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RESEARCH ARTICLE

Do Social Factors Contribute to Sovereign (Country) Default Risk Premium?

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ABSTRACT

More and more research has indicated the importance of incorporating ESG factors into key financial management decisions. Social factors in particular are understood to be an indication of overall strength of national wellbeing and hence credit resilience. Therefore, with this paper, we examined initially the role of specific macroeconomic factors into pricing the sovereign credit default swaps (S-CDS). We then included into our model certain factors that collectively indicate a country's overall social performance. Subsequently, we explored for any variation in findings by segregating countries across various income levels and regional classifications. With this paper, we intend to guide national governments on how they can benefit from lower borrowing costs by simply improving their social indicators. Our findings confirm that some, not all, social factors do play a role in sending signals to financial markets to price the credit default spreads for sovereign borrowers. Hence, national governments and policy makers can prioritize improving their social indicators given their respective individualities.

1. INTRODUCTION

The issuance of debt in global financial markets is one of the prime sources of funds for national governments. There can be many reasons to do so e.g., i) to bridge any financing needs, ii) to fund infrastructure projects, iii) to manage their cashflows, iv) to top-up foreign currency reserves, or v) to take advantage of prevailing market rates. Given the country credit profile, reflected in sovereign ratings, institutional investors and other market players invest in sovereign bonds as per their risk appetite, portfolio allocations and performance targets. They either hold these securities for trading intent in order to benefit from short-term capital gains or to hold on till maturity to generate stable income. The former strategy is when investors expect material changes in the country's risk profile in the near future, causing movement in bond prices whereas the later strategy is adopted when the issuing country is deemed resilient to market shocks in medium to long-term horizon. In either case, investors and participants in the global financial markets do monitor closely any changes in the countries' macroeconomic factors that could lead to changes in their risk profiles both at the time of pricing sovereign bonds and quantification of desire risk premia (Bernoth & Erdogan, 2012), as well as in their ongoing portfolio risk management and rebalancing.

It is very common practice for a particular risk averse bond investor to purchase credit default swap (CDS) in order to protect themselves from any potential losses that would be incurred otherwise in case the issuing country defaults. It is because the CDS spreads are determined in almost real time by market participants on the basis of their perceptions about changes in inherent credit risk profile of the issuer as well the overall demand and supply, these CDS spreads provide a dynamic quantification of sovereign default risk as opposed to the credit ratings that are assigned by external credit rating agencies (ECRAs) on the basis of period end macro factors.

Quantification of sovereign default risk is a complex yet pivotal topic in the context of international finance and economic policy making and hence it has been the central topic in various past and current studies and will remain important for future research as well. It is important from the perspective of both the investors as well as the bond issuers i.e., the national governments in case of sovereign bonds, since it serves as a key factor for determining the borrowing cost and market yield for the underlying bond. For this reason, it is beneficial to national governments to take whatever steps that could improve credit risk perception by not just managing the macroeconomic variables but also by sending out positive reinforcing signals to the markets through other means.

Through numerous studies, it is almost established that macroeconomic factors do serve as the foundation for any credit risk assessments. Hence nearly all external credit rating agency (ECRA[1]) utilize some form of scorecard for assigning credit ratings to countries on the basis of weighted scores on macro factors (Brown et al., 2015). These weights are typically derived using multifactor regression analyses, calibrated against historically observed default instances or probabilities of default. While the macroeconomic factors contribute to the long-run changes to credit risk (Telila, 2023), CDS spreads also account for short to medium term variations stemming from other nonconventional variables and indicators. Amongst others, ESG indicators are perceived to play some role toward credit risk by practitioners and academics.

From the broader ESG framework, we decided to focus on the social aspects of a country and identified five (5) social performance indicators to test, alongside key macro factors, for their relevance in determining credit default swap (CDS) spreads. Intuition is that social factors can affect CDS spreads of the issuing country and whether any differences exist amongst countries depending on their national income or regional location.

Findings of this study may help the national governments in devising policies to target improvements in certain social indicators for not just political but for also financial reasons.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

Behavior studies in the domain of financial management and investments suggest that investors are selective in their investment choices. Since the capital they own is scarce and costly (Morelli et al., 2021), they do have some preference for risk and return trade-offs as conceptualized by the Modern Portfolio Theory (MPT) and Capital Asst Pricing Mode (CAPM). It is because of this intrinsic investor behavior; a phenomenon is observed in financial markets which is called “capital flight-to-quality”, where the investors would move, if viable, their investments towards those financial instruments that offer them better reward per unit risk (Vayanos, 2004). Sensitive and well-informed investors would employee complex tools, models and methodologies to be able to sense any changes to the credit risk profile embedded in their portfolio and devise portfolio rebalancing strategies for situations where their risk tolerances can potentially breach. Therefore it is utmost important for national governments and policymakers to stabilize the market assessed country default risk if they wish to keep international investors from fleeing their economy (Ordoñez et al., 2017).

[1] S&P Global, Moody's, Fitch.

While there are many macro variables that are decent candidates for credit rating models, the factors that relate to the economic activity of a country, the magnitude of international trade the country has with its counterparts, capital flows into the country's economy and the size of a country's foreign currency reserves are often found to perform well in predicting shifts in credit profile and alerting of default events.

Amongst the fundamental metrics for measuring economic activity of a country is Gross Domestic Product (GDP) which is also the first measure frequently considered for credit scoring (Landefeld et al., 2008). Some related measures that are also found good indicators for credit worthiness include GDP per Capita (Dreher et al., 2021), and GDP Growth rate (Mcconnell et al., 1999). While the former indicates the overall wellbeing of households in a country, later shows the growth in economic activity instead of its size. Both are easier to compare across countries as against GDP itself.

International trade is often gauged using indicators like net trade in US dollars (Alshubiri et al., 2020), exports to GDP ratio and current account balance (CAB) as percentage of GDP etc. which are some of the key measures reflecting how well a country is integrated with its trading counterparts and global economy overall.

Last but not least, the debt repayment capacity of any country is curtailed by the size of its reserves hence parameters such as import coverage of foreign exchange (FX) reserves is an important variable. This is because any outstanding debt on a country must be paid out of its surplus reserves net of its necessary imports.

As indicated already, macroeconomic factors and their changes are believed to be strongly correlated with a country's creditworthiness and default probability therefore all prominent rating agencies such as Fitch ratings, Standard and Poor's, Moody's etc., all use macro variables into their country risk rating models (S&P, 2013, 2017). Countries that show improving or stable economic indicators are perceived as safer bets for investment whereas economies with uncertain and volatile socio-economic realities and inconsistent national policies are considered risky by investors and hence they demand a higher rate of return on their investments leading to higher borrowing costs for the bond issuing country.

When it comes to pricing risk for any issuer, there are two ways to do it. Market based risk premia vs rating-based risk premia. What differs these is that market-based risk premiums are more sensitive to any news, signals and perceptions that get spread quickly in the markets and get incorporated in demand and supply for sovereign bonds leading to changes in yield. That is why market-based risk premia such as CDS spreads are found to convey accurate and timely information about changes in the underlying country's risk of default (Augustin, 2018). Due to its close connection with sovereign default risk, market participants often refer to changes in Credit Default Swap (CDS) spread of a country as a proxy to changes in default risk of that country (Ams et al., 2019; Telila, 2023). This is because CDS spread functions similar to a typical insurance premium that is negotiated between well-informed investors and CDS sellers for protection against losses from sovereign default; lower the perceived risk, lower the CDS spread and vice versa.

What is similar however between CDS spreads and credit ratings is that CDS as well encapsulates the 1-year probability of default of the bond issuer (Ribeiro et al., 2017) and measures purely the inherent credit risk and excludes risks such as interest rate risk and liquidity risk (Andres et al., 2021) which are otherwise captured by other market based risk measures such as bond prices and yields. In precise terms, CDS spreads of a country gets priced on the basis of the overall assessment of any country's macroeconomic fundamentals and their sensitivity against various shocks; both systemic and idiosyncratic (Beirne & Fratzscher, 2013). Therefore, rating agencies often recommend incorporating market-determined estimates i.e., CDS spreads into credit rating systems as early warning indicators (EWIs) for any potential or forthcoming credit deterioration and rating downgrades (Colozza et al., 2022).

Besides conventional risks, Environmental, Social, and Governance (ESG) risk factors are well recognized (Pollard, 2019). Some studies found that CDS spreads tend to be lower for countries that demonstrated better ESG performance (Hübel, 2022) while others found inconclusive results (Anand et al., 2023; Capelle-Blancard et al., 2019; Hübel, 2022) hence leading to an ongoing debate in academic circle as to whether the ESG risks are relevant into the broader risk management framework or not; particularly in the case of sovereign default risk. This is because sovereign default risk is a complex and multifaceted topic that requires various quantitative as well as qualitative variables and their sensitivities to systemic and idiosyncratic shocks to be considered. Nevertheless, ESG risks warrants proper assessment (Jeff et al., 2018) and incorporation into business decisions (Ahmed et al., 2018; Friede et al., 2015).

Within the ESG Framework, social factors are more reflective of a country's overall well-being, inclusiveness and equity and therefore relate to its long-term sustainability hence warranting adoption of certain control mechanisms (Ahmed et al., 2018). Under one study, a bidirectional causation was noted between social factors and economic growth (Ho et al., 2019) which then relates to the country default risk. Other studies found a non-linear relationship between literacy and economic growth as it leads to innovation (Maneejuk & Yamaka, 2021) and research and development with GDP per capita (Gyedu et al., 2021). Life expectancy and health conditions also play a role towards economic growth and income distribution (W. Luo & Xie, 2020) with life expectancy also lowering the disaster risk (Egawa et al., 2018) that goes into broader default risk. Refugee influx and immigration in one study shown a direct negative effect on economic growth (Kouni, 2018). Which may be partially due to the effect of remittances that are sent out of the host country's economy (Wellalage & Locke, 2020). Immigration, if causing increase in population density, may even aid in lowering default risk (Navarro-Galera et al., 2017) in both short- and long-run (Baloch et al., 2017).

More obvious is the relationship between unemployment rate and economic growth (Baloch et al., 2017) with the reverse relation also being true since growth results in more employment opportunities (Soylu et al., 2018). In fact, default risk premia and credit spreads are seen to have strong response to unemployment rates (Bai, 2021). Labor force participation (Ul Haque et al., 2019) and its productivity are also identified as determinants of country default risk particularly for emerging economies (Parnes, 2023). Additional social factors such as literacy rate (Schwerdt et al., 2020) and human development index, which are both closely related measures, also contribute to economic growth (Wijaya et al., 2021). Some scholars went deeper and found internet literacy as contributor to economic growth (Widarni et al., 2022). Hence ESG factors in general and social factors in particular can be considered as key drivers for credit (default) risk (Calderón et al., 2004).

This concept of improving socio-economic prosperity and sustainability is not new but rather goes back many decades. With the creation of the World Bank in 1944, global governments jointly started a new category of financial institutions called Multilateral Development Banks (MDBs) or Multilateral Lending Institutions (MLIs) with this very objective (Bresser-Pereira & Bechelaine, 2019; Shelepov, 2017; Zhao et al., 2019). The term Corporate Social Responsibility (CSR) was first introduced by Howard Bowen (Bowen, 1953) that became central discussion topic amongst businesses during 1970 (Friede et al., 2015) leading to specific implementable actions for CSR (Bowen et al., 2013). ESG as a term was coined officially by United Nations and International Finance Corporation (IFC) 2004 report "Who Cares Wins" (McIntyre, 2015).

There are some findings that show developing countries performing relatively lower on ESG parameters (Singhania et al., 2023; Singhania & Saini, 2023) that could be curtailing their growth potential (Usman et al., 2022) and elevating their default risk. This may be because either they lack the resources or the will to invest towards ESG targets. That is why studying differences due to income and region may be intuitive.

Some fundamental theories that explain the interaction between risk management and investor behavior with the economic growth, default risk and risk pricing involve the modern portfolio theory (Fabozzi et al., 2002) and endogenous growth theory (Levine, 1997). When it comes to the sovereign default risk, factors that contribute towards creditworthiness of any country can vary significantly given the heterogeneity and differences that exist between countries such as state of economy, factors of production, level of endowment etc. For developed countries technological innovation, skilled immigration, trade partnerships, and value chain integration would matter more whereas, for developing countries infrastructure development, agricultural productivity, industrialization, workers working abroad, investment and remittances etc. will be important. A lot may depend on social factors that can make the effects of such factors better or worse and subsequently contribute towards sovereign default risk.

In short, the national governments need to be convinced that any cost for being socially responsible may be largely compensated from the savings in their borrowing costs (Azmi et al., 2021) since social factors within the broader ESG framework are noted to play some role in improving sovereign (country) risk profile together with macroeconomic factors. However, which social factors to be considered in credit risk assessment is still a topic of debate which is presently far from its conclusion.

2.1. Research hypothesis

For the purpose of this study, some well-known and frequently adopted macroeconomic variables are selected based on their relevance to sovereign (country) default risk as per the available literature. From the World Bank data sources, a number of social indicators are also obtained. We began analyzing the linear relationship between the selected macroeconomic factors and country credit default swap (CDS). This forms our baseline model for this paper.

Once we fixed our baseline model, our first hypothesis is to test each of the chosen social indicators into the model, one at a time and to test its incremental effect on the baseline model. Since multicollinearity is expected amongst social factors, we deliberately avoided adding more than one social factor into the model at a time.

Hypothesis (H1): Individual social factors have a statistically significant influence on a country's CDS (C-CDS) spread.

Subsequently, for the purpose of confirming any differences amongst countries with different income and regional classifications, we segmented our data using World Bank classifications of Income Groups and Regional Groups. By doing so, we transformed our hypothesis 1 into two further hypotheses as follows.

Hypothesis (H2): Individual social factors have a statistically significant influence on a country's CDS (C-CDS) spread, with significant differences existing between countries across different income groups.

Hypothesis (H3): Individual social factors have a statistically significant influence on a country's CDS (C-CDS) spread, with significant differences existing between countries across different geographic regions.

3. DATA AND METHODOLOGY

The data used in this paper is obtained from two sources. Bloomberg is used to collect data on sovereign credit default swap (C-CDS) spreads. We focused mainly on the five-year CDS spread which is often used in literature and is in general more accepted amongst practitioners. Country CDS spread is the main response (explained) variable for this study. It is worth noting that while CDS spread is available on daily frequency but for our study only the year end CDS spreads are used. This is because we needed to test our response variable against the selected macroeconomic variables whose data is

available on yearly frequency at World Bank's databank. The dataset spans from 2000 to 2022 since 2023 data is not yet provided by databank.

Since the subject of our study is countries, it is important to start off with the full list of countries in the world. Due to geo-political issues and border disputes between countries, there is no globally accepted list of countries available. However, the World Bank provides data for two-hundred and eighteen (218) countries. Out of which we managed to obtain credit default swap (C-CDS) spreads for only eighty-four (84) countries from Bloomberg. This may be indicating that remainder countries either do not issue sovereign bonds or they do not have market traded CDS spreads due to some reason outside scope of this study. Even for countries that do have CDS data available, it is only available for a limited number of years. This makes our dataset unbalanced panel.

Along with providing data, the World Bank also offers its own classification of countries by Income Groups and Regional Groups; criteria for both classification is transparent and well documented on World Bank's website. We utilized the same classification with minor modification where we combined the Upper Middle Income, Lower Middle Income and Lower Income Countries together in single group and seven regional groups are mapped to four regions based on their geographic proximity. This mapping is done mainly to avoid running the model on a small number of data observations for some groups. Tables 1 and 2 illustrate this mapping.

Table 1: CDS Observations grouped by income group

Category	Revised	# Countries	CDS Obs.		Weights	Has CDS	Weights
High Income	High Income	83	734	734	38%	45	54%
Upper Middle Income	Upper Middle Income, Lower Middle Income and Lower Income	55	368	553	25%	21	25%
Lower Middle Income		54	173		25%	16	19%
Low Income		26	12		12%	2	2%
Total		218	1287		100%	84	100%

Table 2: CDS Observations grouped by regions

Regions	Revised	# Countries	CDS Obs.		Weights	Has CDS	Weights
South Asia	Asia & Pacific	8	37	259	4%	3	4%
East Asia & Pacific		38	222		17%	13	15%
North America	Americas	3	24	251	1%	2	2%
Latin America & Caribbean		42	227		19%	13	15%
Europe & Central Asia	Europe, Middle East & North Africa	58	568	692	27%	32	38%
Middle East & North Africa		21	124		10%	11	13%
Sub-Saharan Africa	Sub-Saharan Africa	48	85	85	22%	10	12%

Total		218	1287	100%	84	100%

Key descriptives metrices and the correlation matrix with confidence intervals are provided in Tables 3 and 7. To preserve data originality, simplicity and to avoid imputation bias, records with missing values are ignored instead of opting to apply linear interpolation for missing data.

For econometric methodology we resorted to panel data analysis where we estimated and compared both fixed-effects and random-effects models. Before applying these methodologies, the stationarity each variable is checked. Stationarity in most panels is achieved following natural log transformation of CDS data. For the explanatory variables combination of natural log and differencing is applied in order to achieve stationarity. Breusch-Pagan Lagrange Multiplier (BPLM) test indicated nonexistence of random effects and suggested pooled OLS is sufficient for analysis. However, Hausman test indicated fixed effect model to be preferred. Multicollinearity is not observed, and linearity is ensured. However, due to potential heteroscedasticity, robust fixed-effects model and robust pooled OLS model are used to report findings with robust standard errors. For fixed effect model, within R^2 is considered for model's goodness of fit whereas adjusted R^2 is sufficient for pooled OLS model. One important point to highlight is that since CDS like any finance variable is known to have inertia aka autoregressive properties, a lag value of CDS is also added as explanatory variable to each model iteration.

4. RESULTS AND STATISTICAL ANALYSIS

4.1. Descriptive statistics and Correlation analysis

While we started with almost 1200 observations for most variables, some records are dropped due to certain missing values that are not reported in the World Bank dataset. The descriptive statistics are produced in Table 3. Variable (1) is our response (explained) variable i.e., Country Credit Default Swap (C-CDS) 5-year spread, variables (2)-(10) are the selected macroeconomic variables chosen as explanatory variables or regressors. These include GDP per capita, GDP growth, Current account balance to GDP, Total FX reserves in months of imports, Net trade in goods and services, Total exports of goods and services to GDP ratio, Portfolio Equity Inflows, Foreign Direct Investment Net, Personal Remittances etc. Variables (11)-(15) represent the chosen social indicators i.e., Life Expectancy at Birth in years, Refugee Population by Country of Asylum, Refugee Population by Country of Origin, Unemployment Rate, Labor Force Participation Rate

Table 3: Summary of descriptive statistics.

Variable	Obs.	Mean	Std. Dev.	Min	Max
(1) ln CCDS	1287	4.52	1.34	0.06	9.08
(2) D ln GDPperC	1181	0.04	0.11	(0.41)	0.42
(3) GDPperCG	1284	1.96	3.90	(18.85)	23.31
(4) CABtoGDP	1262	(0.01)	6.06	(22.94)	34.51
(5) FXRtoIMP	1249	5.17	4.56	0.03	32.78
(6) D ln Trade	1160	0.00	1.07	(25.42)	25.87
(7) D ExptoGDP	1157	0.54	4.08	(18.26)	27.71
(8) D ln PEI	1127	(0.00)	1.15	(26.83)	27.61
(9) D ln FDINet	1159	0.00	1.10	(26.65)	25.70
(10) D ln PR	1181	0.09	1.15	(16.27)	22.05
(11) LE	1203	76.13	5.86	51.71	85.53
(12) D ln RP	1165	0.12	0.58	(6.86)	5.43
(13) ln RPO	1250	6.63	3.03	1.61	14.65
(14) D UE	1182	(0.11)	1.20	(4.39)	9.78
(15) D LFP	1182	0.03	0.97	(8.44)	5.69

CCDS = Country Credit Default Swap, GDPperC = GDP per capita, GDPperCG = GDP growth, CABtoGDP = Current account balance to GDP, FXRtoIMP = Total FX reserves in months of imports, Trade = Net trade in goods and services, ExptoGDP = Total exports of goods and services to GDP, PEI = Portfolio Equity Inflows, FDINet = Foreign Direct Investment Net, PR = Personal Remittances, LE = Life Expectancy at Birth, RP = Refugee Population by Country of Asylum, RPO = Refugee Population by Country of Origin, UE = Unemployment Rate, LFP = Labor Force Participation Rate.

The pairwise correlations (Pearson) are provided in Table 7 along with their statistical significance over different confidence intervals.

4.2. Testing of hypothesis

The baseline model that was discussed under heading 2.1 is presented in Equation 1 which is being tested using fixed-effects multivariate panel regression methodology. Recall that social factors are not included in the baseline model.

The robust fixed effect model yielded that the lag value of CDS along with seven out of nine macroeconomic variables came out as statistically significant; refer model 1 in Table 8. Only portfolio equity inflows and worker remittances turn out statistically insignificant. The model itself is statistically significant since the goodness of fit measure of "within-adjusted R^2" for fixed effect model is around 50% with Prob>F value as 0.0000. Detailed output is provided as model 1 under Table 4 and Table 8. Whereas the pooled OLS model yielded a high R^2 of over 78% with lag of CDS and five out of nine macro variables as statistically significant.

Equation 1 – Baseline model without social factors

$$\begin{aligned} CCDS_{it} = {} & \alpha + \beta_1 CCDS_{it-1} + \beta_2 GDPperC_{it} + \beta_3 GDPperCG_{it} + \beta_4 CABtoGDP_{it} + \beta_5 FXRtoIMP_{it} \\ & + \beta_6 Trade_{it} + \beta_7 ExptoGDP_{it} + \beta_8 PEI_{it} + \beta_9 FDINet_{it} + \beta_{10} PR_{it} + \varepsilon_{it} \end{aligned}$$

Subsequent to testing and confirming the baseline effect, we proceeded to test our three hypotheses.

H_1: Individual social factors have a statistically significant influence on a country's CDS (C-CDS) spread.

Upon adding the social factors to the baseline model one at a time, we tested the model that is provided below in Equation 2. All the seven macroeconomic variables remained statistically significant just as in the case of the baseline model, still continue to remain statistically significant. Interesting enough, none of the five (5) social factors came out as statistically significant in this hypothesis. This may indicate that on global level, social factors are not contributing enough towards pricing of CDS spreads which are proxy to sovereign credit (default) risk.

Equation 2 – Baseline model with individual social factors

$$\begin{aligned} CCDS_{it} = {} & \alpha + \beta_1 CCDS_{it-1} + \beta_2 GDPperC_{it} + \beta_3 GDPperCG_{it} + \beta_4 CABtoGDP_{it} + \beta_5 FXRtoIMP_{it} \\ & + \beta_6 Trade_{it} + \beta_7 ExptoGDP_{it} + \beta_8 PEI_{it} + \beta_9 FDINet_{it} + \beta_{10} PR_{it} + \beta_{11} S_{it} + \varepsilon_{it} \end{aligned}$$

For all the models, within-adjusted R^2 is around 50% with Prob>F value as 0.0000. Detailed output is provided as models 2-7 under Table 4 and Table 8.

In order to look for any differences in findings due to income levels of countries and geographic location, we subsequently tested hypotheses 2 and 3 by segmenting the dataset on the basis of income and regional classifications of countries.

H_2: Individual social factors have a statistically significant influence on a country's CDS (C-CDS) spread, with significant differences existing between countries across different income groups.

Equation 3 – Baseline model with individual social factors by Income Groups

$$CCDS_{it} = \alpha + \beta_1 CCDS_{it-1} + \beta_2 GDPperC_{it} + \beta_3 GDPperCG_{it} + \beta_4 CABtoGDP_{it} + \beta_5 FXRtoIMP_{it} + \beta_6 Trade_{it} + \beta_7 ExptoGDP_{it} + \beta_8 PEI_{it} + \beta_9 FDINet_{it} + \beta_{10} PR_{it} + \beta_{11} S_{it} + D\beta_{IG} IG_{it} + \varepsilon_{it}$$

Under this hypothesis, we tested countries with different income levels separately. For high-income countries, the lag effect of CDS along with GDP per capita, GDP growth rate, current account balance to GDP ratio, FX reserves import cover, net trade, export to GDP ratio and Foreign Direct Investment net came as statistically significant under both the baseline model as well as in models with the individual social factors. Out of social factors only the refugee population by country of asylum showed statistical significance. For all the models, within-adjusted R^2 is around 60%. Refer Table 9.

Findings for the upper middle-income, lower middle income and lower income countries differ significantly where only the lag effect of CDS, net trade and foreign direct investment have shown statistical significance. When it comes to social factors, refugee population by country of origin came out as significant for this group of countries. For all the models, within-adjusted R^2 is just over 30%. Refer Table 10.

Reading these findings together and noting that coefficients are positive, it can be said that the refugee migration from developing countries towards developed and high-income countries is adding to the credit risk for both groups.

We now tested our third hypothesis.

H_3: Individual social factors have a statistically significant influence on a country's CDS (C-CDS) spread, with significant differences existing between countries across different geographic regions.

Equation 4 – Baseline model with individual social factors by Regional Groups

$$CCDS_{it} = \alpha + \beta_1 CCDS_{it-1} + \beta_2 GDPperC_{it} + \beta_3 GDPperCG_{it} + \beta_4 CABtoGDP_{it} + \beta_5 FXRtoIMP_{it} + \beta_6 Trade_{it} + \beta_7 ExptoGDP_{it} + \beta_8 PEI_{it} + \beta_9 FDINet_{it} + \beta_{10} PR_{it} + \beta_{11} S_{it} + D\beta_{RG} RG_{it} + \varepsilon_{it}$$

As our final hypothesis, we switched to regional (geographic) classification of countries. For Asia Pacific countries, the lag effect of CDS along with GDP per Capita, GDP growth, Current Account Balance to GDP, net Trade and portfolio equity investments are significant. Out of social factors, only refugee population by country of origin is significant. For all the models, within-adjusted R^2 is just over 40%. Refer Table 11. This finding coincides with our finding under H2 since most countries in this regional group fall under the second group of by income classification.

Table 4: Summary of Models for comparison.

	Groups	F-stat	corr (u_i, Xb)	Prob > F	rho	Top VIF	Mean VIF	_hatsq
Model 1	78	101.54	0.4944	0.0000	.3481613	1.73	1.22	0.127
Model 2	77	95.46	0.4443	0.0000	.36174509	1.74	1.28	0.378
Model 3	77	98.41	0.4923	0.0000	.35258233	1.73	1.21	0.125
Model 4	78	109.62	0.4346	0.0000	.27934506	1.79	1.31	0.153
Model 5	78	93.15	0.4939	0.0000	.34853606	2.13	1.28	0.126

Model 6	78	108.45	0.4956	0.0000	.34796934	1.88	1.23	0.124

For countries in Europe, Middle East and Nort Africa, the lag effect of CDS is significant with GDP per capita, GDP growth rate, current account balance to GDP ratio, FX reserves import cover, net trade, export to GDP and portfolio equity investments are all significant along with refugee population by country of asylum and refugee population by country of origin under social indicators. For all the models, within-adjusted R^2 is just over 60%. Refer Table 12. This can be due to intra-regional immigration. Interesting enough, the coefficient of refugee population by country of asylum is positive but negative for refugee population by country of asylum, indicating that while former adds to the credit risk for the countries in this regional group, the later improves it.

Table 5: Summary of findings.

Hypothesis	Test Performed	Outcomes
H_1	Individual social factors, together with macroeconomic factors, have a statistically significant influence on the country's credit default swap (C-CDS) spreads **Finding**: None of the social factors came as statistically significant. Life Expectancy at Birth, Refugee Population by Country of Asylum, Refugee Population by Country of Origin, Unemployment Rate, Labor Force Participation**.**	Rejected
H_2	Individual social factors, together with macroeconomic factors, have a statistically significant influence on the country's credit default swap (C-CDS) spread regardless of their income classification **Finding**: **Bold** font indicates statistical significance. • **High Income Countries**: Life Expectancy at Birth, **Refugee Population by Country of Asylum****, Refugee Population by Country of Origin, Unemployment Rate, Labor Force Participation. • **Upper Middle-Income, Lower Middle Income and Lower Income Countries**: Life Expectancy at Birth, Refugee Population by Country of Asylum, **Refugee Population by Country of Origin*****, Unemployment Rate, Labor Force Participation.	Partially Accepted
H_3	Individual social factors, together with macroeconomic factors, have a statistically significant influence on the country's credit default swap (C-CDS) spread across regions **Finding**: **Bold** font indicates statistical significance. • **Asia & Pacific Countries:** Life Expectancy at Birth, Refugee Population by Country of Asylum, **Refugee Population by Country of Origin***, Unemployment Rate, Labor Force Participation. • **Europe, Middle East and North Africa Countries:**	Partially Accepted

Hypothesis	Test Performed	Outcomes
	Life Expectancy at Birth, **Refugee Population by Country of Asylum****, **Refugee Population by Country of Origin***, Unemployment Rate, Labor Force Participation. • **Americas Countries:** **Life Expectancy at Birth***, Refugee Population by Country of Asylum, **Refugee Population by Country of Origin****, **Unemployment Rate***, Labor Force Participation. • **Sub-Saharan African Countries:** Life Expectancy at Birth, Refugee Population by Country of Asylum, Refugee Population by Country of Origin, Unemployment Rate, Labor Force Participation.	
Robust standard errors are in parentheses		
*** p<.01, ** p<.05, * p<.1		

For the American side of the globe, lag effect of CDS is also significant along with Current Account Balance to GDP, FX reserves import cover, net Trade, foreign direct investment and worker remittances. Out of five (5) social factors, life expectancy at birth, refugee population by country of origin, unemployment rate came significant for these countries. For all the models, within-adjusted R^2 is just over 25%. Refer Table 13. From coefficients we see that improvement in life expectancy at birth lowers credit risk for these countries whereas refugee population by country of origin and unemployment rate cause the credit risk to increase. And finally for sub-Saharan African region, lag effect of CDS, GDP per capita, net trade, portfolio equity investment, foreign direct investment are the factors showing statistical significance while none of the social factors came out as significantly causing variation in credit risk premium. Refer Table 14.

For testing robustness, pooled-OLS method is also applied which confirmed that Life Expectancy at Birth and Refugee Population by Country of Origin are significant if the fixed effects are ignored. For all the models, adjusted R^2 is over 78%. Refer Table 15.

5. CONCLUSION

The country's performance in terms of social factors appears to influence the pricing of its credit default swap (CDS) spreads. This significance of these factors, however, varies based on the unique characteristics and heterogeneity of each country.

Findings of this study underscores for the policymakers the importance of enhancing national social indicators, as financial markets do view such indicators as signals, both positive and negative, when assessing a particular country's (sovereign) default risk. The perceived default is not solely determined by quantitative macroeconomic indicators but also by overall market sentiment, that considers various qualitative aspects as well such as the overall wellbeing of the society and its households.

Although the findings are mixed, they emphasize the importance of social factors, which may hold varying degrees of importance towards a country's default risk depending on country specific context.

DECLARATION OF COMPETING INTEREST

The author hereby declares that they have no known conflict of interest, neither financial nor personal, that could have introduced any bias or influence on the work reported in this study.

APPENDIX 1: VARIABLE DEFINITIONS

Table 6: List of Variables and their definitions.

Variable	Definition
CCDS	It is financial derivative that allows lenders/investors/bond holders to transfer the risk of loss that will be incurred in the event of borrowing/beneficiary/issuing country defaulting.
GDPperC	The ratio of Gross Domestic Product (GDP) of a country to its total population
GDPperCG	The percentage change in a country's Gross Domestic Product (GDP) over a specified period
CABtoGDP	the balance of a country's current account relative to its Gross Domestic Product (GDP)
FXRtoIMP	The ratio of the country's Foreign Exchange reserves to its average monthly import needs.
Trade	The difference between a country's exports and imports of goods and services
ExptoGDP	The proportion of a country's gross domestic product (GDP) that comes from exports
PEI	The net inflows towards equity portfolios/securities such as direct purchases of shares, stocks, depository receipts etc.
FDINet	The net inflows for acquiring management interest by foreign investors in corporations or businesses operating in a country.
PR	Worker remittances sent back home by the citizens of a country working in foreign countries
LE	Life Expectancy at Birth, estimate from World Bank data series SP.DYN.LE00.IN
RP	Refugee Population by Country of Asylum, estimate from World Bank data series SM.POP.REFG
RPO	Refugee Population by Country of Origin, estimate from World Bank data series SM.POP.REFG.OR
UE	Unemployment rate, estimate from World Bank data series SL.UEM.TOTL.ZS]
LFP	Labor Force Participation, estimate from World Bank data series SL.TLF.CACT.ZS

APPENDIX 2: CORRELATION MATRIX

Table 7: Correlation analysis.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) ln_CCDS	1.00															
(2) L.ln_CCDS	0.88***	1.00														
(3) D_ln_GDPperC	-0.05*	-0.12***	1.00													
(4) GDPperCG	-0.08***	-0.10***	0.58***	1.00												
(5) CABtoGDP	-0.25***	-0.20***	0.032	-0.09***	1.00											
(6) FXRtoIMP	0.06**	0.09***	0.00	-0.00	0.18***	1.00										
(7) D_ln_Trade	0.01	0.01	-0.00	0.00	0.01	0.00	1.00									
(8) D_ExptoGDP	0.02	-0.05*	0.15***	0.33***	0.00	-0.10***	0.00	1.00								
(9) D_ln_PEI	0.00	-0.00	-0.01	-0.03	-0.00	0.00	0.01	-0.01	1.00							
(10) D_ln_FDINet	-0.01	-0.00	-0.00	-0.00	0.00	0.00	-0.00	-0.00	-0.45***	1.00						
(11) D_ln_PR	0.02	0.02	0.08***	0.05*	0.01	0.01	-0.00	0.03	-0.00	-0.00	1.00					
(12) LE	-0.50***	-0.48***	-0.10***	-0.07**	0.23***	-0.09***	-0.01	0.05	-0.01	0.00	-0.01	1.00				
(13) D_ln_RP	0.01	-0.01	-0.04	0.05	-0.05	-0.06*	0.00	0.13***	-0.00	-0.01	-0.01	0.01	1.00			

(14) ln_RPO	0.50***	0.50***	0.10***	0.17***	-0.20***	0.29***	0.00	-0.03	0.00	-0.00	0.03	-0.62***	-0.03	1.00	
(15) D_UE	0.11***	0.15***	-0.33***	-0.52***	0.03	0.09***	0.03	-0.14***	0.09***	0.01	-0.03	-0.06**	-0.06**	-0.02	1.00
(16) D_LFP	-0.03	-0.05	0.19***	0.33***	-0.02	-0.08***	0.00	0.15***	-0.03	0.00	-0.00	0.03	0.05*	-0.02	-0.25***	1.00

CCDS = Country Credit Default Swap, GDPperC = GDP per capita, GDPperCG = GDP growth, CABtoGDP = Current account balance to GDP, FXRtoIMP = Total FX reserves in months of imports, Trade = Net trade in goods and services, ExptoGDP = Total exports of goods and services to GDP, PEI = Portfolio Equity Inflows, FDINet = Foreign Direct Investment Net, PR = Personal Remittances, LE = Life Expectancy at Birth, RP = Refugee Population by Country of Asylum, RPO = Refugee Population by Country of Origin, UE = Unemployment Rate, LFP = Labor Force Participation Rate.

APPENDIX 3: MODEL OUTPUT SUMMARIES

Table 8: Regression results Fixed Effect on full data set.

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS
L.ln_CCDS	.663***	.666***	.665***	.664***	.663***	.663***
	(.028)	(.028)	(.027)	(.029)	(.028)	(.028)
D_ln_GDPperC	.667**	.833***	.661**	.649**	.667**	.668**
	(.282)	(.304)	(.289)	(.291)	(.282)	(.282)
GDPperCG	-.028***	-.031***	-.028***	-.028***	-.027***	-.028***
	(.008)	(.008)	(.008)	(.008)	(.008)	(.008)
CABtoGDP	-.031***	-.032***	-.03***	-.032***	-.031***	-.031***
	(.007)	(.007)	(.007)	(.007)	(.007)	(.007)
FXRtoIMP	-.037**	-.044***	-.038***	-.037**	-.037**	-.036**
	(.014)	(.016)	(.014)	(.015)	(.014)	(.015)
D_ln_Trade	-.015***	-.014***	-.015***	-.015***	-.015***	-.014***
	(.002)	(.002)	(.002)	(.002)	(.003)	(.002)
D_ExptoGDP	.028***	.024***	.028***	.028***	.028***	.028***
	(.006)	(.006)	(.006)	(.006)	(.006)	(.006)
D_ln_PEI	-.004	-.004	-.004	-.004	-.004	-.004
	(.006)	(.006)	(.006)	(.006)	(.007)	(.006)
D_ln_FDINet	-.012**	-.012**	-.012**	-.012**	-.012**	-.012**
	(.005)	(.005)	(.005)	(.005)	(.005)	(.005)
D_ln_PR	-.003	-.001	-.003	-.005	-.003	-.003
	(.008)	(.008)	(.007)	(.008)	(.008)	(.008)
LE		.005				
		(.015)				
D_ln_RP			.028			
			(.033)			
ln_RPO				.042		
				(.034)		
D_UE					.004	
					(.017)	
D_LFP						.003
						(.014)
_cons	1.708***	1.383	1.701***	1.452***	1.711***	1.708***
	(.154)	(1.129)	(.151)	(.244)	(.153)	(.154)
Observations	1096	1037	1088	1061	1096	1096
R-squared	.503	.506	.504	.505	.503	.503
BPLM Prob > chibar2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Hausman Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Robust standard errors are in parentheses						
*** p<.01, ** p<.05, * p<.1						
CCDS = Country Credit Default Swap, GDPperC = GDP per capita, GDPperCG = GDP growth, CABtoGDP = Current account balance to GDP, FXRtoIMP = Total FX reserves in months of imports,						

Trade = Net trade in goods and services, ExptoGDP = Total exports of goods and services to GDP, PEI = Portfolio Equity Inflows, FDINet = Foreign Direct Investment Net, PR = Personal Remittances, LE = Life Expectancy at Birth, RP = Refugee Population by Country of Asylum, RPO = Refugee Population by Country of Origin, UE = Unemployment Rate, LFP = Labor Force Participation Rate.

Table 9: Regression results Fixed Effect on 'High-Income' Countries.

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS
L.ln_CCDS	.711***	.72***	.715***	.712***	.712***	.711***
	(.028)	(.028)	(.027)	(.03)	(.028)	(.028)
D_ln_GDPperC	1.23***	1.501***	1.28***	1.235***	1.229***	1.23***
	(.306)	(.342)	(.319)	(.323)	(.306)	(.307)
GDPperCG	-.04***	-.044***	-.041***	-.041***	-.041***	-.04***
	(.009)	(.009)	(.009)	(.01)	(.009)	(.01)
CABtoGDP	-.035***	-.033***	-.033***	-.037***	-.035***	-.035***
	(.008)	(.008)	(.008)	(.009)	(.008)	(.008)
FXRtoIMP	-.051***	-.065***	-.051***	-.053***	-.051***	-.051***
	(.017)	(.018)	(.017)	(.018)	(.018)	(.018)
D_ln_Trade	-.014***	-.014***	-.014***	-.014***	-.014***	-.014***
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
D_ExptoGDP	.032***	.026***	.031***	.032***	.032***	.032***
	(.008)	(.008)	(.008)	(.008)	(.008)	(.008)
D_ln_PEI	-.003	-.003	-.003	-.003	-.003	-.003
	(.006)	(.006)	(.006)	(.005)	(.006)	(.006)
D_ln_FDINet	-.011**	-.012**	-.011**	-.012**	-.011**	-.011**
	(.005)	(.005)	(.004)	(.005)	(.005)	(.005)
D_ln_PR	-.007	-.007	-.006	-.008	-.007	-.007
	(.008)	(.008)	(.007)	(.008)	(.008)	(.008)
LE		-.014				
		(.025)				
D_ln_RP			.077**			
			(.031)			
ln_RPO				.004		
				(.045)		
D_UE					-.004	
					(.021)	
D_LFP						.002
						(.031)
_cons	1.372***	2.503	1.342***	1.361***	1.37***	1.372***
	(.135)	(2.006)	(.136)	(.234)	(.134)	(.135)
Observations	655	619	653	620	655	655
R-squared	.586	.595	.589	.591	.586	.586

Robust standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

CCDS = Country Credit Default Swap, GDPperC = GDP per capita, GDPperCG = GDP growth, CABtoGDP = Current account balance to GDP, FXRtoIMP = Total FX reserves in months of imports, Trade = Net trade in goods and services, ExptoGDP = Total exports of goods and services to GDP, PEI = Portfolio Equity Inflows, FDINet = Foreign Direct Investment Net, PR = Personal Remittances, LE = Life Expectancy at Birth, RP = Refugee Population by Country of Asylum, RPO = Refugee

Population by Country of Origin, UE = Unemployment Rate, LFP = Labor Force Participation Rate.

Table 10: Regression results Fixed Effect on 'Upper Middle, Lower-Middle and Lower Income' Countries.

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS
L.ln_CCDS	.527***	.523***	.528***	.531***	.527***	.526***
	(.054)	(.058)	(.054)	(.053)	(.054)	(.053)
D_ln_GDPperC	-.137	-.078	-.183	-.196	-.137	-.125
	(.368)	(.382)	(.378)	(.374)	(.368)	(.365)
GDPperCG	-.004	-.006	-.003	-.005	-.004	-.005
	(.009)	(.01)	(.01)	(.009)	(.011)	(.01)
CABtoGDP	-.014	-.015	-.012	-.014	-.014	-.014
	(.01)	(.011)	(.01)	(.01)	(.01)	(.01)
FXRtoIMP	-.029	-.037	-.028	-.031	-.029	-.029
	(.026)	(.024)	(.026)	(.026)	(.026)	(.026)
D_ln_Trade	-1.31**	-2.042*	-1.413**	-1.283**	-1.302**	-1.301**
	(.575)	(1.075)	(.591)	(.568)	(.575)	(.569)
D_ExptoGDP	.014	.014	.014	.014	.014	.013
	(.009)	(.01)	(.009)	(.009)	(.009)	(.009)
D_ln_PEI	-5.357***	-5.97***	-5.263***	-5.353***	-5.361***	-5.395***
	(.884)	(1.002)	(.995)	(.893)	(.891)	(.885)
D_ln_FDINet	-.179**	-.052	-.237	-.204***	-.179**	-.188**
	(.068)	(.072)	(.159)	(.073)	(.068)	(.072)
D_ln_PR	-.043	.035	-.048	-.031	-.043	-.046
	(.152)	(.171)	(.152)	(.15)	(.152)	(.151)
LE		.012				
		(.018)				
D_ln_RP			-.026			
			(.07)			
ln_RPO				.104***		
				(.033)		
D_UE					-.003	
					(.027)	
D_LFP						.012
						(.017)
_cons	2.685***	1.912	2.677***	1.774***	2.685***	2.694***
	(.406)	(1.193)	(.41)	(.486)	(.406)	(.403)
Observations	441	418	435	441	441	441
R-squared	.326	.323	.328	.335	.326	.327

Robust standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

CCDS = Country Credit Default Swap, GDPperC = GDP per capita, GDPperCG = GDP growth, CABtoGDP = Current account balance to GDP, FXRtoIMP = Total FX reserves in months of imports, Trade = Net trade in goods and services, ExptoGDP = Total exports of goods and services to GDP, PEI = Portfolio Equity Inflows, FDINet = Foreign Direct Investment Net, PR = Personal Remittances, LE = Life Expectancy at Birth, RP = Refugee Population by Country of Asylum, RPO = Refugee Population by Country of Origin, UE = Unemployment Rate, LFP = Labor Force Participation Rate.

Table 11: Regression results Fixed Effect on 'Asia Pacific' Countries.

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS
L.ln_CCDS	.613***	.606***	.616***	.601***	.616***	.613***
	(.057)	(.063)	(.057)	(.056)	(.056)	(.057)
D_ln_GDPperC	1.494**	1.385*	1.47**	1.374*	1.502**	1.502**
	(.651)	(.75)	(.682)	(.689)	(.662)	(.652)
GDPperCG	-.044*	-.043*	-.045*	-.042*	-.05*	-.047**
	(.022)	(.022)	(.022)	(.022)	(.027)	(.021)
CABtoGDP	-.02***	-.018**	-.018**	-.017**	-.02***	-.019**
	(.006)	(.007)	(.007)	(.007)	(.006)	(.007)
FXRtoIMP	-.045	-.057	-.045	-.041	-.044	-.044
	(.043)	(.042)	(.044)	(.042)	(.043)	(.044)
D_ln_Trade	-1.925***	-2.468***	-1.947***	-1.942***	-1.844***	-1.909***
	(.568)	(.532)	(.595)	(.593)	(.558)	(.558)
D_ExptoGDP	.01	.007	.01	.012	.01	.011
	(.009)	(.009)	(.009)	(.009)	(.009)	(.009)
D_ln_PEI	-1.094*	-1.155	-1.105*	-1.009	-1.086*	-1.09*
	(.568)	(.675)	(.57)	(.581)	(.583)	(.572)
D_ln_FDINet	.226	.237**	.221	.196	.215	.222
	(.138)	(.11)	(.203)	(.13)	(.131)	(.14)
D_ln_PR	.161	.307	.151	.162	.16	.164
	(.249)	(.289)	(.245)	(.245)	(.246)	(.25)
LE		.018				
		(.026)				
D_ln_RP			0			
			(.052)			
ln_RPO				.105*		
				(.059)		
D_UE					-.063	
					(.063)	
D_LFP						.03
						(.032)
_cons	2.074***	.831	2.056***	1.36*	2.062***	2.073***
	(.421)	(1.996)	(.44)	(.735)	(.417)	(.424)
Observations	226	215	219	225	226	226
R-squared	.427	.426	.428	.432	.43	.428
Robust standard errors are in parentheses						
*** p<.01, ** p<.05, * p<.1						
CCDS = Country Credit Default Swap, GDPperC = GDP per capita, GDPperCG = GDP growth, CABtoGDP = Current account balance to GDP, FXRtoIMP = Total FX reserves in months of imports, Trade = Net trade in goods and services, ExptoGDP = Total exports of goods and services to GDP, PEI = Portfolio Equity Inflows, FDINet = Foreign Direct Investment Net, PR = Personal Remittances, LE = Life Expectancy at Birth, RP = Refugee Population by Country of Asylum, RPO = Refugee Population by Country of Origin, UE = Unemployment Rate, LFP = Labor Force Participation Rate.						

Table 12: Regression results Fixed Effect on 'Europe, Middle East & North African' Countries.

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_CCDS	**ln_CCDS**	**ln_CCDS**	**ln_CCDS**	**ln_CCDS**	**ln_CCDS**
L.ln_CCDS	.728***	.735***	.733***	.728***	.727***	.728***
	(.03)	(.031)	(.029)	(.031)	(.03)	(.03)
D_ln_GDPperC	1.345***	1.464***	1.372***	1.394***	1.346***	1.344***
	(.35)	(.399)	(.358)	(.348)	(.349)	(.351)
GDPperCG	-.04***	-.041***	-.041***	-.041***	-.039***	-.04***
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
CABtoGDP	-.032***	-.031***	-.031***	-.036***	-.032***	-.032***
	(.009)	(.009)	(.008)	(.01)	(.009)	(.009)
FXRtoIMP	-.038**	-.051***	-.038***	-.04**	-.039**	-.038**
	(.014)	(.014)	(.014)	(.015)	(.014)	(.014)
D_ln_Trade	-3.311***	-3.387***	-3.184***	-3.351***	-3.349***	-3.306***
	(.809)	(.956)	(.775)	(.891)	(.769)	(.804)
D_ExptoGDP	.041***	.036***	.039***	.042***	.041***	.041***
	(.006)	(.007)	(.006)	(.006)	(.006)	(.006)
D_ln_PEI	-.736*	-.752*	-.725*	-.752	-.737*	-.736*
	(.396)	(.408)	(.398)	(.466)	(.396)	(.396)
D_ln_FDINet	.1	.115	.098	.102	.098	.099
	(.094)	(.101)	(.095)	(.112)	(.095)	(.094)
D_ln_PR	-.139	-.128	-.122	-.142	-.136	-.139
	(.141)	(.149)	(.14)	(.14)	(.141)	(.142)
LE		-.021				
		(.025)				
D_ln_RP			.072**			
			(.034)			
ln_RPO				-.081*		
				(.045)		
D_UE					.005	
					(.02)	
D_LFP						-.003
						(.032)
_cons	1.323***	3.026	1.291***	1.794***	1.327***	1.324***
	(.141)	(1.976)	(.139)	(.295)	(.142)	(.141)
Observations	600	568	599	566	600	600
R-squared	.608	.613	.612	.615	.608	.608
Robust standard errors are in parentheses						
*** p<.01, ** p<.05, * p<.1						
CCDS = Country Credit Default Swap, GDPperC = GDP per capita, GDPperCG = GDP growth, CABtoGDP = Current account balance to GDP, FXRtoIMP = Total FX reserves in months of imports, Trade = Net trade in goods and services, ExptoGDP = Total exports of goods and services to GDP, PEI = Portfolio Equity Inflows, FDINet = Foreign Direct Investment Net, PR = Personal Remittances, LE = Life Expectancy at Birth, RP = Refugee Population by Country of Asylum, RPO = Refugee Population by Country of Origin, UE = Unemployment Rate, LFP = Labor Force Participation Rate.						

Table 13: Regression results Fixed Effect on 'Americas' Countries.

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS
L.ln_CCDS	.339***	.333***	.339***	.349***	.343***	.349***
	(.04)	(.036)	(.039)	(.046)	(.036)	(.041)
D_ln_GDPperC	-.859	-.769	-.885	-.815	-.866	-.968
	(.689)	(.719)	(.704)	(.703)	(.702)	(.653)
GDPperCG	.016	.011	.017	.01	.029**	.025*
	(.012)	(.012)	(.012)	(.012)	(.013)	(.014)
CABtoGDP	-.041***	-.054***	-.039**	-.044***	-.041**	-.04***
	(.014)	(.017)	(.013)	(.013)	(.014)	(.014)
FXRtoIMP	-.07***	-.065***	-.066***	-.075***	-.073***	-.074***
	(.016)	(.017)	(.016)	(.019)	(.017)	(.016)
D_ln_Trade	-.006**	-.003	-.007**	-.006**	-.01***	-.007***
	(.002)	(.002)	(.002)	(.002)	(.003)	(.002)
D_ExptoGDP	.007	.002	.008	.012	.008	.006
	(.015)	(.017)	(.015)	(.014)	(.015)	(.014)
D_ln_PEI	.002*	-.002	.002	.002	-.003	.002*
	(.001)	(.002)	(.001)	(.001)	(.003)	(.001)
D_ln_FDINet	-.008***	-.01***	-.008***	-.008***	-.01***	-.008***
	(0)	(.001)	(.001)	(0)	(.002)	(.001)
D_ln_PR	.012**	.013***	.011**	.011**	.011**	.012**
	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)
LE		-.062*				
		(.035)				
D_ln_RP			-.151			
			(.111)			
ln_RPO				.111**		
				(.047)		
D_UE					.054*	
					(.03)	
D_LFP						-.033
						(.024)
_cons	3.648***	8.28***	3.646***	2.808***	3.626***	3.614***
	(.247)	(2.548)	(.247)	(.286)	(.242)	(.26)
Observations	221	209	221	221	221	221
R-squared	.258	.268	.271	.276	.266	.263
Robust standard errors are in parentheses						
*** p<.01, ** p<.05, * p<.1						
CCDS = Country Credit Default Swap, GDPperC = GDP per capita, GDPperCG = GDP growth, CABtoGDP = Current account balance to GDP, FXRtoIMP = Total FX reserves in months of imports, Trade = Net trade in goods and services, ExptoGDP = Total exports of goods and services to GDP, PEI = Portfolio Equity Inflows, FDINet = Foreign Direct Investment Net, PR = Personal Remittances, LE = Life Expectancy at Birth, RP = Refugee Population by Country of Asylum, RPO = Refugee Population by Country of Origin, UE = Unemployment Rate, LFP = Labor Force Participation Rate.						

Table 14: Regression results Fixed Effect on 'Sub-Saharan African' Countries.

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS	ln_CCDS
L.ln_CCDS	.504***	.494**	.513***	.514***	.508***	.481***
	(.103)	(.171)	(.096)	(.125)	(.104)	(.119)
D_ln_GDPperC	-.798**	-.755**	-.782**	-.901**	-.808**	-.958*
	(.267)	(.215)	(.286)	(.258)	(.281)	(.474)
GDPperCG	-.011	-.009	-.008	-.013	-.008	0
	(.024)	(.024)	(.025)	(.028)	(.027)	(.039)
CABtoGDP	.015	.008	.018	.014	.018	.02
	(.017)	(.01)	(.018)	(.018)	(.02)	(.024)
FXRtoIMP	.028	-.01	.049	-.007	.039	.035
	(.04)	(.082)	(.05)	(.094)	(.044)	(.042)
D_ln_Trade	-15.016**	-17.016	-17.334**	-11.654*	-15.231**	-8.916
	(4.095)	(11.167)	(4.399)	(5.726)	(4.047)	(9.59)
D_ExptoGDP	.024	.024	.023	.023	.022	.017
	(.021)	(.02)	(.022)	(.02)	(.022)	(.026)
D_ln_PEI	-13.004***	-13.441***	-13.095***	-12.436**	-12.944***	-12.814***
	(2.761)	(2.438)	(2.448)	(3.347)	(2.537)	(2.399)
D_ln_FDINet	8**	8.209**	7.858**	7.521*	7.521**	8.543*
	(3.076)	(2.872)	(2.628)	(3.641)	(2.456)	(3.371)
D_ln_PR	-.42*	-.254	-.4	-.362	-.404*	-.397
	(.189)	(.359)	(.206)	(.249)	(.194)	(.198)
LE		.026				
		(.032)				
D_ln_RP			.332			
			(.213)			
ln_RPO				.138		
				(.216)		
D_UE					-.03	
					(.031)	
D_LFP						.034
						(.03)
_cons	2.752***	1.369	2.599***	1.751	2.685***	2.859***
	(.495)	(1.065)	(.452)	(2.011)	(.476)	(.584)
Observations	49	45	49	49	49	49
R-squared	.557	.586	.563	.561	.56	.564
Robust standard errors are in parentheses						
*** p<.01, ** p<.05, * p<.1						
CCDS = Country Credit Default Swap, GDPperC = GDP per capita, GDPperCG = GDP growth, CABtoGDP = Current account balance to GDP, FXRtoIMP = Total FX reserves in months of imports, Trade = Net trade in goods and services, ExptoGDP = Total exports of goods and services to GDP, PEI = Portfolio Equity Inflows, FDINet = Foreign Direct Investment Net, PR = Personal Remittances, LE = Life Expectancy at Birth, RP = Refugee Population by Country of Asylum, RPO = Refugee Population by Country of Origin, UE = Unemployment Rate, LFP = Labor Force Participation Rate.						

Table 15: Main and robust analysis using Pooled-OLS.

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_CCDS	**ln_CCDS**	**ln_CCDS**	**ln_CCDS**	**ln_CCDS**	**ln_CCDS**
L.ln_CCDS	.839***	.805***	.842***	.806***	.84***	.839***
	(.019)	(.022)	(.019)	(.022)	(.019)	(.019)
D_ln_GDPperC	1.048***	1.083***	1.051***	.928***	1.048***	1.046***
	(.245)	(.26)	(.246)	(.246)	(.245)	(.245)
GDPperCG	-.021***	-.025***	-.022***	-.025***	-.021***	-.021***
	(.006)	(.006)	(.006)	(.006)	(.007)	(.007)
CABtoGDP	-.028***	-.027***	-.028***	-.024***	-.028***	-.028***
	(.004)	(.005)	(.004)	(.005)	(.004)	(.004)
FXRtoIMP	.002	-.001	.003	-.006	.002	.002
	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)
D_ln_Trade	-.009***	-.006*	-.009***	-.005	-.009***	-.009***
	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
D_ExptoGDP	.025***	.023***	.025***	.027***	.025***	.025***
	(.005)	(.005)	(.005)	(.005)	(.005)	(.005)
D_ln_PEI	-.002	-.003	-.002	-.002	-.002	-.002
	(.011)	(.013)	(.011)	(.013)	(.011)	(.011)
D_ln_FDINet	-.011	-.012	-.011	-.012	-.011	-.011
	(.018)	(.019)	(.017)	(.019)	(.018)	(.018)
D_ln_PR	-.003	-.004	-.003	-.005	-.003	-.003
	(.026)	(.026)	(.026)	(.027)	(.026)	(.026)
LE		-.017***				
		(.004)				
D_ln_RP			.025			
			(.036)			
ln_RPO				.038***		
				(.008)		
D_UE					-.002	
					(.016)	
D_LFP						-.005
						(.017)
_cons	.704***	2.216***	.69***	.666***	.704***	.704***
	(.09)	(.393)	(.091)	(.091)	(.09)	(.09)
Observations	1096	1037	1088	1061	1096	1096
R-squared	.784	.784	.784	.786	.784	.784
Robust standard errors are in parentheses						
*** p<.01, ** p<.05, * p<.1						
CCDS = Country Credit Default Swap, GDPperC = GDP per capita, GDPperCG = GDP growth, CABtoGDP = Current account balance to GDP, FXRtoIMP = Total FX reserves in months of imports, Trade = Net trade in goods and services, ExptoGDP = Total exports of goods and services to GDP, PEI = Portfolio Equity Inflows, FDINet = Foreign Direct Investment Net, PR = Personal Remittances, LE = Life Expectancy at Birth, RP = Refugee Population by Country of Asylum, RPO = Refugee Population by Country of Origin, UE = Unemployment Rate, LFP = Labor Force Participation Rate.						

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