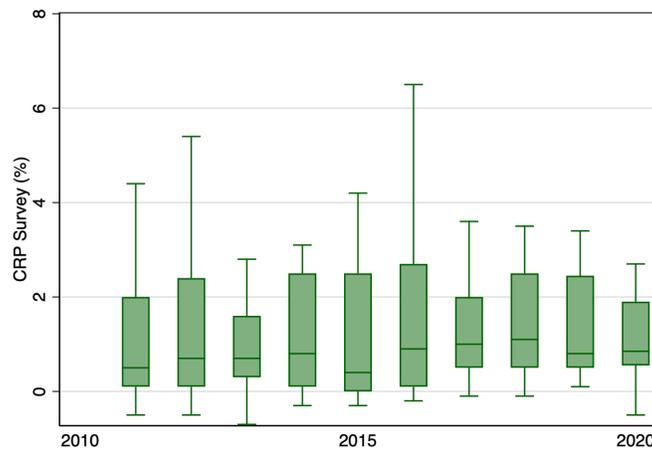


Notes: This figure presents the distribution of the Survey based CRPs for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower than the total average.

Figure 7 summarize time trends of Survey CRPs for both groups over the limited available time period. Unfortunately, since data points before 2011 are unavailable, we are unable to understand whether the upward trend of the last 10 years depicted in Figure 2 is present when we turn to Survey CRPs. Nevertheless, a few things are worth mentioning. First, also in this limited time period, there seems to exist a systematic increase of CRPs over time. Second, differently from Default CRPs trends, the gap between poor and rich countries is increasing over time. In-

deed, the difference increases from 1.6 percentage points in 2011 to 2.66 percentage points in 2019. Third, in this case as well, CRPs of poor countries seem to be more volatile than the rich ones. Therefore, not only the market, but also experts, perceive poor countries to be less resilient than rich ones to global-scale shocks. Fourth, even though the general time trend is similar for both groups, in the period from 2013 to 2016 the two curves almost mirror each other. Indeed, there is a considerable increase in risk measure for poor countries, accompanied by a small but sustained decrease for rich ones. However, due to the small number of data points in the poor category, it is plausible that this conclusion is entirely driven by idiosyncratic events happening to one, or a few, countries. Therefore, this has to be taken with a grain of salt.

Figure 8: CRP Survey Based - Box plot



Notes: This figure presents the box plot of Survey based CRPs over time.

To conclude, Figure 8 presents the box-plot of Survey based CRP's distribution over time. As one can see, there seems to be a compression of the right-tail of the distribution over time, with the notable exception of 2016. This means that, over time, there was a decrease in hetero-

generosity in rates suggested by the experts in the survey. This result may seem difficult to reconcile with the increasing gap between poor and rich countries. However, this difficulty is in reality driven by our implicit bias in categorizing poor countries in the right-tail of the CRP distribution. While it is certainly true that *on average* poor countries have higher CRPs than rich ones, this is not necessarily true for all poor countries, as highlighted in Figures 2 and 7. Therefore, it is possible that the gap between these two countries is on average increasing over time, but this increase is driven by countries that were more central in the distribution, while those in the right-tail are becoming “safer” over time. If the first effect outweighs the second, on average, we would observe both an increasing gap and a distribution compression, as it seems the case here.

Some conclusions can be drawn from this preliminary analysis of both the default and the survey based Country Risk Premiums:

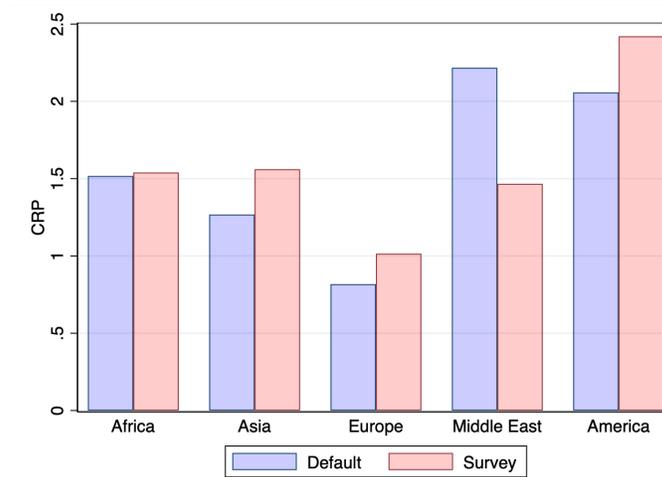
1. GDP per capita is an important gradient for CRPs;
2. *On average*, rich and poor countries have very different risk rates;
3. However, there is substantial overlap between the two distributions, meaning that there are relatively poorer countries which are considered safer than relatively richer ones, and vice-versa;
4. CRPs are increasing over time, especially in the last 10 years;
5. CRPs for poorer countries are much more volatile than the ones for richer ones. This higher volatility is attributable to an increased difficulty in estimating CRPs for poorer countries, as well as poorer countries being more affected by global-scale shocks.

3.3 Default Rate vs Survey Based

In the previous subsections, we presented descriptive evidence about two different risk measures: the one based on default rates, and the survey based one. In this subsection we compare them. Are they similar? Is there any systematic difference between the two? Why this difference, if any, exists? Where is it more pronounced? A couple of things have to be mentioned before proceeding with the comparison. First, recall that the group composition of the two CRPs is radically different. For this reason, in this subsection, we focus only on countries with available information for both risk measures. Second, we highlight the differences between the two alternative methodologies. However, this does not necessarily mean that one CRP is better than the other, or that one, or potentially both, are “wrong”. It is possible that they are simply evaluating different risks. Nevertheless, it is clear that an objective risk measure should be at least comparable across different methodologies.

As usual, we start by comparing averages. In Figure 9, we plot the average CRP per region and methodology. In particular, we plot the average Survey CRP in red, and the Default one in blue. In Africa, they are basically identical. However, this is probably due to the fact that the only overlapping country (available for both CRP measures) in this group is South Africa. In Asia the Survey based one is slightly higher than the default one, as in Europe and America. In the first case, this is due to a higher perceived riskiness of China in the survey CRP relative to the default one. Mexico, instead, is the driver for the higher average in America. Nevertheless, the largest difference is in the Middle East region, where the Default CRP is 50% larger than the Survey one. This difference is not driven by any particular country. All countries in this region are considered riskier in the default relative to the survey measure. Despite this region,

Figure 9: Default vs Survey - Average by region

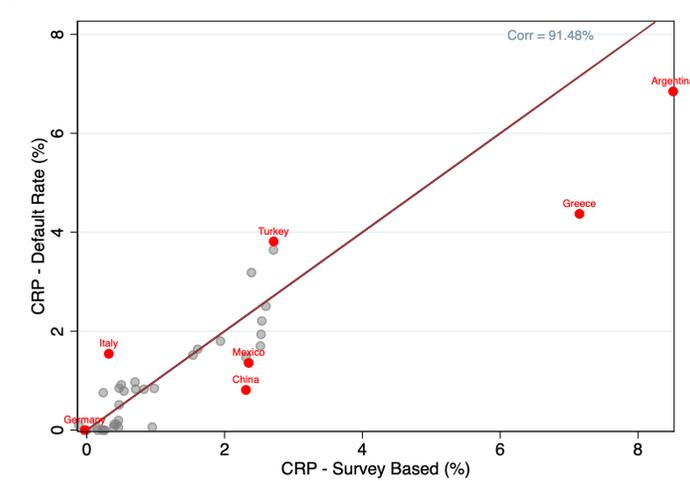


Notes: This figure presents the average Default CRP (in blue) and Survey CRP (in red) for different regions.

the conclusion from comparing averages is that these two methodologies don't produce radically different results.

An analogous conclusion is summarized in Figure 10. Here we directly look at the correlation between the two measures by using a scatter plot. As one can see, the majority of countries lie very close to the 45 degree line. This means that there is almost a 1-1 comparison between the two indexes. Corroborating this point even further, the correlation between the two indexes is approximately 91%. We can obtain two take-aways from this. First, the transformation we applied to the Survey based CRP in section 3.2 is actually effective in allowing a comparison with the Default one. Second, it looks like these two methodologies produce very similar results. However, when one looks at higher values of risk measures, there is substantial dispersion along the 45 degree line. In other words, these two measures seems to agree at low levels of risk, in countries such as Germany and the UK. However, they tend to report significantly different re-

Figure 10: Default vs Survey - Scatter

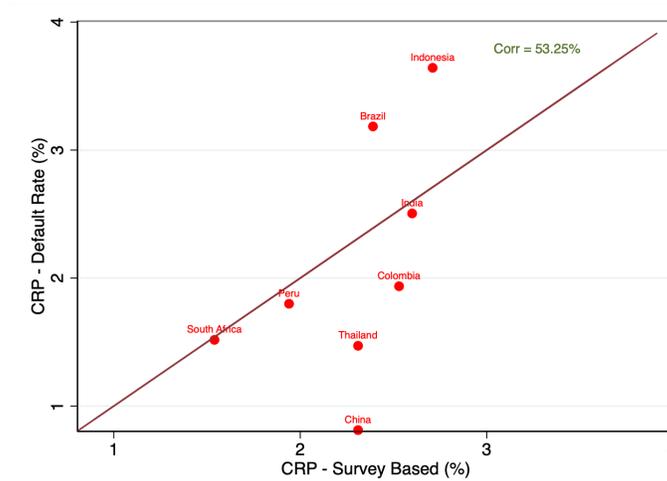


Notes: This figure presents the correlation between the average Default CRP and Survey CRP. The black line is the 45 degree line.

sults when one turns to countries such as Turkey, China, Greece, and Argentina, where correctly estimating the investment risk is much harder. In other words, they seem to fail exactly in those contexts in which having a reliable risk estimate would be more important. This is, however not surprising, since these are much more difficult to estimate.

To further look at this insight, we replicate Figure 10 only for poor countries (defined as usual as those countries with an average GDP per capita lower than the total mean). The idea is that in these poorer, more unstable (*on average*), countries, risk assessment is more difficult. Results are summarized in Figure 11. As expected, the correlation performance here is quite poor. The total correlation drops from 91% to a mere 53% (a 40% decrease). Moreover, virtually all countries in the figure are substantially far away from the 45 degrees line. In particular, it looks like the Default base CRP is much more disperse than the Survey one. In other words, almost

Figure 11: Default vs Survey - Scatter poor countries



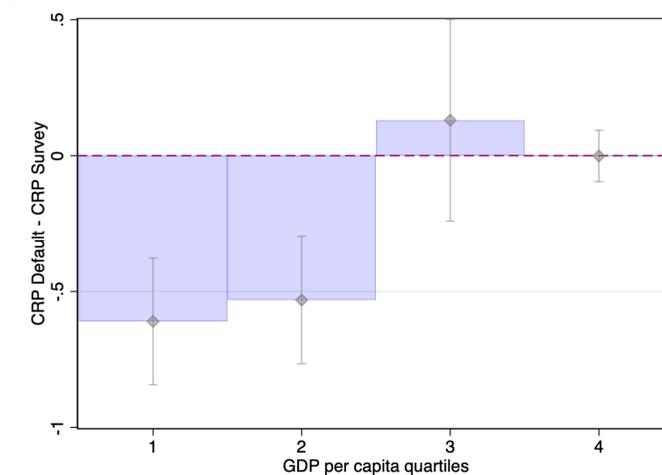
Notes: This figure presents the correlation between the average Default CRP and Survey CRP. The black line is the 45 degree line. Sample restricted to poor countries. We define a state to be poor if its average GDP per capita is lower then the total average.

all poor countries have a Survey CRP in the interval from 2.3% to 2.67%. Instead, the interval for the Default CRP is from 1% to almost 4%. Moreover, the majority of points lie below the line, highlighting an higher Survey based CRPs on average.

To investigate this even further, we compute the difference between the two risk measures and we plot them (Figure 12) for the 4 quartiles of the GDP per capita income distribution. As expected, Default and Survey based CRPs are not statistically different from each other at a 5% confidence level for the relatively richer countries (third and fourth quartiles). In other words, both methodologies give analogous risk measures for this group of countries. However, when we turn to poor countries, the picture is completely different. The difference of the two rates is statistically different from zero at a 5% confidence level. One can further elaborate that the Sur-

vey based risk measure is statistically larger than the default one, as mentioned when discussing Figure 11. The magnitude of this difference is also striking. Suppose, for example, that we would like to invest 100\$ in a poor country that has CRP equal to the overall average. Suppose that the risk-free-return rate is 1%. In other words, if we invest this amount in US, we get 1\$. By investing this amount in the poor country, given the higher risk, under the Default CRP regime, we would get 4.64\$. Under the alternative regime, instead, we would get 2.73\$. Hence, a 70% increase in the return from this risk. Or, equivalently, on average, a poor country (defined as a country in the first quartile of the GDP per capita distribution) is considered 70% riskier under the default CRP methodology than in under the survey one. To conclude, the same conclusions drawn for the first quartiles are valid also for the second.

Figure 12: Default vs Survey - Difference



Notes: This figure presents the difference between CRP Default and CRP Survey across the 4 quartiles of the GDP per capita distribution. 95% confidence interval shown.

To conclude, in Table 1 we perform a more robust exercise with confirms us similar conclu-

sions. In particular, we run the following regressions:

$$\text{CRP Default}_{c,t} = \alpha + \beta \text{CRP Survey}_{c,t} + \epsilon_{c,t} \quad (2)$$

and we add country fixed effects in column (2), year fixed effects in column (3), and several control variables in column (4). The idea of this exercise is straightforward. By adding subsequently fixed effects (FEs) and controls, we explore how robust the correlation between the two risk measures is.

As one can read in column (1), without FEs and controls, the correlation between the two indexes is quite strong, consistently with Figure 10. Moreover, a 1-unit increase in the Survey CRP is associated with a 0.7-units increase in the Default CRP. This is in line with the Default one being on average smaller than the Survey one, as in Figures 11 and 12. Finally, only including Survey CRP in the model, we are able to explain a very large proportion of the variation of the Default CRP (62%). Things change significantly when we include country fixed effects, in column (2). Hence, when, instead of looking at CRP levels, now we look at deviations from country-averages. Here the correlation between the two country measures is virtually zero, and not statistically different from zero at any conventional level. This is indicative that, while the two methodologies seems to agree on which country is riskier than the other, they fail completely in measuring changes in relative riskiness of the same country. This conclusion is actually perfectly in line with the one presented before. Indeed, relatively richer countries have very low variation over time in their CRPs for both measures. Hence, the majority of the time variation within each country comes exactly from those relatively poorer ones, in which the comparison between the two methodologies is the poorest. As a result, when we focus on this variation, the

correlation between the two disappears. Things are unchanged when we include year fixed effects (model 3), and when we control for GDP per capita, strength of legal rights, number of deaths for violence, and internet share in the population in column 4. Before proceeding, it is worth mentioning that country fixed effects included in model (2) seems to explain a very large portion of the variation in Default CRPs. Indeed, including them in the model, we go from an R^2 of 62% to approximately 90%. Given the low number of observations, it is possible that these results are in reality driven by the fact that very few variation is left after these are included in the model.

Table 1: Default vs Survey

Dep. Variable	(1) CRP Default Rate	(2) CRP Default Rate	(3) CRP Default Rate	(4) CRP Default Rate
CRP Survey Based	0.709*** (0.0525)	0.0261 (0.0710)	0.0239 (0.0718)	-0.0924 (0.0829)
Observations	380	380	380	266
R^2	0.620	0.902	0.909	0.940
Country FE	No	Yes	Yes	Yes
Year FE	No	No	Yes	Yes
Controls	No	No	No	Yes

Notes: OLS estimation with high dimensional fixed effects. Standard error clustered at the country level in parenthesis. ***, **, * = indicate significance at the 1, 5, and 10% level, respectively. Controls are GDP per capita, strength of legal rights, number of deaths for violence, and internet share.

Main conclusions from the comparison of CRPs across the two methodologies (Default and Survey) are the following:

1. The two risk measures produce a consistent ranking in levels of the overall riskiness of different countries. In other words, if a country A is riskier than a country B under one methodology, it is likely that it would be the same under the other;

2. Moreover, the two risk measures are statistically the same for relatively richer countries (countries with a GDP per capita higher than the total average);
3. Nevertheless, the difference between the two is statistically different from zero at a 95% confidence level, and economically significant, for relatively poorer countries. This means that they provide very different assessments for these countries, exactly where a risk assessment is more difficult but, remarkably, more important;
4. The correlation between them is virtually 0 when we look at time variation within single countries. Hence, the two methodologies give very different results if we are interested in understanding if, and to what extent, a specific country is becoming riskier, or vice-versa.

As a result of these considerations, in the following subsection, when we will compare CRPs to several risk determinants, we will have to use both the Survey and the Default base, since they give quite different answers to the same question.

3.4 Risk determinants

In this subsection, we try to evaluate the performance of both the Default and Survey based CRPs. In particular, we explore the correlation between these risk measures and a large number of risk determinants. The analysis is structured in the following way. First, we present an alternative classification of risk determinants that helps us guiding out our analysis and considerations. Second, a simple description of these determinants as well as their characteristics is provided. Then, in the main part of the analysis, we explore how CRPs relates to these risk determinants, and to what extent these risks are able to explain the variation we see in CRPs. The idea of this analysis is twofold. On the one hand, we would like to understand whether CRPs are representative of actual investment risks. By doing so, we use the correlation analysis. On the other, we would also like to explore the structural model behind the construction of these risk measures. For this reason, we turn to the second type of analysis in which we try to understand which portion of CRPs' variance is explained by which risk. In the forth, and final, part of the analysis we focus on one single risk determinant: violence. Using three different measures of violence, we investigate how these risk measures react to changes in violence, if they do at all. In doing so, we will also explore three recent large scale violent crisis: the Arab Spring in Egypt (2011-2014), the Russian-Ukrain crisis (2014-ongoing), and a spike in violence in Lebanon in 2017.

Classification of risk determinants

Throughout the analysis we deal with a large number of risk determinants. For this reason, it is useful to have a way to classify them in a systematic way. Actually, multiple risk determinants classifications based on different criteria already exists.

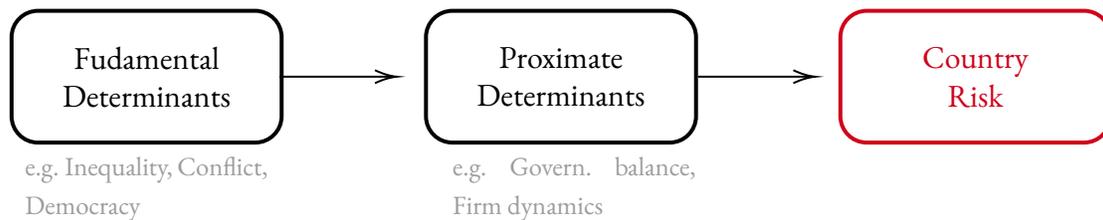
One of the most relevant ones is detailed in Damodaran (2003). The author uses a classification based on the type of risk a country face. Hence, he outlines four different risk categories. First, economic growth life cycle. Countries in early growth are more exposed to (global) risks than mature countries. Second, political risk. This category includes everything from whether the country is a democracy or dictatorship to how smoothly political power is transferred in the country. Third, legal risk. Independently from his political status, different countries may have different level structures. The strength of these structures (to what extent property rights are protected) and their efficiency (the speed with which legal disputes are resolved) are relevant in determining the risk level of a country. For example, France and Italy are very similar with respect to the growth stage in which they are, as well as their political structure. Nevertheless, the legal system in Italy is much less efficient than the French one. As a result, investing in Italy is riskier. Fourth, the economic structure of the country. According to Damoradan, this criteria essentially boils down to the diversification of the economic activities within the country. Indeed, if a country is dependent upon a specific commodity, then idiosyncratic changes in product or service may impact dramatically its economic success. Therefore, economic dependence on a limited portfolio of activities create additional risk for investors. In addition to the different categories, it is clear how these are interconnected and mostly dependent on the economic path of the country. Nevertheless, this classification is very effective when ones tries to compare the relative riskiness of different countries.

In this analysis, however, we capitalise on what described above and we propose something different. We want to capture the degree to which CRPs measures react to different risk determinants. For this reason, more than the type of risk, it is fundamental for our analysis to underline

its time horizon. For this reason, we propose an alternative classification based on the type of equilibrium influenced by the risk determinant itself. A couple of points must be raised before proceeding to the classification. First, we do not believe that this approach is a “better” classification than the others already available. It is, simply, a different classification specifically tailored to the needs of this analysis. Second, this is not a rigid structure. We assign risk determinants to two main categories. Nevertheless, this is far from being a perfect assignment. Under certain circumstances, one risk determinant could be assigned also to a different category, or potentially both. To conclude, it is important to have in mind that this classification is only instrumental to the analysis that follows.

As mentioned above, we divide risk determinants in two broad categories: (1) Fundamental Determinants and (2) Proximate Determinants. In Figure 13, we show the structure of this classification.

Figure 13: Risk determinants - Classification



Instead of classifying risk determinants based on their type, we divide them based on the type of equilibrium we think they may affect. Hence, we say that a determinant is fundamental if it affects the long-run equilibrium of a country. Things like inequality, conflict dynamics, cultural differences, as well as the political structure of a state are all in this category. Hence, here

we group all those determinants that are very sticky in the short-run, evolve very slowly, and determines the long-run equilibrium of a country. On the other hand, we classify as proximate all those determinants which have an higher volatility also in the medium-short run. For example, government debt, strength of property rights, firm dynamics, and regulations are all in this category. Some of these allocations may seem odds at first. However, one needs to take in consideration that we are not dealing with variables that are very volatile also in the short run. All determinants considered in the analysis should be thought at most as influencing the medium-short run equilibrium. So, for example, changing the strength of property rights within one year is obviously impossible. However, with a medium horizon in mind (say, 5 to 10 years), there is a much larger scope for it. Moreover, notice that this determinant is clearly more volatile than the political structure of the country. Indeed, it is exactly the latter which influence the strength of the first. This is the reason why we classify it as proximate determinant. This reasoning is general for all the risk determinants categorized in this way. As clear from Figure 13, we think at fundamental determinants as those variables shaping incentives in the long run, and hence implicitly influencing also proximate risk causes. To conclude, all these determinants contributes to the country risk.

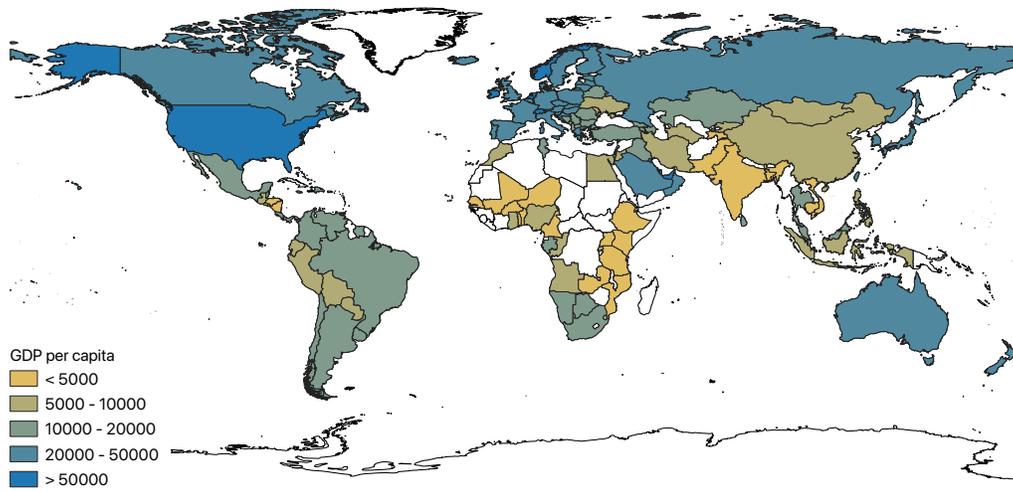
But why is this categorization useful? Recall that we would like to understand how CRPs measures react to changes in risk determinants. Therefore, having in mind the horizon of these changes is fundamental. Moreover, classifying risk determinants in this way help us understanding whether variations in CRPs measures are explained better by long-run changes (and, hence, fundamental determinants) or short-run ones (proximate determinants). This has, in turn, implications on what type of risk are these indexes measuring, as well as the type of investments we

have to think of when analyzing them.

Fundamental Determinants

As detailed in the previous paragraphs, we say that a risk determinant is fundamental when it is determined in the long-run, and it affects the long run equilibrium of a country. We collected 8 risk determinants in this category: (1) GDP per capita; (2) the Democracy Index; (3) the Gini Index; (4) Life Expectancy; (5) the Corruption Perception Index; (6) the share of Internet connection; (7) the number of violent deaths; (8) the number of general violent events.

Figure 14: Fundamental determinants - GDP per capita



Notes: This figure presents the geographical distribution of average GDP per capita over time.

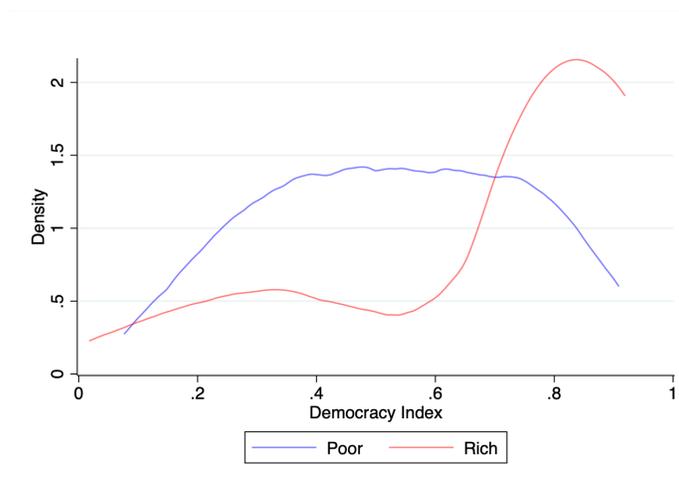
The first information we look at when we discuss about long-run development of a country is its GDP per capita. Hence, we start from this determinant. It is important to notice that we can map this to the economic life cycle risk discussed by Damodaran in its categorization. The GDP per capita is a measure of the per-capita production in a state and, hence, of its eco-

conomic stage. Figure 14 is a geographical representation of this determinant. As expected, GDP per capita is higher in North America and Europe, while it is lowest in Africa. There is, instead, substantial heterogeneity in Asia. Although the terrific economic performance over the last 20 years, GDP per capita is still quite low in China, India, and Taiwan. While Japan and South Korea perform significantly better.

The second risk determinant we study is the political structure of the country. A governance structure that respects basic rights of the population and encourages association and expression will be more stable in the long-run, and hence less risky. On the other hand, a country with a repressive regime may also perform better (economically) in the short-run, but it will be always an unstable equilibrium. Hence, in the long-run, it is riskier to invest in it. This risk determinant relates to the political risk discussed by Damoradan. However, this determinant is particularly difficult to measure. We chose to rely on the existing work done by V-Dem. This is a research project that takes a comprehensive approach to understanding democratization. In particular, they provide a multidimensional dataset that reflects the complexity of the concept of democracy as a system of rule that goes beyond the simple presence of elections. Among their products, we chose to focus on electoral democracy. This index captures to which extent political leaders are elected under comprehensive voting rights in free and fair elections, and freedoms of association and expression are guaranteed. In other words, exactly what we were mentioned to capture. They construct this index based on expert assessments, and it ranges from 0 to 1 (most democratic). Figure A1 presents the average of this index over time in a map. It is not surprising that this map is very similar to the one for GDP per capita (Figure 14), given how interconnected these two determinants are. Indeed, in Europe and North America the index is quite homogeneous

in the range between 0,8 and 1. In Asia, with the common exceptions (Japan and South Korea), the index is very low (generally below 0.5). However, in Africa we find substantial heterogeneity. Indeed, we find countries both in the lowest tier (e.g. Egypt, Rwanda) and in the second-highest one (e.g. South Africa, Botswana). To further investigate the relationship between this index and GDP per capita, we plot its distribution for rich and poor countries (again defined as GDP per capita higher or lower than the total average respectively). Results are summarized in Figure 15. As expected, the two distributions are quite different. In particular, the distribution for rich countries has a large mass in the right part of the distribution. Hence, many rich countries have very high democracy scores. Instead, the distribution for poor countries is almost flat. This means that it is equally likely that a poor country has a high or a low democracy score. This is in line with very rich countries performing poorly in this determinant (e.g. United Arab Emirates), as well as very poor countries having very high scores (e.g. Botswana, and Uruguay).

Figure 15: Density - Democracy Index



Notes: This figure presents the distribution of the Democracy Index for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower than the total average.

The third determinant we take in consideration is inequality. Although this may seem more a proximate determinant, it turns out that inequality is a very slow-moving phenomenon. Hence, we think about it as a long-run phenomenon in what follows. To measure inequality we use the Gini Index (or coefficient). This is a 0 - 1 (most unequal) index. A country with 0 has all incomes are perfectly equally distributed. Instead, a 1 means that one person in the country has all the income, while the others nothing.

The fourth determinant is life expectancy. This is a key metric for assessing population health. It tells us the average age of death in a population. Hence, this is broader than similar metrics such as infant or child mortality, which focus solely at mortality at a young age. As such, this is a a very powerful index, summarizing what is the final goal of all prosperous nations: ensure a long happy life to all its citizens. In Figure A4, we plot the geographical distribution of this variable. As one can see, life expectancy is the highest in North America, Europe, and Australia (with a value higher than 75 years). The African continent, instead, lies entirely in the lowest-tier of the distribution. This is very interesting. As we mentioned before, the African continent is very heterogeneous in terms of GDP per capita and Democracy Index. Therefore, we should expect large variations also in life expectancy. Nevertheless, this is not the case. All African nations have a figure between 50 and 67 years. Figure A5 plots the life expectancy distribution for rich and poor countries separately. As one can see, here the correlation between the two dimensions is impressive. The overlap between the two curves is small. The distribution for rich countries is severely right-skewed with a mass of states with very high values. Instead, the distribution for poor countries has a very long left-tail, meaning that there are several poor countries with very low life expectancy's values.

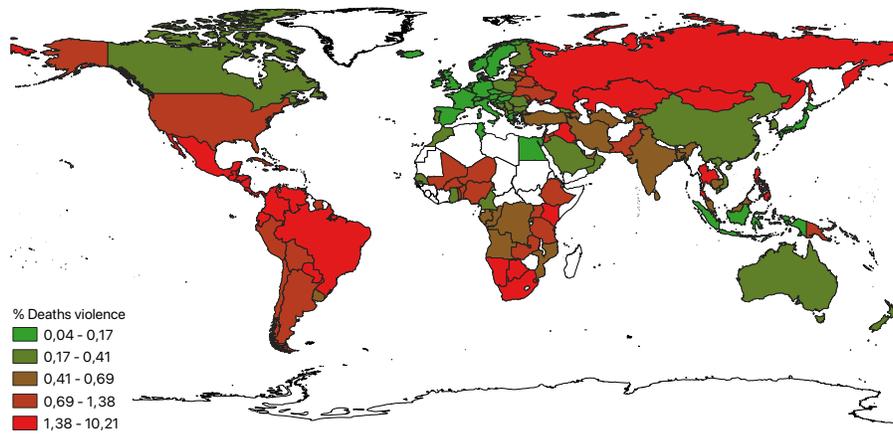
The fifth determinant is the Corruption Perception Index. This is the most widely used indicator of corruption worldwide, and it is estimated by a non-governmental organization called Transparency International. This scores countries on a scale of 0-100, where 0 means that a country is perceived as highly corrupt and 100 means that a country is perceived as very clean. Again, this indicator is representative of expert opinion, as it is constructed by taking the averages of various standardized expert surveys. We can think at this risk determinant as contributing to the “political risks” discussed by Damoradan in a different way than the Democracy Index discussed above. A country may be respectful of individual rights, and hence obtain a very high score in the latter, while its institutions may still be very corrupted. Italy is probably the main example of this dichotomy. Indeed, as it is clear from Figures A1 and A2, Italy has a very high democracy score, but a much lower Corruption Perception Index. Even though a country is “democratic”, in the wider sense of the term, having corrupted institutions may still represent a risk for investments. Indeed, side-payments, as well as judicial problems are very common in most corrupted countries. It is also interesting to mention how the distribution of this index, across poor and rich countries, is basically specular to the one presented for the democracy index (Figures 15 and A3). In the democracy case, as seen above, rich countries tend to have very high figures while, instead, the distribution is sparse for poor countries. Here the situation is the complete opposite. Poor countries have a distribution concentrated around very low values of the index (30-40). Rich countries, instead, have a very sparse distribution (30-80). This means that, while poor countries are very likely to be perceived to be corrupted, rich countries have almost the same probability across the whole scale of corruption.

As sixth determinant, our idea was to capture in some way the technological development of a country. Nevertheless, this is particularly difficult to measure. On the one hand, we have to pay attention not to capture the technological advancement of only a small portion of the population. On the other hand, focusing completely on the least may hide interesting technological advancements. Moreover, one should also focus on technology that is, in some way, instrumental to production. If in a country everyone has the last super high-tech oven, this is certainly a good news for the food culture, but probably it is not an important information about the technological capacity of the country. To solve this trade-off, we decide to focus on the share of internet users for two reasons. First, internet is a fundamental development platform nowadays. Hence, the spread of this technology is instrumental to growth. Second, looking at the share of people with internet, we focus on how diffuse this technology is, hence solving the trade-off highlighted before. Nevertheless, this is not a perfect measure. As a result, this measure is strongly correlated with GDP per capita, as clear from Figures A6 and A7.

As last determinant, our idea is to capture the amount of violence of a country. We focus on two different measures. First, the proportion of violent deaths. This risk determinant is meant to capture the degree of extreme violence. Second, the number of violent events in general (number of ACLED events). In this second category, also non-fatal events, such as riots or protests are included. Hence, this is more a measure of instability, than strict violence per se. In Figure 16, we plot the geographical distribution of the first risk determinant. This graph is significantly different from all the others we have seen so far. As usual, Europe performs quite well with respect to the rest of the world. However, North America is severely divided. On the one hand, there is Canada with a proportion of 0.22%. On the other hand, we find US and Mexico with

an average of 3.33% (almost 200% larger than the worldwide average). The same heterogeneity can be found in all the continents. Several countries in North Africa are in the top-tier of the distribution (Egypt, Tunisia, Morocco). While countries in sub-Saharan Africa typically have a very low performance. In Asia the situation is even more heterogeneous. Japan has one of the lowest rates (0.07%), China performs quite well to (0.22%), India is in the middle tier (0.48%), while Iraq has, of course, one of the highest scores (2.64%). As a result, the distributions of the proportion of violent deaths of poor and rich countries (Figure A8) have a large overlapping region. It is true that, on average, in rich countries there is a lower proportion of deaths for violence (even though this is entirely driven by the European continent). However, also several poor countries perform quite well in this determinant. Moreover, the rich distribution has a very long right-tail, with very rich countries performing quite poorly (e.g. the US).

Figure 16: Fundamental determinants - Violent Deaths



Notes: This figure presents the geographical distribution of average share of violent deaths over time.

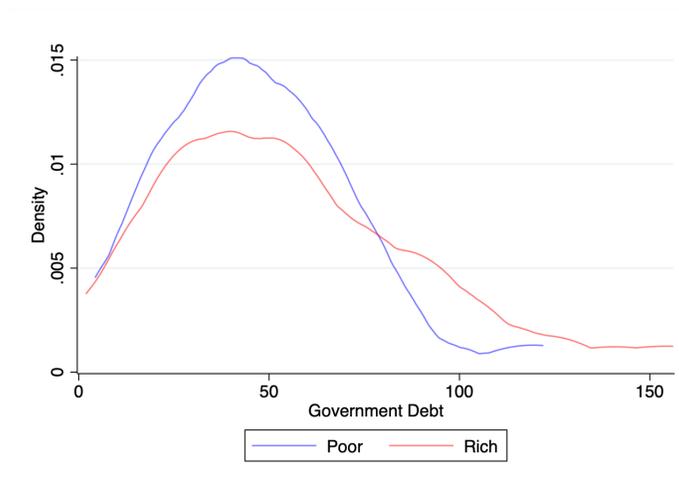
Proximate Determinants

In this subsection, we turn to proximate determinants. Recall, we define a risk determinant to be proximate if it influences the medium-short run equilibrium of a country. As such, these risk determinants are implicitly determined by the fundamental ones described in the previous subsection. Nevertheless, given their volatility in the medium-short term, it is important to investigate them, as they are likely to be influential for firm dynamics, on the one hand, and the development of country risk premiums, on the other. We divide these risk determinants in two broad categories: (1) government related determinants, and (2) firm related determinants.

In the first category we group all those determinants which relates with the stability of government finances. As they are an important component in the risk evaluation, we take them in consideration separately from the other determinants. The first, and probably most important, determinant in this category is government debt. It is safe to assume that a state with an higher debt is riskier, given the higher probability of default. Nevertheless, it should be mentioned that this relationship is not necessarily linear, nor simple. The probability of repaying the debt is of course a function of debt size. But it is also a function of several other characteristics of the country, as well as of the international scenario. As an example, Spain and Brazil have, on average, very similar debt to GDP ratios (82 and 62 respectively, in the period from 2010 to 2016). If anything, we should perceive Brazil to be safer than Spain. However, this is not the case. Hence, even though important, the relative size of government debt is not the only determinant of risk at the country level. In Figure A9, we can see the geographical distribution of government debt as percentage of GDP. As one can see, there seems not to be a strong development gradient. As a result, in Figure 17, the distribution of this risk determinant is almost identical between poor and

rich countries. The only difference is in the right-tail of the distribution, more pronounced for rich countries. Hence, some rich countries, such as Japan, have very high levels of debt to GDP ratios. Instead, these levels are unlikely to be reached by relatively poorer countries. Despite that, the first are still perceived to be safer than the latter, on average. Therefore, even though important, probably the size of debt is only one determinant of country-level default risk. Therefore, we analyse also other determinants.

Figure 17: Density - Government Debt



Notes: This figure presents the distribution of the Government Debt to GDP ratio for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower than the total average.

The first one is intended to capture the fiscal capacity of the country. For this reason, we use total tax revenues. The idea is that, even though a country has a very high debt to GDP ratio, if tax revenues are high, it is still able to repay it relying on the strength of his fiscal structure. The second alternative measure we take in consideration is the percentage in military expenditure. The idea here is that if this debt is made to boost growth, then maybe we are looking at

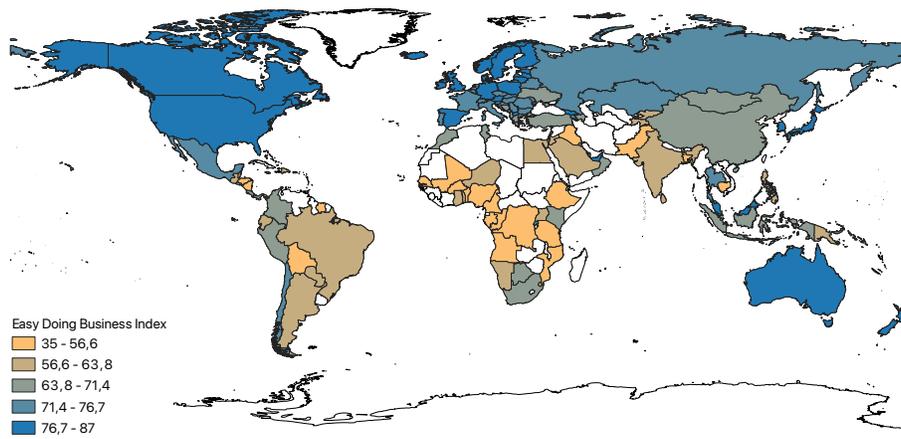
“good debt”, which is perceived positively for the market. The type of debt may then explain why we perceive some more indebted countries as safer. Of course, defining what is “good debt” is extremely complicated. The literature is severely divided on the topic, and no consensus is likely to be reached in the near future. On the other hand, it is easier to identify a category of government expenditure which is unlikely to boost growth, especially in the medium-short run: military expenditure. With respect to other expenditure items, this is likely to be less growth-directed. Hence, we can take it as a measure of bad, rather than good, debt. It is important to underline that we are not judging the expenditure item per se. Military expenditure is likely to be important when geo-political issues are particularly relevant. We are just saying that the primary scope of this expenditure is not growth-related.

The second category of proximate determinants are those directly related to firm dynamics. This is, in our opinion, the most important category of risk determinants. Indeed, the scope of this report is to understand whether country risk premiums are a good measure of the risk encountered by privates when investing in a certain country, in particular developing ones. Therefore, risk determinants directly affecting the performance of firms in these countries are the most important variables to take in consideration. Moreover, the proximate nature of these determinants is directly linked to the time-horizon of these investments, and hence risks. We group four variables in this category, each looking at a different perspective.

First, the easy of doing business index. This is an aggregate index of how *easy* is doing business in a certain country. Higher rankings indicated better, usually simpler, regulations for businesses and stronger protections of property rights. This is an aggregate measure, taking all the

different perspectives under consideration. As such, as can be seen in Figures 18 and A10, this is highly correlated with the level of development of the country. In North America and Europe almost all countries have very high rankings, consistently with them being developed ones. Australia makes no exception. Africa and South America, instead, are characterized by countries with a relatively lower index figure. To conclude, as for the level of development, we find substantial heterogeneity in Asia, with Japan taking place in the first-tier, and countries like Bangladesh at the other extreme of the distribution. To conclude, the ease of doing business index seems to be extremely correlated with the development (and hence income per capita) of a country. Of course, exception exists also in this case. As an example, Georgia has one of the highest rankings in the data, while being technically (using the definition of this report) a poor country.

Figure 18: Proximate determinants - Easy Doing Business Index

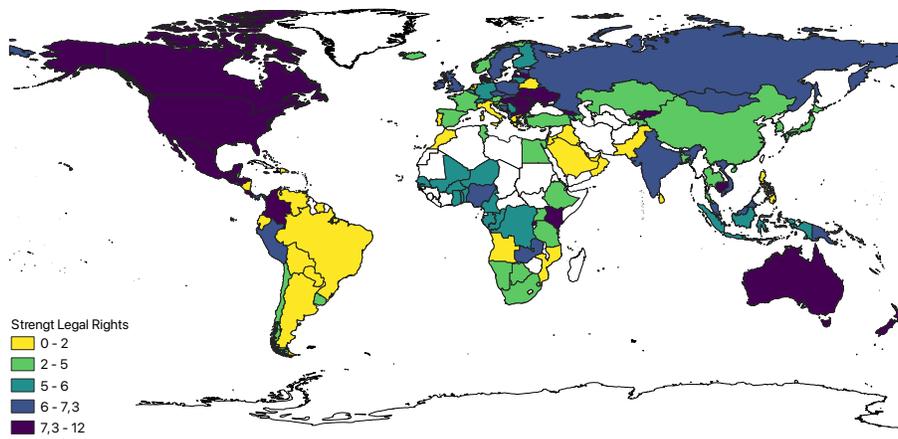


Notes: This figure presents the geographical distribution of average easy doing business index over time.

Second, the number of new firms. This index is meant to capture the vivacity of the entrepreneurial ground in the country. Nevertheless, it is a poor measure of how successful are then these firms once created. Third, the strength of property rights. As widely known, this is

one of the most important determinants in the medium-long run success of an economy, since it is tightly linked to firm performance. To measure the strength of legal rights, we use the index developed by the World Bank, in the Doing Business initiative, which spans from 0 (very weak) to 12 (very strong). Surprisingly, as one can see in Figure A13, there doesn't seem to be any difference in the distribution of this determinant between rich and poor countries. This is due to the fact that several rich countries seem to perform very poorly in the protection of property rights (such as Italy, Greece and Portugal), while some poor countries benefit from relatively high values of this index (e.g. Colombia, Kenya, and Cambodia).

Figure 19: Proximate determinants - Strength Property Rights



Notes: This figure presents the geographical distribution of average strength property rights over time.

Fourth, the profit loss due to theft or vandalism. This is, in our opinion, a very good measure of the (violent, short run) risk faced by firms. Indeed, existing firms in more unstable environments, will face higher losses due to violent events, and thus it is riskier to invest in these places. The risk measured through this determinant is only the local one. In other words, the profit loss due to violent events is not able to capture systematic risks that may happen at the country

level. However, it is plausible to assume that weaker countries, which are characterized by higher levels of risk at the aggregate level, are also characterized by higher violence at the local level, and hence higher profit loss due to violent events on average. In conclusion, profit loss due to violent events is a good measure of local risk, as well as probably a good proxy for aggregate risk too. The problem with this is its sample availability. As one can see in Figure A11, this is available only for a limited amount of countries, often developing ones. Unsurprisingly, countries with the highest percentage of profit loss are mostly located in Africa, with Nigeria reaching the incredible figure of 13.6%. Brazil also has a very high percentage of profit loss (approximately 7%), probably due to the strong criminal groups present in the country. Italy performs relatively poor too, probably for the same reason. Instead, the majority of countries in Europe, that we have data of, have very low percentages of profit loss (from 0 to approximately 1.5%). Again unsurprisingly, the country with the lowest figure is China (0.5%), together with Ireland (approximately 0.5%), and Denmark (0.6%). As clear from these examples, the relationship between this risk determinant and income per capita is indeed negative, although not as strong as in other determinants in this category. The distribution of risk countries is quite left-skewed, as expected (Figure A12). In other words, the percentage of profit loss due to violent events is mostly low in rich countries. Instead, there is substantial variation for poor countries. Although the median is only slightly higher than the one for rich countries, the right tail of this second distribution is particularly “thick” and long. As a result, the average profit loss between the two group of countries is significantly different. Nevertheless, there is also a substantial overlap area between the two curves. To conclude, rich countries are characterized by lower profit losses due to violent events, on average, but the relationship between these two determinants is far from being simple.

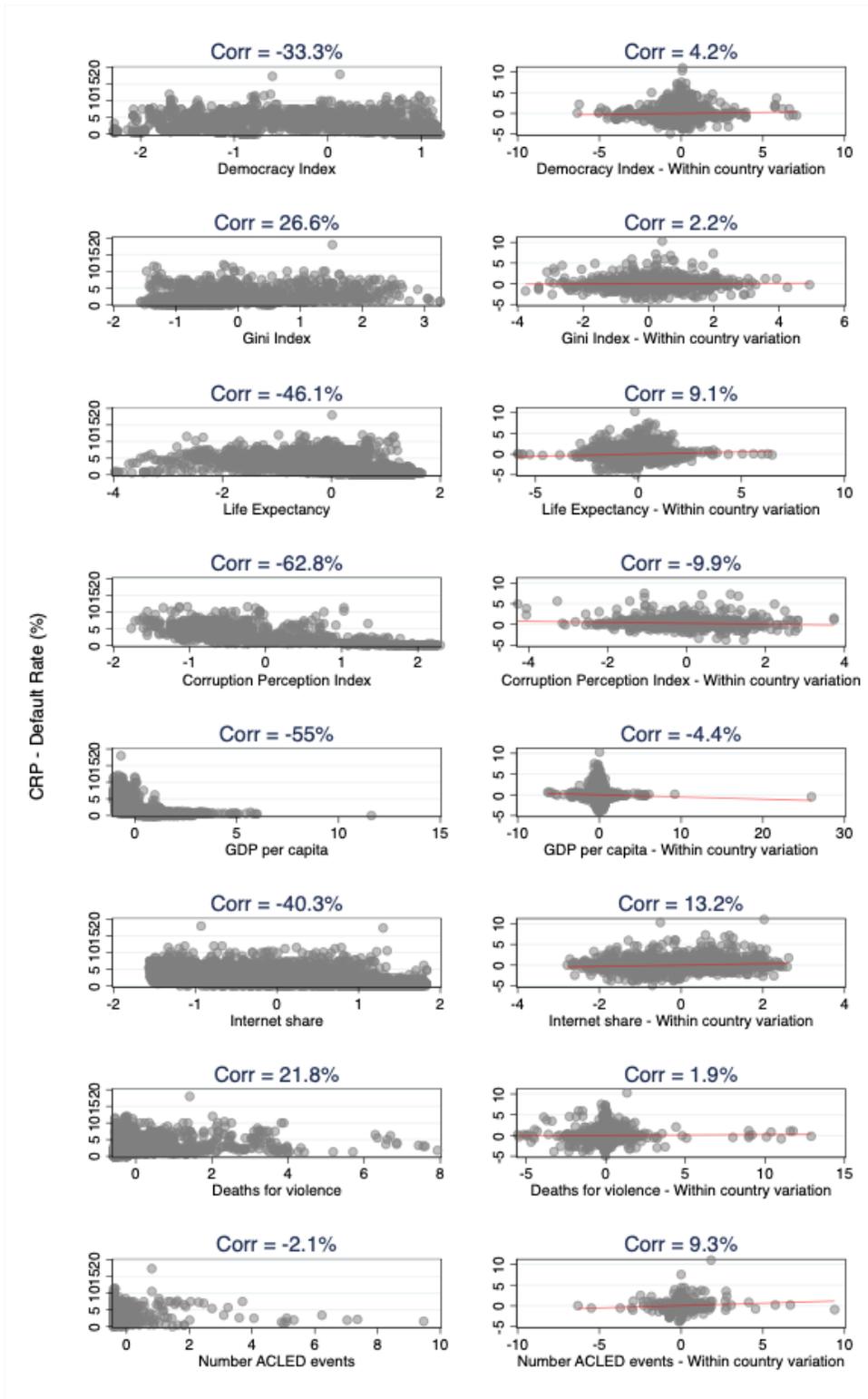
3.5 CRPs and risk determinants

Finally, in this subsection, we turn to the analysis of the two country risk premium measures. The goal of this analysis is to understand whether the indexes presented in subsections 3.1 (Default based CRP) and 3.2 (Survey based CRP) are a good measure of the risk an entrepreneur face when investing in a given country. The first step towards this goal is to understand how the CRPs relates with the risk determinants described in subsection 3.4. All results in what follows have been standardized to ease comparison between determinants.⁸

Let's start with fundamental determinants. In Figure 20, we plot the correlation between the Default based CRP measure and all the fundamental risk determinants in column 1. To investigate even further these correlations, we replicate the same analysis by using only the within country variation in column 2 of the same figure. In other words, we regress both the CRP measure and risk determinants over country fixed effects, take the residuals, and then correlate them. This is equivalent to subtracting the mean for each country over time. By doing so, we "clean" the variables from factors that are time-invariant characteristics of the countries. This within-country correlational analysis is important for what described in section 3.3. The two country risk premiums perform relatively well in levels, meaning that they produce a consistent ranking of the overall riskiness of different countries. However, they seem to have problems in capturing whether a country is becoming more or less risky. Hence, they seem to have problems in measuring the evolution of risk over time.

8. To standardize a variable we subtract the overall mean to each value, such that the sample mean of the variable is zero, and we divide by its standard deviation.

Figure 20: Correlations CRP Default Rate - fundamental determinants



Notes: This figure presents scatter plots of Default based CRP with fundamental determinants. Correlations in levels are shown in the first column. Within-country variation correlations in the second one, together with the a linear fit of the correlation in red.

Correlations in levels are pretty good. Default based CRP is strongly correlated with the majority of risk determinants in levels. Correlation between the democracy index and the risk measure is approximately -33%. This means that if a country-(year) has a relatively high democracy score, it is likely that the same has a relatively lower CRP. The correlation is strong and negative also for Life Expectancy (-46%), Corruption Perception Index (-63%), GDP per capita (-55%), and share of internet users (-40%). All these have expected sign, and relevant magnitude. Gini Index and number of deaths for violence have a positive correlation, as expected. Also in this case the magnitude is particularly relevant (26.6% for the first and 22% for the second). The only fundamental risk determinant which seems not to be correlated in levels with the CRPs measure is the number of ACLED events. Situation looks very similar when turning to the Survey based CRP in Figure A14, which is not surprising given the strong correlation in levels between the two. As a conclusion, both CRPs measures seem to correlate quite well with all the fundamental risk determinants in levels. In other words, if a country A has an higher “fundamental risk” than country B, then country A is more likely to have an higher CRP than country B.

The question we have to ask ourselves now is the following: Is it sufficient for a risk measure to satisfy the above condition to be considered a “good” measure? In other words, is a risk measure good if it ranks consistently risk determinants? Suppose for a moment a positive answer. In other words, suppose we define a good risk measures whatever index is able to rank consistently in order countries with their risk determinants. Under this definition, GDP per capita is a very good risk measure. Indeed, as explored in subsections 3.4.2 and 3.4.3, income per capita is strongly correlated with all risk determinants, also in a meaningful way. Realistically, we need to go a bit further the mere GDP per capita to have a good risk measure. We need something

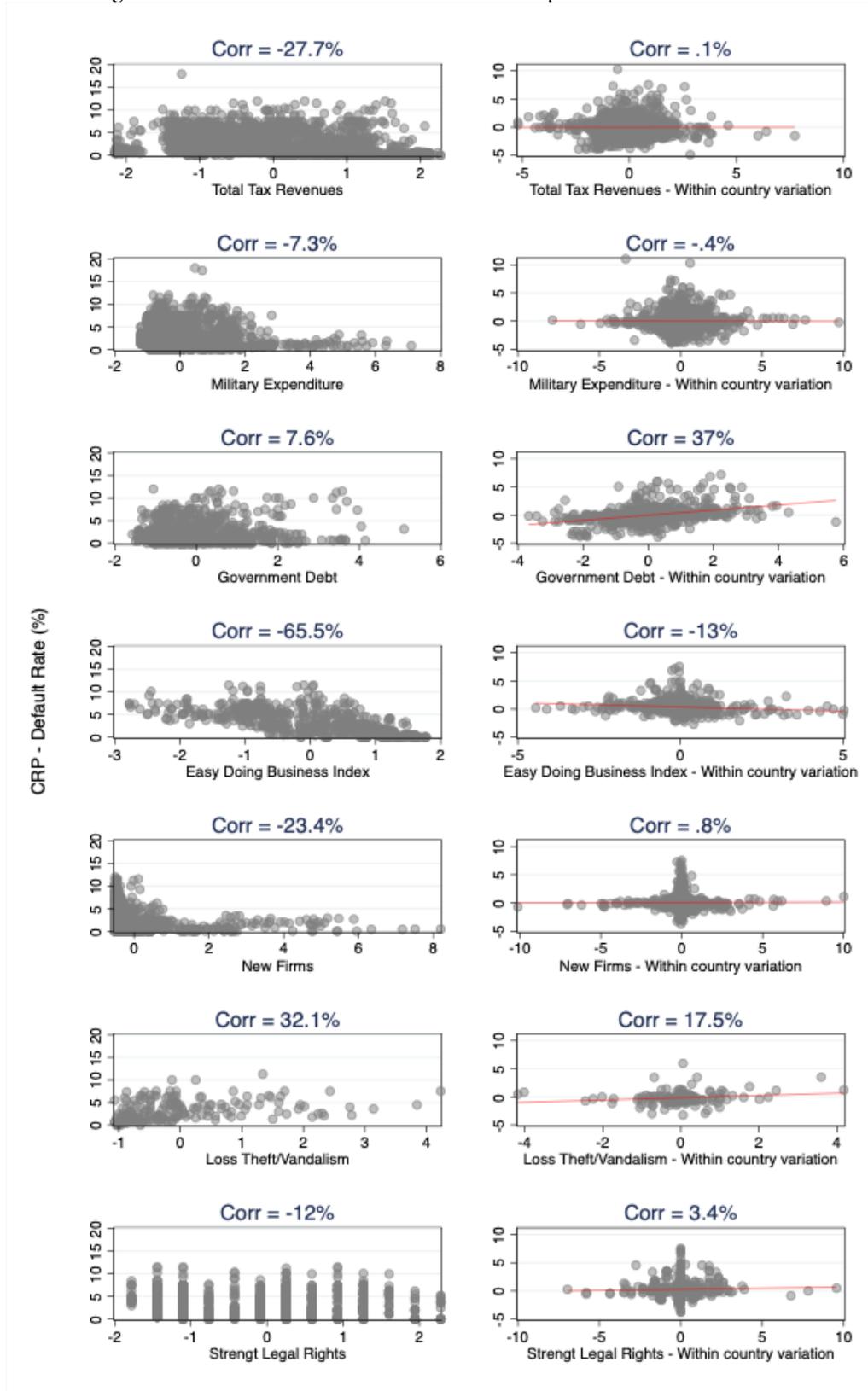
more detailed. Something more accurate. Hence, the answer to the previous question is not completely positive, nor negative. The ability of ranking consistently countries is a *necessary condition* to have a good risk measure. However, it is *not a sufficient one*. A measure that is unable to rank consistently cannot be a good measure. Nevertheless, a measure that ranks consistently is not necessarily good. Instead, a measure that deviates from the country average when a risk determinants do so, in a meaningful way, is a good risk measure. Hence, a sufficient condition to have a good measure is that it reacts positively to risk's increases, and negatively when risk decreases. When a country becomes riskier, the risk measure has to increase. When a country becomes safer, the risk measure has to decrease. For this reason, we turn to the within-country variation analysis.

Results of this analysis are summarized in column 2 of Figures 20 and A14. As one can see, using the within-country variation, the situation changes dramatically. Almost all correlations are quite low (below 10%), and the majority of them have also the wrong sign. We see a slight positive correlation between Life Expectancy and Default based CRP, probably due to the decrease in Life Expectancy some very rich countries are facing in recent years. The correlation between Corruption Perception Index and Default based CRP is of the correct sign, but the magnitude is far from being relevant (9.9%). The same can be said for the number of ACLED events (9.3%). This risk measure has the largest (in magnitude) correlation with the share of Internet users, although of the wrong sign (approximately 13%). Turning to the Survey based CRP does not change substantially results. The highest figures are with Life Expectancy and share of internet users, but with the wrong sign. All the other correlations are below 6%.

Both the Default and Survey based CRPs seems to satisfy the necessary condition to be a good risk measure (they rank consistently countries with their fundamental risk determinants). However, they do not seem to satisfy the sufficient condition (they do not increase when a country becomes “fundamentally” riskier, and vice-versa). However, this result can be driven by the long-run nature of these risk determinants. It is possible that over a short time period, looking only at the within-country level, we don’t have sufficient variation to investigate these correlations since fundamental risk determinants develops over a long time horizon. Hence, we turn to proximate risk determinants.

Figures 21 and A15 replicates Figures 20 and A14, respectively, for proximate risk determinants. As one can see, results from the first column of Figure 21 (Default based CRP) are consistent with the ones for fundamental risk determinants. Correlations are strong for almost all proximate determinants. This is especially true when we look at firm dynamics determinants: -65% for the easy doing business index, -23% for the number of new firms, 32% for profit loss due to theft or vandalism, -12% for the strength of legal rights. Correlational performance of the survey based risk measure is a bit poorer for proximate determinants, as shown in Figure A15, column 1. The correlation is strong and negative for the easy doing business index, but it is quite small for the number of new firms, and the profit loss due to theft and vandalism. Higher is instead the correlation with the strength of legal rights. Taking things together, the final result does not change looking at one version of the risk measure or the other: both seem to satisfy quite well the necessary condition for a good risk measure. Hence, also with proximate determinants, they are able to rank consistently countries and their proximate risks.

Figure 21: Correlations CRP Default Rate - proximate determinants



Notes: This figure presents scatter plots of Default based CRP with proximate determinants. Correlations in levels are shown in the first column. Within-country variation correlations in the second one, together with the a linear fit of the correlation in red.

However, also when we turn to within-country variation the situation does not change dramatically. As we can see in Figure 21, all correlations are very low when turning to within-country variation for the Survey based measure. Three notable exceptions. First, the strong positive correlation with Government Debt (37%). This is intuitive and will be explored much more in detail in what follows. The Default based CRP is a risk measured primarily based on the ability of the country to repay its debt. Therefore, it is obvious that there is a strong correlation with the debt amount. When a country accumulates more debt, there is a lower probability of repaying it, conditional on the fiscal structure, and thus an higher default based risk measure. This intuitive logical process is exactly what we observe in the data. Second, there is also a persistent correlation (17.5%) with profit loss for theft and vandalism. Although not sufficient, this is still a good news. As described in subsection 3.4.3 this is likely to be one of the most important proximate risk determinant. Third, the correlation with the easy doing business is still negative, above 10%, although the magnitude is significantly smaller than the one in levels. Also in this case the performance of the Survey based risk measure is slightly worse than the Default one. Indeed, also the correlations with profit loss due to violent events and easy of doing business are under the 10%. Thus the only strong correlation with this risk measure in the within-country variation is with government debt (23%).

The conclusions of this first analysis are straightforward. Both Default and Survey risk measures perform well in ranking countries according to their fundamental and proximate risks (necessary condition for a good risk measure). However, they both fail when we turn to explain the variation within countries over time. In other words, they don't increase when the risk determinant does so, with respect to the country average, and vice-versa (sufficient condition for a

good risk measure). It is worth mentioning that the Default based risk measure seems to work a bit better than the Survey one, since correlations in within-country variations are a bit larger for main determinants.

However, if these risk measure perform so poorly in satisfying the sufficient condition for a good risk measure, what does then explains their within-country variation? To answer this question we perform a very simple exercise: we regress the main risk determinants (the ones with the highest correlation) on both risk measures, using only the within-country variation, and we collect the R^2 for each regression. This is, indeed, a measure of the variance of the risk measure explained by the model, i.e. the risk determinant, in our case. Results are summarized in Tables 2 and 3 for the Default and Survey based measures respectively, column 1. We also replicate this analysis restricting the sample to the fourth quartiles of the GDP per capita distribution, columns from 2 to 5. The idea of this alternative exercise is trying to understand in which type of country each determinant is more relevant in explaining the CRPs' variations.

Table 2: Fraction Variance Explained (R^2) by determinant - CRP Default Rate

Determinant (within country)	Total	GDP p.c. 1q	GDP p.c. 2q	GDP p.c. 3q	GDP p.c. 4q
GDP p.c.	0,19	0,59	0,02	0,00	0,50
Life Expectancy	0,82	0,01	3,33	2,10	0,00
Internet Share	1,74	0,07	7,04	5,12	0,68
Total Tax Revenues	0,00	0,03	0,45	0,55	0,10
Loss Theft/Vandalism	3,01	13,06	1,05	0,64	23,62
Government Debt	13,67	25,79	13,14	9,42	26,12

Notes: This table shows the R^2 of the regression with dependent variable the Default based CRP, and independent one the risk determinant. All variables are in deviation from the country average. Column 1 shows the R^2 for the entire sample. Column 2-5 R^2 for the sample restricted to GDP per capita quartiles.

We start from the Default based CRP. As one can see from the first column, Government Debt is the single risk determinant explaining the highest proportion of variation of the risk measure (approximately 13.5%). All the other determinants explain less than 5%. Turning to the decomposition over the GDP per capita distribution, a strong polarization appears. Government debt explains a substantial portion of the CRPs' variations (one fourth) in both the richest and the poorest countries. While, instead, this is much lower for intermediate ones. An even stronger polarization appears looking at profit loss due to violent events. In the poorest, as well as the richest countries, the portion of CRPs' variance explained by this determinant is higher than 10%. However, this figures decrease dramatically to approximately zero in middle-income countries.

Table 3: Fraction Variance Explained (R^2) by determinant - CRP Survey Based

Determinant (within country)	Total	GDP p.c. 1q	GDP p.c. 2q	GDP p.c. 3q	GDP p.c. 4q
GDP p.c.	0,01	1,33	0,03	0,05	0,02
Life Expectancy	0,75	2,38	2,83	1,49	0,68
Internet Share	0,86	3,36	3,82	3,48	0,85
Total Tax Revenues	1,14	3,21	7,38	2,99	0,02
Government Debt	4,22	1,72	19,18	0,45	3,05

Notes: This table shows the R^2 of the regression with dependent variable the Default based CRP, and independent one the risk determinant. All variables are in deviation from the country average. Column 1 shows the R^2 for the entire sample. Column 2-5 R^2 for the sample restricted to GDP per capita quartiles.

As expected, figures are even lower when turning to Survey based CRPs in Figure 3. No determinant explains more than 5% of this risk measure, and this is virtually true also splitting the sample across the GDP per capita distribution. Nevertheless, Government debt seems always to be the most important explanatory factor. Two conclusions may be drawn from this R^2 analysis.

First, risk determinants seems to explain very little within-country variation of both the Default and Survey based risk measures. Second, the most important explanatory factor, if anything, seems to be government debt.

To test further this second conclusion, we run an horse-race between the most relevant risk determinants. In other words, we take all the relevant risk determinants (the ones with the highest correlations in Figures 20, A14, 21, A15), and we include them all in a regression with the CRPs as dependent variables. The idea is to test the significance of the single risk determinant, conditional on values for all the others, given the strong correlational structure between them. To further explore the role played by government debt, we run two different regressions, one excluding it, and one including it in the model. Results are summarized in Table 4. In columns (1) and (2) the dependent variable is the Default based risk measure. Column (1) presents the model without government debt, column (2) including this last determinant. The structure is the same for columns (3) and (4) where the dependent variable is the Survey based CRP.

Results are consistent between the two measures: in columns (1) and (3) some risk determinants show a coefficient that is statistically different from zero. This would be GDP per capita for the Default based, and Internet share for the Survey one. However, as soon as we include government debt in models (2) and (4), coefficients of the other risk determinants become smaller, and mostly not statistically different from zero. This means that government debt is actually the (only) most important explanatory factor of both CRP measures. The conclusion we can draw from this result is about the *type of risk* these indexes are measuring. Both indexes, and in particular the Default one, are measuring the debt repayment risk of the country. Indeed, they both

react to changes in the size of debt quite well, and this last one is the main determinant of their variation. Our goal, instead, is to measure the risk a private individual face when investing in it. These two risks are connected, but inherently different. As a result, both fail to react to changes in other risk determinants, sufficient condition to have a good risk measure.

Table 4: Correlations

Dep. Variable	(1) CRP Default Rate	(2) CRP Default Rate	(3) CRP Survey Based	(4) CRP Survey Based
Life Expectancy	0.234 (0.187)	-0.306 (0.231)	-0.100 (0.124)	0.0403 (0.155)
Internet Share	0.00996 (0.0141)	0.0331 (0.0217)	0.0496** (0.0200)	0.0123 (0.0131)
GDP p.c. (1000\$)	-0.131*** (0.0332)	-0.0492 (0.0388)	-0.00189 (0.0107)	0.0525* (0.0298)
Total Tax Revenues	0.0733* (0.0419)	-0.0538 (0.0569)	0.122 (0.0866)	0.0396 (0.0671)
Loss Theft/Vandalism	0.0697 (0.0831)	-0.414 (0.334)		
Government Debt		0.0424*** (0.0141)		0.0450** (0.0196)
Observations	124	51	338	202
R ²	0.836	0.839	0.802	0.847
Country FE	Yes	Yes	Yes	Yes

Notes: OLS estimation with high dimensional fixed effects. Standard error clustered at region level in parenthesis. ***, **, * = indicate significance at the 1, 5, and 10% level, respectively.

Four main conclusions can be drawn from this analysis:

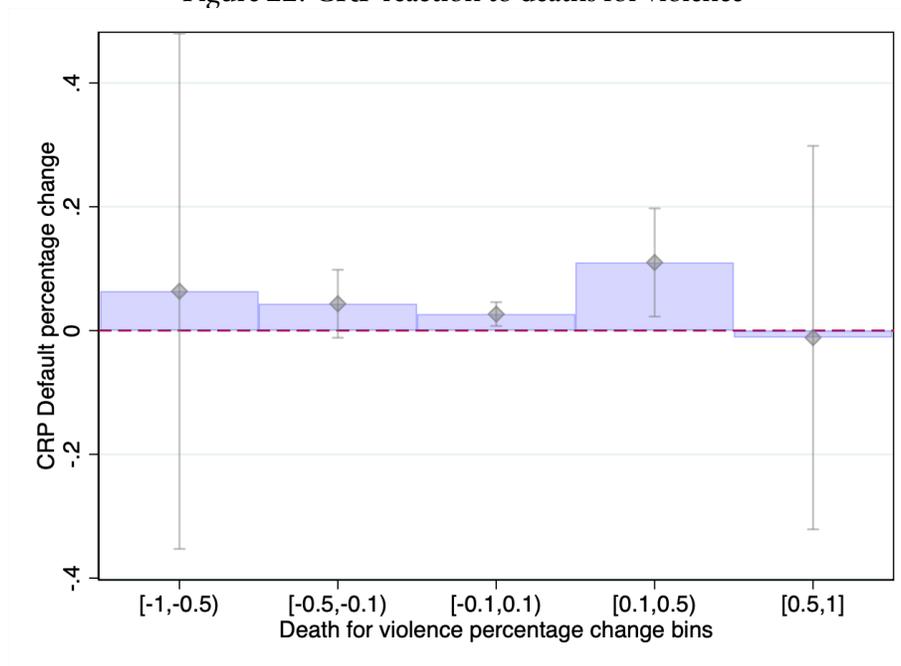
1. CRP's measures taken in consideration in this report (one Default and one Survey based) rank consistently countries with respect to their risk determinants, both the fundamental and the proximate ones. Hence, they satisfy the necessary condition for being a good risk measure: riskier countries have higher rates.
2. However, they don't satisfy the sufficient condition for being a good risk measure. Indeed, they don't react in a consistent way to risk deviations from the country mean. In other words, when a country becomes riskier, they don't necessarily increase, and vice-versa. Hence, when considering the general risk faced by a private individual when investing in the country, they are not good risk measures.
3. The Default based risk measure performs relatively better than the Survey one, as its correlation with important risk determinants is relatively higher, also when considering only within-country variation.
4. Why are they not particularly good risk measures? Because they are measuring a different risk. Both indexes measure the debt repayment risk of the country. Indeed, they react in a consistent way to deviations from the average of the size of the debt, this determinant explains a good portion of their variation, and it is their main explanatory factor.

As a result of these statements, we underline the need for a new risk measure, built specifically to measure the private investment risk, which will very likely vary at the sub-national level.

CRPs reaction to violence

In this last subsection, we analyse more in detail some limitations of the Default CRP measure. We focus on violence as risk determinants, and we directly study the risk measure reaction to changes in the determinant, rather than only looking at the correlation between the two. Finally, we look at three real world examples highlighting why we do not see significant reactions in the analysis.

Figure 22: CRP reaction to deaths for violence



Notes: This figure presents the percentage change in Default CRP across 5 bins of percentage change of share of violent deaths. 95% confidence interval shown.

As measure of violence, we take share of deaths due to violent events (in the Appendix, we replicate the analysis also using the number of ACLED events, and profit loss due to theft or vandalism and results are consistent). A good risk measure should *decreases* when the number of deaths decrease, and *increase* when the determinant does the same. Hence, we compute the

average percentage change of the Default CRP for 5 change bins of the risk determinant. By doing so, we can see how the risk measure react to (1) strong decrease in deaths, (2) decrease in deaths, (3) stable deaths, (4) increase in deaths, (5) strong increase in deaths. Results are summarized in Figure 22 (A16, A17 for ACLED and profit loss respectively).

As one can see, there is no reaction. All percentage changes are small, not statistically different from zero at the 95% confidence level, and not statistically different from each other across the 5 percentage change bins of the determinant. The same can be said using the alternative measures of violence. Hence, as concluded before, Default CRPs is not an appropriate risk measure as it does not react consistently to changes in risk determinants, i.e. violence in our case. Why is this the case?

To answer this question, we look at three real-world example, summarized in Figures 23, 24, and 25. In this graph, we plot two figures over time: (1) the share of violent deaths relative to the country average, and (2) the Default CRP relative to the world average. The idea of this exercise is exactly the same as before. We would like to see what happens to the Default CRP, with respect to worldwide trends, when we see a change in the share of violent deaths in a country. However, here we focus on three episodes, rather than working with averages. First, the Arab Spring in Egypt (Figure 23). This was a tumultuous period. However, it was not deeply violent. Indeed, as one can see from the graph, during the Arab Spring, there is a mild 10% increase in the share of deaths with respect to the country average. On the other hand, the uncertainty of the period made the risk measure overreact with a 110% increase relative to the worldwide average as the Spring begun. Second, the start of the Ukraine-Russia dispute in 2014 (Figure 24). In this case

we can see how the reaction of the risk measure was quantitatively similar to the deviation of the risk determinant. To a 39% increase in deaths, we see a 36% increase in the Default CRP. Third, the spike in violence in Lebanon in 2017 (Figure 25). In the figure, one can clearly see the spike in violence (+70%), although temporary. In this case we see almost no reaction of the CRP measure. As a conclusion, the average results of no reaction masks considerable heterogeneity. Sometimes the risk measures react accordingly (e.g. Ukraine), sometimes they overreact (e.g. Arab Spring), and sometimes they barely react (e.g. Lebanon). As mentioned in the previous section, this is probably due to the fact that these measures are not tailored on this specific risk, but rather on the country debt one.

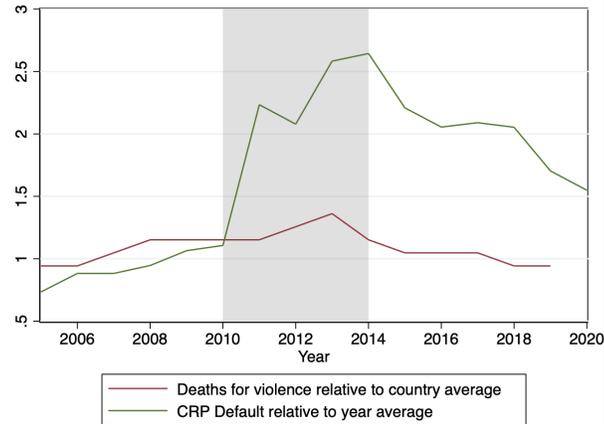


Figure 23: Egypt

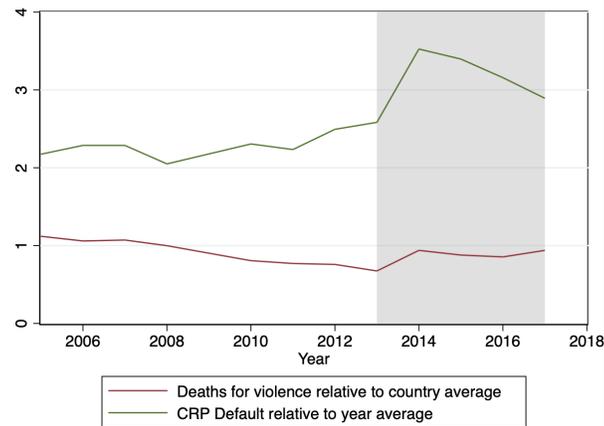


Figure 24: Ukraine

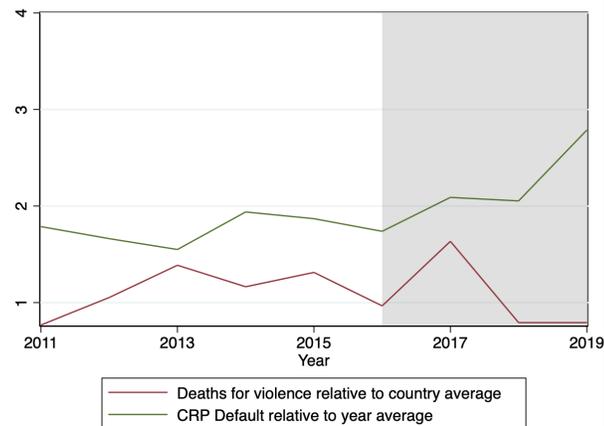


Figure 25: Lebanon

Notes: This figure presents three real world examples of CRP reaction to change in violence. In red we plot the share of violent deaths relative to the country average. In green we plot the Default CRP relative to the world average in that year. Figure 23 refers to the Arab Spring in Egypt. Figure 24 to the start of the dispute between Ukraine and Russia. Figure 25 to a spike in violence in Lebanon.

References

- Andrade, S. C. (2009). A model of asset pricing under country risk. *Journal of International Money and Finance*, 28(4), 671–695.
- Bekaert, G., Harvey, C. R., Lundblad, C. T., & Siegel, S. (2011). What segments equity markets? *The Review of Financial Studies*, 24(12), 3841–3890.
- Bekaert, G., & Mehli, A. (2019). On the global financial market integration “swoosh” and the trilemma. *Journal of International Money and Finance*, 94, 227–245.
- Clark, E. (2018). Terminology and history of country risk. In *Evaluating country risks for international investments: Tools, techniques and applications* (pp. 3–20). World Scientific.
- Damodaran, A. (2003). Country risk and company exposure: theory and practice. *Journal of applied finance*, 13(2).
- Damodaran, A. (2022a). Country risk: Determinants, measures and implications-the 2022 edition.
- Damodaran, A. (2022b). Equity risk premiums: Determinants, estimation and implications-the 2022 edition. *mimeo*.
- Dimson, E., Marsh, P., & Staunton, M. (2022). Credit suisse global investment returns yearbook 2022: Summary edition. *Credit Suisse Research Institute*.
- Dolde, W., Giaccotto, C., Mishra, D. R., & O’Brien, T. J. (2011). Foreign exchange exposure and cost of equity for us companies: local versus global capm. *Journal of Applied Finance (Formerly Financial Practice and Education)*, 21(1).
- Dunsch, F., Evans, D. K., Macis, M., & Wang, Q. (2018). Bias in patient satisfaction surveys: a threat to measuring healthcare quality. *BMJ global health*, 3(2), e000694.
- Fernández, P., Aguirreamalloa, J., & Acín, I. F. (2015). Required market risk premium among

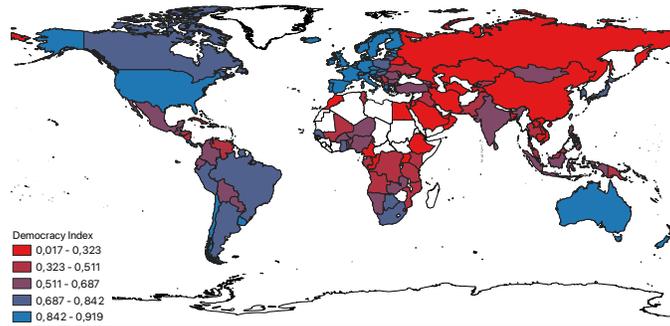
- countries in 2012. *The Journal of Finance and Data Science*, 1(1), 42–54.
- Fernandez, P., de Apellániz, E., & F Acín, J. (2020). Survey: Market risk premium and risk-free rate used for 81 countries in 2020.
- Fernandez, P., García, T., & F Acín, J. (2022). Survey: Market risk premium and risk-free rate used for 95 countries in 2022.
- Fiorese, A. (2022). Emerging markets company valuation: Investigation on country risk.
- García-Sánchez, J., Preve, L., & Sarria-Allende, V. (2010). Valuation in emerging markets: A simulation approach. *Journal of Applied Corporate Finance*, 22(2), 100–108.
- Goedhart, M. H., & Haden, P. (2003). Are emerging markets as risky as you think? *McKinsey on Finance*, 28(4), 7–12.
- Graham, J. R., & Harvey, C. R. (2018). The equity risk premium in 2018. *mimeo*.
- Halko, M.-L., Kaustia, M., & Alanko, E. (2012). The gender effect in risky asset holdings. *Journal of Economic Behavior & Organization*, 83(1), 66–81.
- Karolyi, G. A., & Stulz, R. M. (2003). Are financial assets priced locally or globally? *Handbook of the Economics of Finance*, 1, 975–1020.
- Koller, T., Goedhart, M., Wessels, D., et al. (2010). *Valuation: measuring and managing the value of companies* (Vol. 499). John Wiley and sons.
- Krapf, A., & O'Brien, T. J. (2016). Estimating cost of equity: do you need to adjust for foreign exchange risk? *Journal of International Financial Management & Accounting*, 27(1), 5–25.
- Pukthuanthong, K., & Roll, R. (2009). Global market integration: An alternative measure and its application. *Journal of Financial Economics*, 94(2), 214–232.
- Roggi, O., Giannozzi, A., & Baglioni, T. (2017). Valuing emerging markets companies: New

approaches to determine the effective exposure to country risk. *Research in International Business and Finance*, 39, 553–567.

Welch, I. (2000). Views of financial economists on the equity premium and on professional controversies. *The Journal of Business*, 73(4), 501–537.

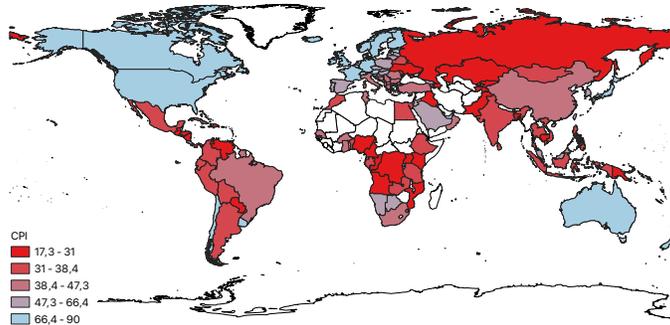
Appendix

Figure A1: Fundamental determinants - Democracy Index



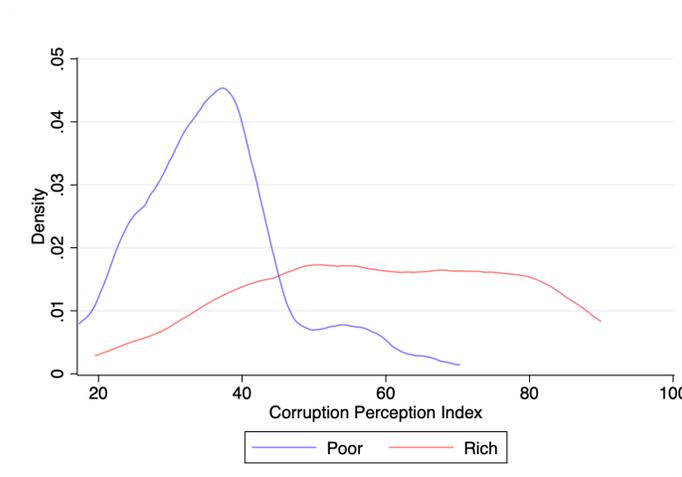
Notes: This figure presents the geographical distribution of the average of democracy index over time.

Figure A2: Fundamental determinants - Corruption Perception Index



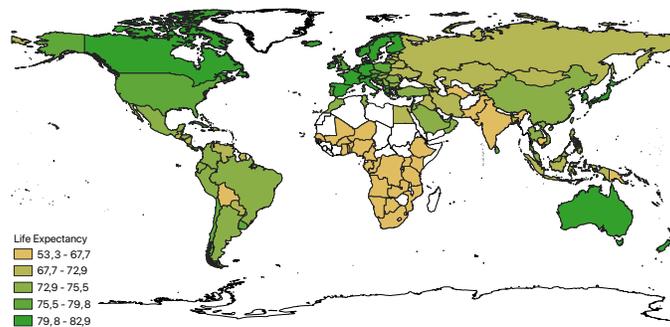
Notes: This figure presents the geographical distribution of the average of corruption perception index over time.

Figure A3: Density - Corruption Perception Index



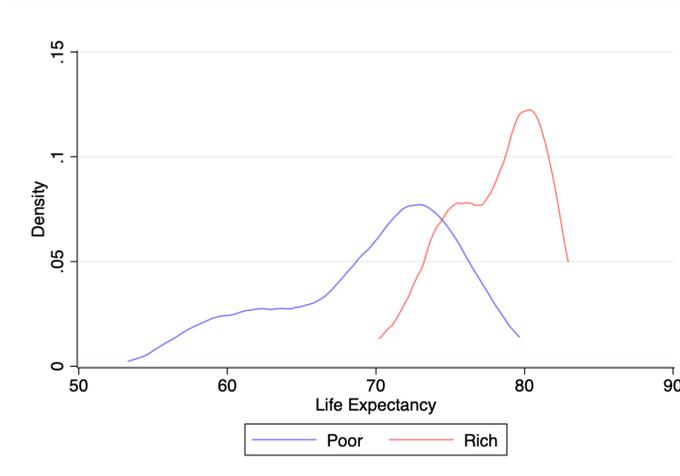
Notes: This figure presents the distribution of the Corruption Perception Index for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower than the total average.

Figure A4: Fundamental determinants - Life Expectancy



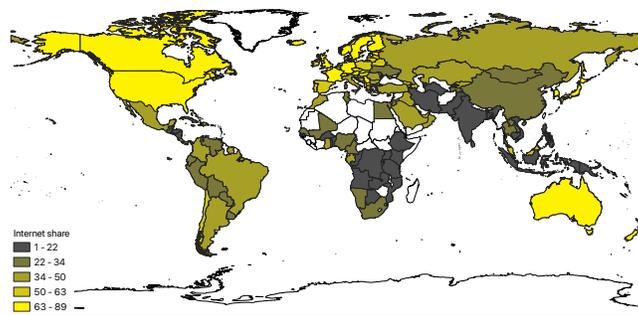
Notes: This figure presents the geographical distribution of the average of life expectancy over time.

Figure A5: Density - Life Expectancy



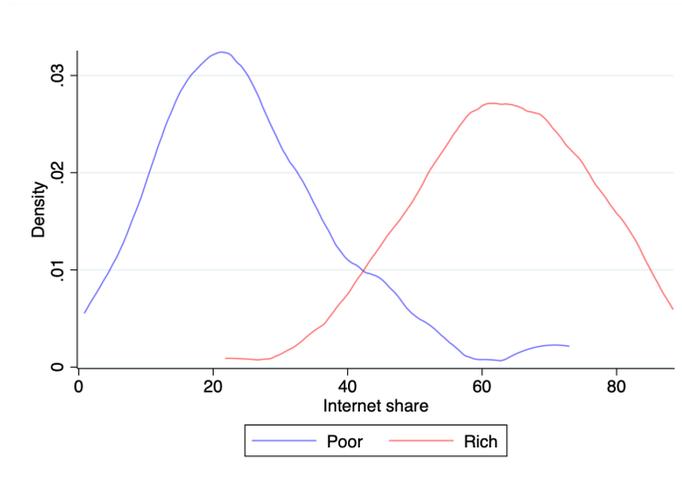
Notes: This figure presents the distribution of Life Expectancy for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower than the total average.

Figure A6: Fundamental determinants - Internet share



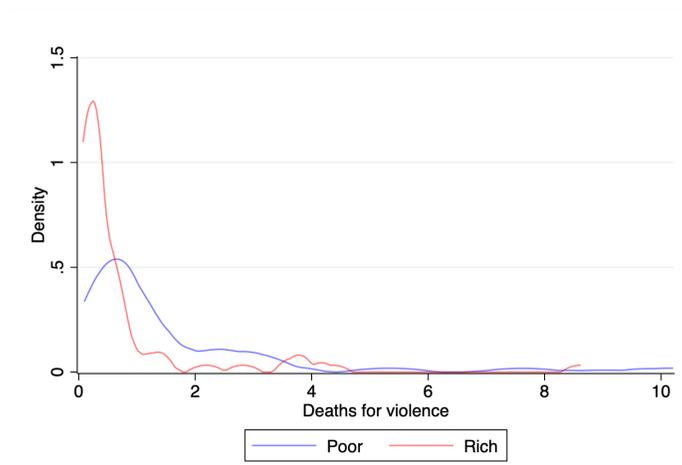
Notes: This figure presents the geographical distribution of the average of share of internet users over time.

Figure A7: Density - Internet share



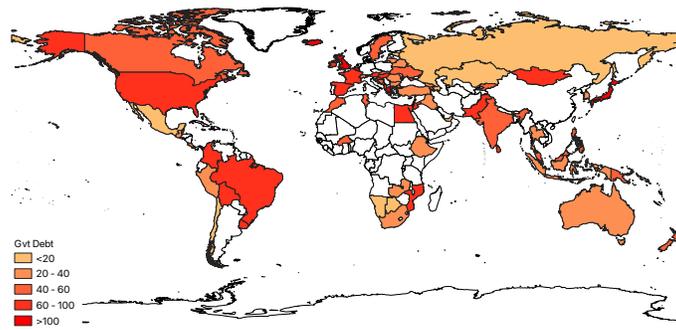
Notes: This figure presents the distribution of the share of internet users for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower then the total average.

Figure A8: Density - Violent Deaths



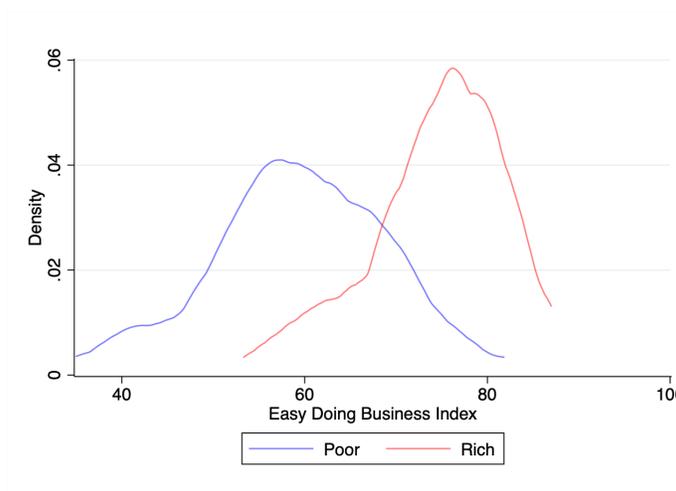
Notes: This figure presents the distribution of the share of violent deaths for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower then the total average.

Figure A9: Proximate determinants - Government Debt



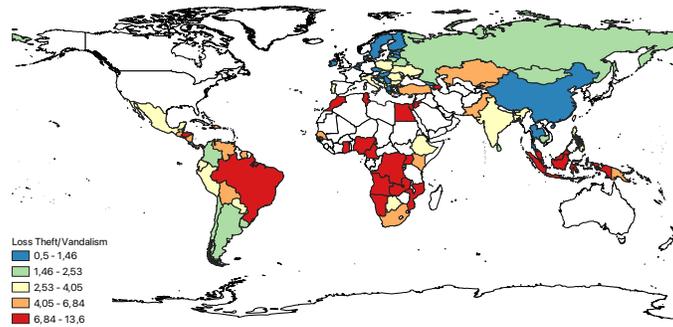
Notes: This figure presents the geographical distribution of the average of government debt over time.

Figure A10: Density - Easy Doing Business Index



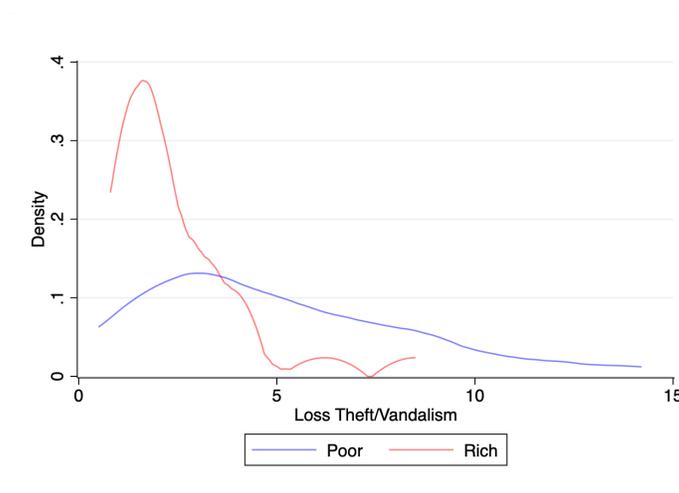
Notes: This figure presents the distribution of the Easy Doing Business Index for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower than the total average.

Figure A11: Proximate determinants - Loss Theft/Vandalism



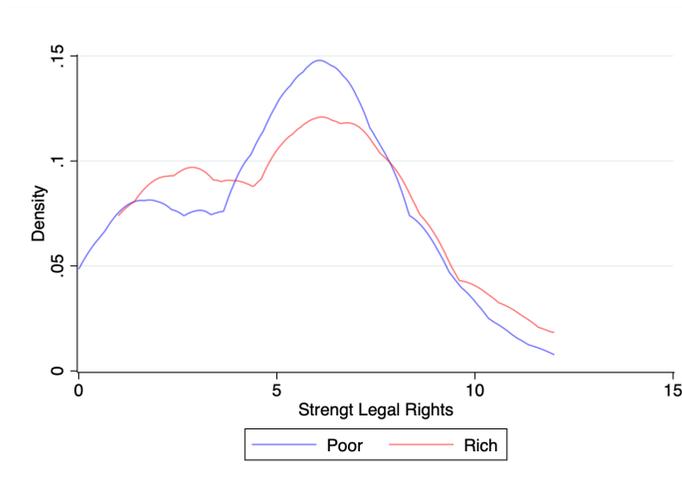
Notes: This figure presents the geographical distribution of the average of profit loss due to theft or vandalism over time.

Figure A12: Density - Loss Theft/Vandalism



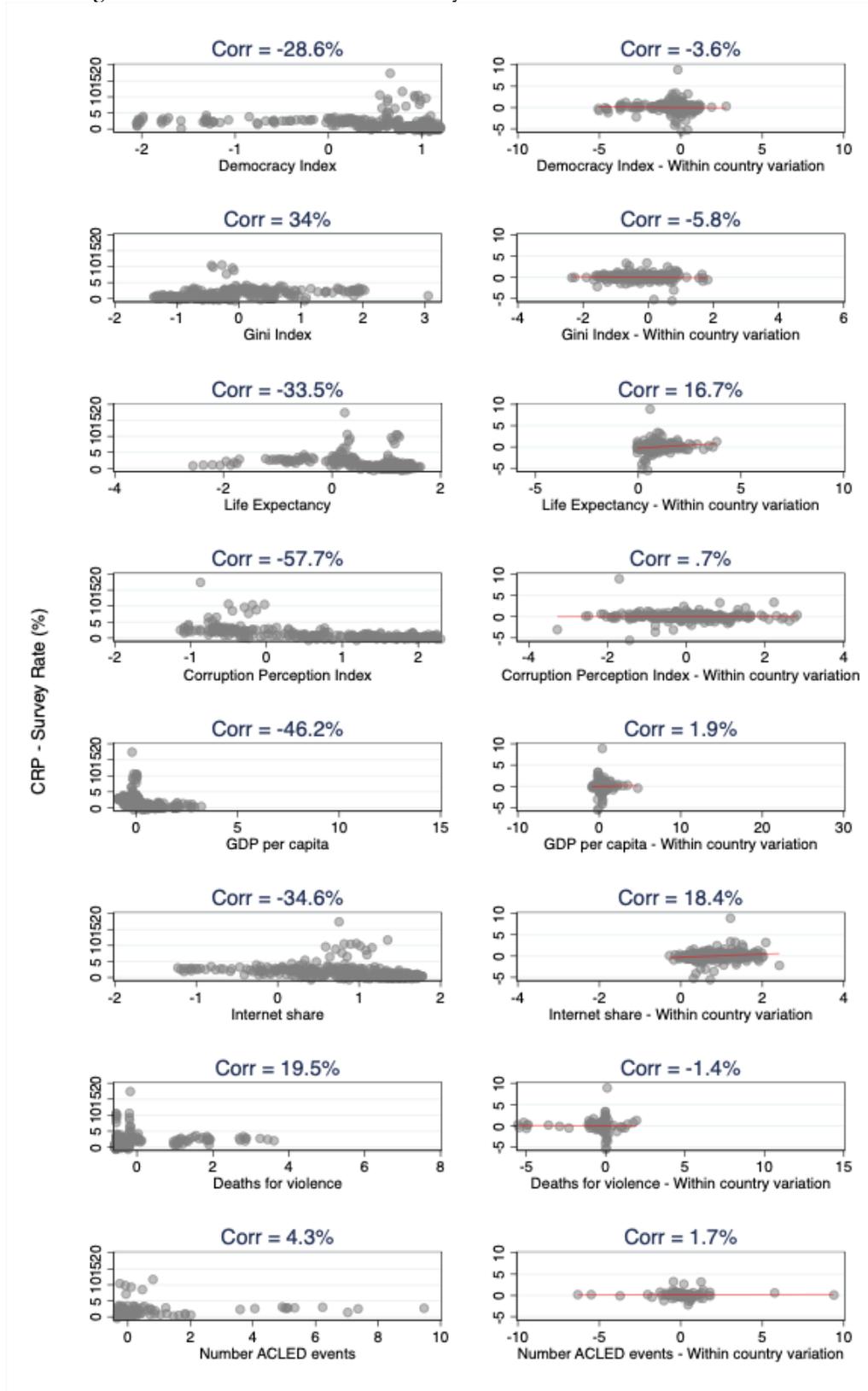
Notes: This figure presents the distribution of the profit loss due to theft or vandalism for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower then the total average.

Figure A13: Density - Strength Property Rights



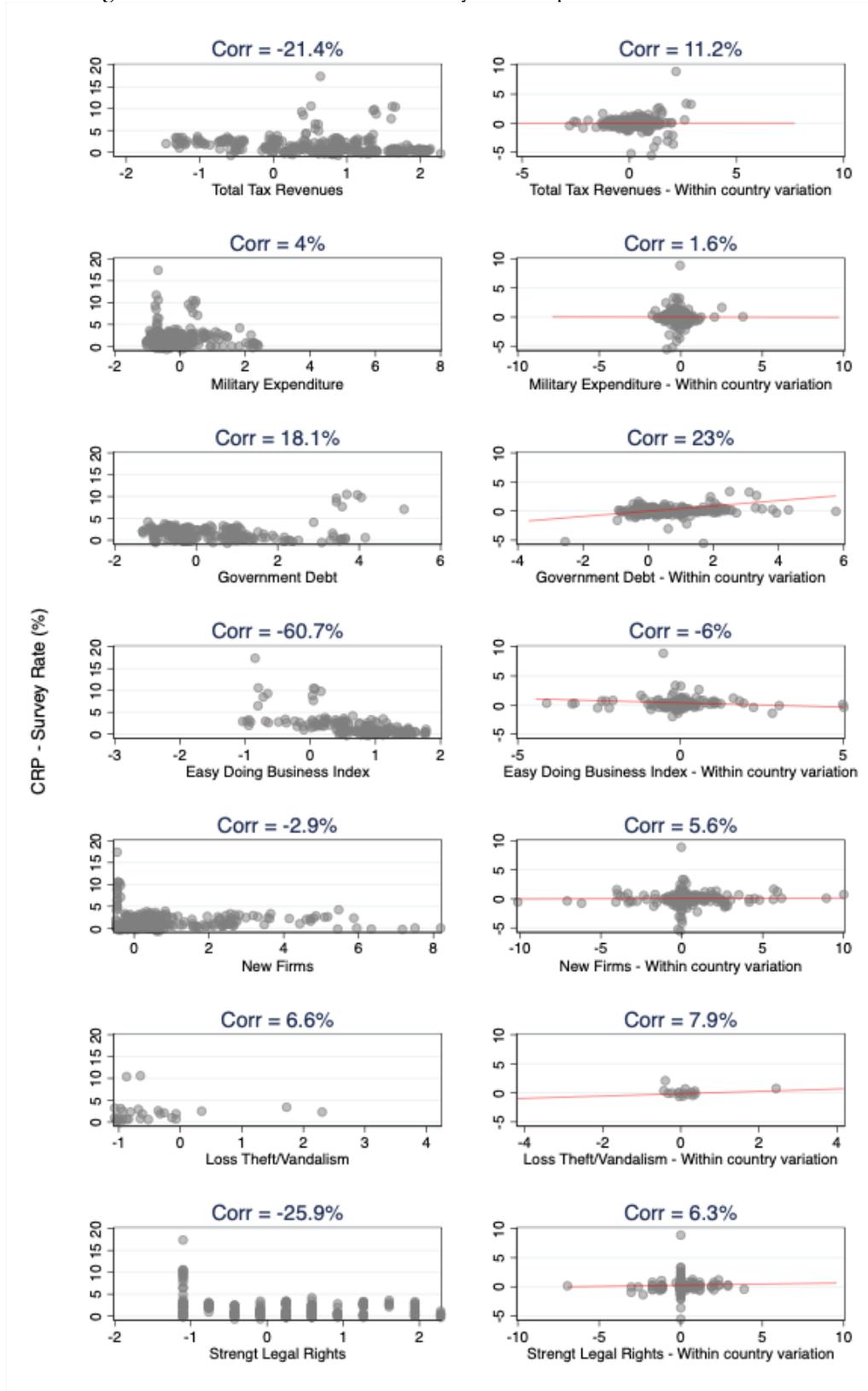
Notes: This figure presents the distribution of the strenght of legal rights for two categories of countries: poor and rich. In particular, we define a state to be poor if its average GDP per capita is lower then the total average.

Figure A14: Correlations CRP Survey Rate - fundamental determinants



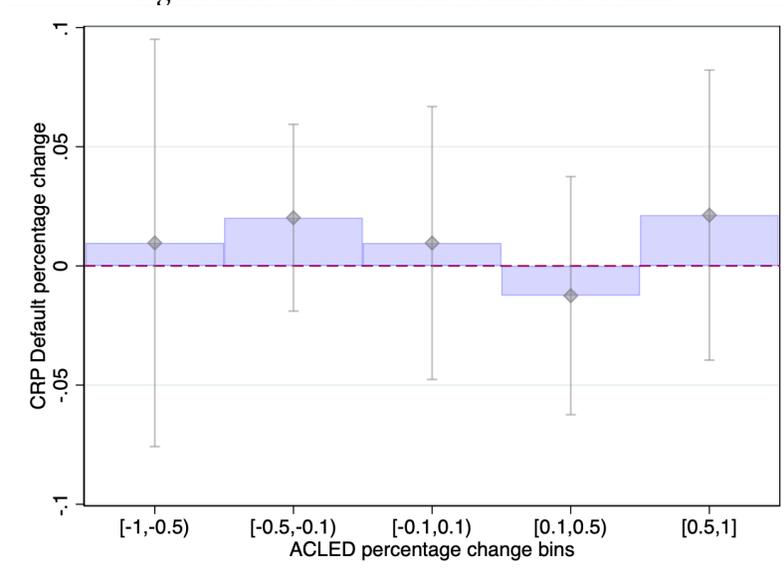
Notes: This figure presents scatter plots of Survey based CRP with fundamental determinants. Correlations in levels are shown in the first column. Within-country variation correlations in the second one, together with the a linear fit of the correlation in red.

Figure A15: Correlations CRP Survey Based - proximate determinants



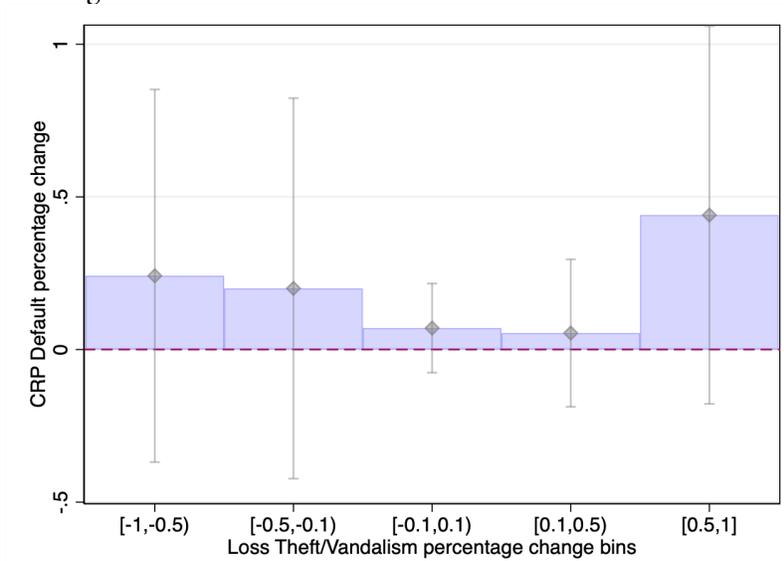
Notes: This figure presents scatter plots of Survey based CRP with proximate determinants. Correlations in levels are shown in the first column. Within-country variation correlations in the second one, together with the a linear fit of the correlation in red.

Figure A16: CRP reaction to ACLED events



Notes: This figure presents the percentage change in Default CRP across 5 bins of percentage change of number of ACLED events. 95% confidence interval shown.

Figure A17: CRP reaction to loss due to theft/vandalism



Notes: This figure presents the percentage change in Default CRP across 5 bins of percentage change of profit loss due to theft or vandalism. 95% confidence interval shown.