



## **IMF Working Paper**

Western Hemisphere Department

### **Income Inequality in Small States and the Caribbean: Stylized Facts and Determinants**

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#### **Abstract**

Rising income inequality has emerged as a major policy issue facing policymakers, but there is a dearth of empirical work on inequality in small states, including the Caribbean. Despite data limitations, the empirical analysis using a sample of small states finds that increased openness and deeper economic integration including financial market openness is associated with lower income inequality, whereas elevated debt levels limit fiscal space and are associated with higher income inequality. An important policy implication is that well targeted social sector spending aimed at improving education and health indicators will support increased redistribution and reduce income inequality.

JEL Classification: O10, F63, I00

Keywords: Small States, economic development, globalization, Gini at market income, absolute redistribution and income redistribution policies.

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## **I. INTRODUCTION**

Widening income inequality has emerged as a major issue to be addressed by policymakers. IMF (2015) pointed out “Inequality can be a signal of a lack of income mobility and opportunity – a reflection of persistent disadvantage for particular segments of society”. This suggests economic wealth and political decision-making are concentrated in a small group, increasing the likelihood of political and economic instability and ultimately a societal crisis. Equally important, the concentration of political decision-making in a small clique is likely to lead to sub-optimal use of human resource potential and expertise in policymaking.

Rising inequality has important implications for growth and macroeconomic stability. Previous studies have found that income inequality (as measured by the Gini coefficient) negatively affects growth and its sustainability (Ostry, Berg and Tsangarides 2014; Berg and Ostry 2011). In addition, inequality also hurts growth drivers as it limits the ability of low-income households to stay healthy and accumulate physical and human capital. This results in an under-investment in education with an adverse impact on labor productivity.

Notwithstanding the increasing concern around rising inequality and the importance of inclusive growth, there is a dearth of analytical work and data on income inequality in the Caribbean and more generally in small states. Consequently, the main contribution of this study is to take a first step in analyzing the trends, determinants, and the evolution of income inequality in small states and the Caribbean.

We focus on cross-sectional differences, given the lack of long historical time series in most countries in the sample, and the associations between market income inequality, fiscal redistribution, and their respective determinants. We find that lower market income inequality is associated with higher foreign direct investment (FDI), financial openness, and public health expenditure in these economies. Fiscal redistribution tends to be lower for countries with higher income, higher debt, and higher public health expenditure, but higher for countries with higher levels of education.

The rest of the paper proceeds as follows. In Section II we provide a review of the literature on the determinants of inequality, particularly in developing countries. In section III we present preliminary stylized facts on inequality in small states and the Caribbean. In section IV empirical results are presented from the estimation of a standard model of the determinants of inequality, and finally we provide an overall assessment of the main conclusions of the analysis and possible policy implications.

## **II. LITERATURE REVIEW**

This paper builds on two strands of literature: the large body of research on the determinants of income inequality in general, and a small collection of papers on income inequality in the Caribbean. From the long list of papers exploring the determinants of income inequality, this

study focuses on those papers studying the determinants of income inequality that are intuitively most likely to be relevant to small states. We group them by types of variables<sup>1</sup>:

- *Economic Development*: No consensus has developed on the relationship between the level of economic development and income inequality. Kuznets (1955) hypothesized that the relationship is non-linear, in which economic development first increases income inequality but later decreases it. Barro (2000) and Cevik and Correa-Caro (2015, 2020) find evidence supporting this theory for a broad sample of emerging market economies. However, this theory does not explain the increase in income inequality in advanced economies in the past three decades, documented by Piketty (2014), among others.
- *Globalization*: Several variables related to globalization, such as trade openness, capital account openness, and FDI, are found to affect income inequality differently. Goldberg and Pavcnik (2007) survey the literature and observe that globalization has broadly led to an increase in inequality, mainly focusing on the Latin American countries that experienced trade liberalization in the 1980-90s. The authors pose several potential explanations, such as change in comparative advantage (trade), outsourcing (FDI), complementarity between capital flows and skill bias (financial globalization), and skill-biased technological change (all). Jaumotte, Lall, and Papageorgiou (2013) report that higher trade openness (both *de jure* and *de facto*) is associated with lower income inequality (especially agriculture exports), while *de facto* financial openness, including the stock of inward FDI, is associated with higher income inequality. Furceri, Loungani, and Ostry (2017) report that large changes in *de jure* capital account openness has led to significant increases in income inequality. Bogliaccini and Egan (2017) argue that FDI in services is more likely to be associated with higher inequality than FDI in other sectors.
- *Public (Fiscal) Policy*: Fiscal policy variables affect income inequality by shaping companies' and workers' decisions and via fiscal redistribution. Their role is dependent on both the size and design of fiscal policy. Progressive taxes and transfers targeted to low income groups decrease disposable income inequality (see Section III below), whereas in-kind transfers such as health and education spending influence the inequality of market incomes (IMF (2017)). The role of fiscal policy in fiscal redistribution is likely to be smaller if the size of the government is smaller, if reliance on indirect taxes is higher, and if the transfers are not well-targeted. Martinez-Vazquez, Vulovic, and Moreno-Dodson (2012) report estimates that are supportive of this hypothesis.
- *Public Debt*: Higher public debt may be associated with income inequality since unsustainable debt levels may limit governments' capacity to invest in social expenditures – education and health – that reduce inequality. Several studies have proposed varying mechanisms to establish positive association between income inequality and the level of public debt. Azzomonti et al. (2014) propose a heterogeneous agent DSGE model to show that the combination of financial globalization and a higher idiosyncratic income shock induces higher public debt. Hager (2016) studies developments of ownership structure of U.S. public debt and argues that concentration of

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<sup>1</sup> There are other potential determinants of income inequality, which we cannot include due to the lack of data.

public debt ownership among high-income households and the favorable performance of the increasing U.S. Treasury market since the early 1980s account for the positive correlation between public debt and income inequality.

- *Socio-demographic factors*: The level of educational attainment affects income equality but it varies depending on the segment of the education achievement distribution. A higher level of education attainment, if achieved by an increase in the lower end of the educational achievement distribution, could decrease income inequality, but not if it is achieved at the high end of the distribution (Barro (2000)). In Latin America, a higher level of education achievement in the 2000s is associated with a large supply of skilled labor and compression in skill premium, leading to lower income inequality (Messina and Silva (2018)).

Analysis of the determinants of income inequality in the Caribbean region and small countries more generally is scarce. The Caribbean Development Bank (CDB (2016)) documents broad stylized facts on poverty and social conditions in the Caribbean as well as inequality, and estimates determinants of poverty. Bellony, Hoyos, and Ñopo (2010) focus on documenting stylized facts of gender earnings gaps in two countries, Barbados and Jamaica. Data availability is a major obstacle to studying income inequality more rigorously, as household budget surveys are regularly conducted in very few countries. Solt (2019) achieves the largest coverage by extensive imputation. This approach comes with a drawback as the estimated data are highly uncertain and there is little variation over time. We discuss the issue of data limitations in more detail below.

### III. STYLIZED FACTS

Rising income inequality has been widely studied in the last twenty years and has currently become one of the most pressing concerns affecting societies worldwide. The literature agrees that increased inequality can erode social cohesion, lead to political polarization, and ultimately lower economic growth. Nevertheless, the global picture on inequality has been mixed and highly heterogeneous and its determinants vary according to the intrinsic characteristics and structure of regions and countries.

Due to problems with data availability, research has mostly focused on a narrow sample of large emerging and advanced economies. As sufficiently long and comprehensive time series are not available for most small states, this study focuses on the analysis of cross-country differences rather than the time dimension.

There are different angles by which income inequality is measured and studied. For the purposes of comparability, this study will use metrics of inequality sourced from Harvard University's standardized world income inequality database (SWIID), originally developed by Solt (2019). Specifically, the study will focus on two variables of interest: Gini measured at market income and a measure of absolute redistribution. These are defined as follows:

- Gini at market income is based on the amount of money coming into the household excluding government cash or near-cash benefits and represents the market measure that does not consider any fiscal policies or policies of redistribution.

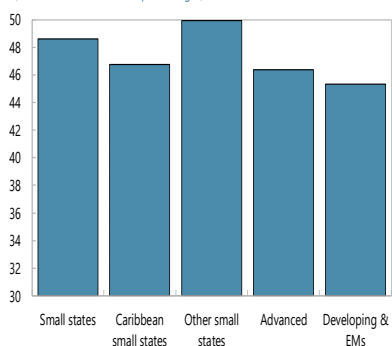
- The measure of absolute redistribution represents direct taxes and transfers, and it is simply defined as the difference between Gini at market income and Gini at disposable income.
- Gini at disposable income represents the net household income after deductions of direct taxes and transfers.

We are interested in the determinants of both market-based income inequality, and the fiscal redistribution that would mitigate it. While the literature often conflates these two and uses the disposable income Gini coefficient as the measure of income inequality, there are still potential nuances and nonlinearities that are difficult to observe from simple correlations that are one-dimensional in nature. Further analysis on these nonlinearities will be discussed in the quantitative analysis section.

Overall, the data challenges for small states are not limited to inequality indicators, however; the study tries to analyze and test the main indicators used in the literature as determinants to measure and control income inequality. These include: a country's economic growth and development, globalization, public policy, and institutional and socio-demographic characteristics.

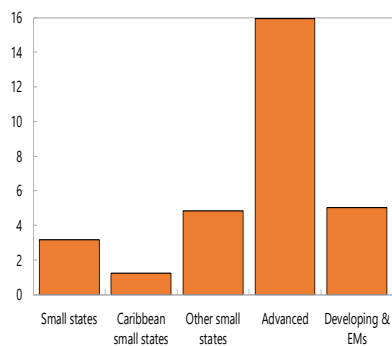
In this first layer of the analysis, and before more in-depth quantitative investigation, preliminary stylized facts between the two metrics and the main determinants identified in the literature are presented. For country data consistency, the sample period coverage is from 2000 to 2014 and includes countries under the broad definition of small states and microstates, defined in the literature as countries with a population of less than 1.5 million. The sample includes 31 countries (see Annex 1) covering the Caribbean, Africa and the South Pacific, and for comparability purposes, we have excluded more advanced micro-states or principalities. Based on the two metrics of inequality utilized, a preliminary look into the data suggests that market income inequality is lower in the Caribbean compared to other small states, and absolute redistribution is also lower in the Caribbean, which implies that disposable income inequality is relatively or marginally higher in the Caribbean than it is in other small states. However, at first glance, there are clear gaps in absolute redistribution and the Gini at disposable income measures for small states in comparison to developing and emerging economies, and in particular to advanced economies.

**Gini (at market income)**  
(Coefficient 2000-2014 simple averages)



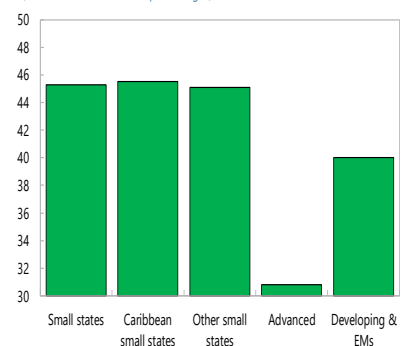
Source: The Standardized World Income Inequality Database.

**Absolute redistribution**  
(Coefficient 2000-2014 simple averages)



Source: The Standardized World Income Inequality Database.

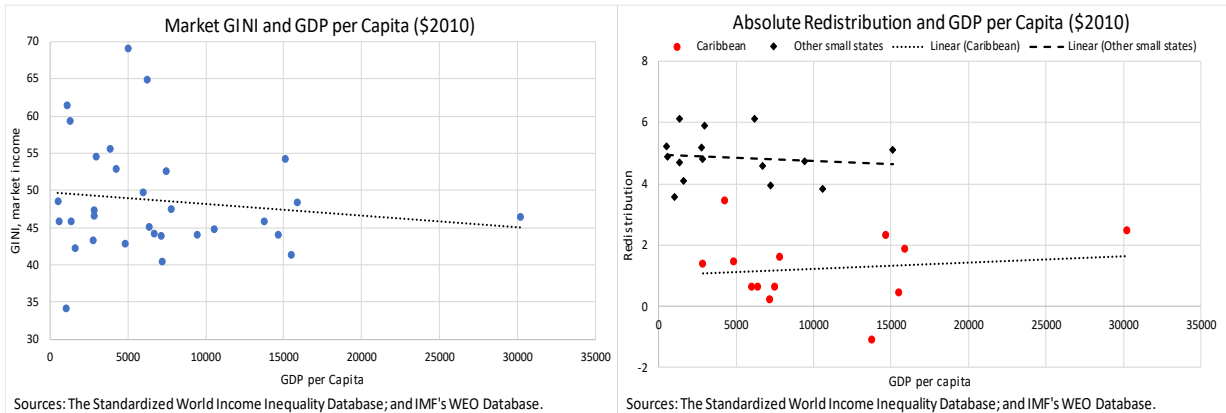
**Gini (at disposable income)**  
(Coefficient 2000-2014 simple averages)



Source: The Standardized World Income Inequality Database.

## A. Economic Development

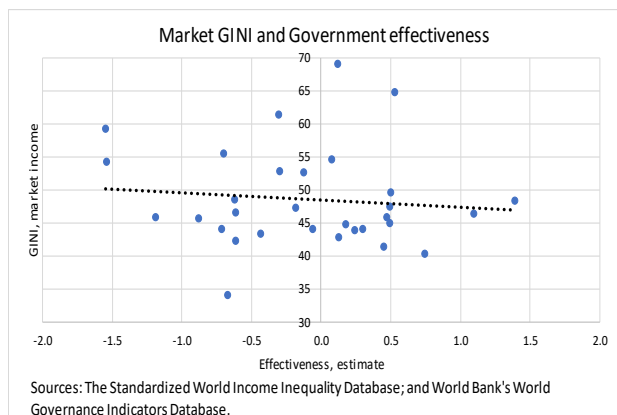
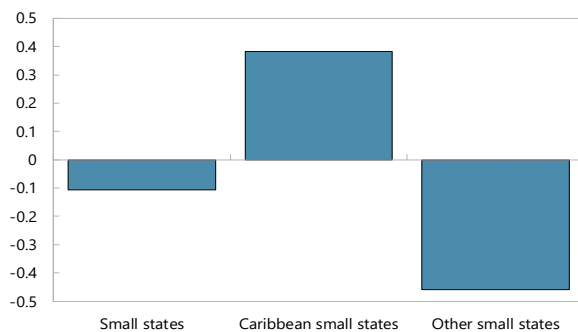
As discussed earlier, economic development has been widely studied in the income inequality literature. In this case, the correlations between economic development, as proxied by real GDP per capita, and the two measures of inequality noted above suggest that higher levels of income per capita are on average associated with lower income inequality as measured by the Gini at market income measure. In terms of redistribution, the results *a priori* are weaker but suggest that, in the Caribbean in particular, higher levels of income per capita are associated with higher absolute redistribution.



## B. Public Policy and Institutions

The fundamental importance of institutional and governance frameworks for socio-economic development are well documented. We find that institutional capacity, as proxied by government effectiveness ratings from the world governance indicators database, is higher in the Caribbean than in other small states and, in general, higher government effectiveness is on average associated with lower income inequality<sup>2</sup>. On the other hand, the association

### Government Effectiveness, 2000-14 (Estimate)



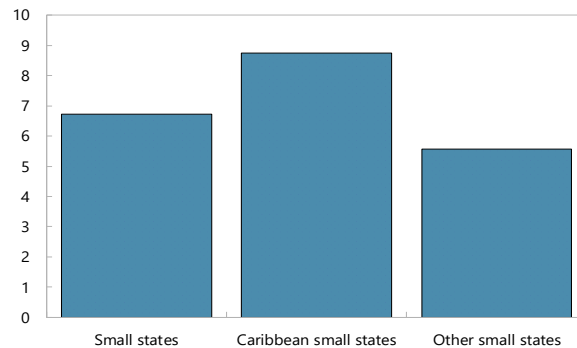
<sup>2</sup> Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Estimates give a country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.

between government effectiveness and redistribution is unclear; this will be further analyzed subsequently.

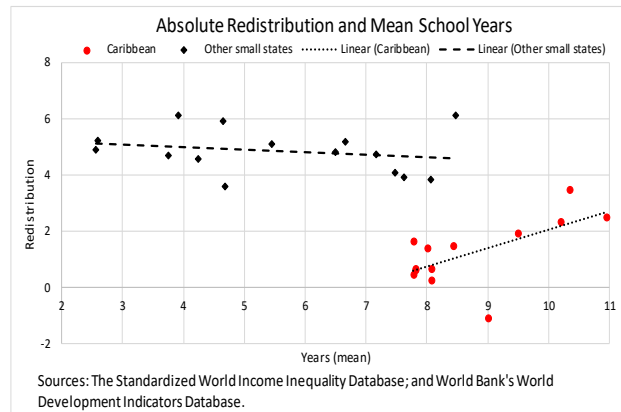
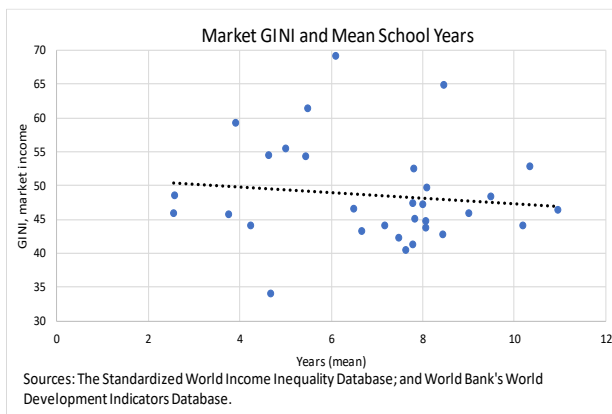
### C. Socio-demographic

Socio-demographic and cultural factors are also fundamental determinants of income inequality. States' redistributive policies also include indirect actions such as spending on education and health care. These expenditures do not affect individuals' current disposable income, although over time they strengthen human capacity and facilitate integration into the labor market resulting in a society with higher standard of living. In our sample, education levels as proxied by mean years of schooling show that the Caribbean is on average more educated than other small states. In line with the literature, in aggregate terms, higher education levels are associated with both lower market income inequality and higher absolute redistribution in Caribbean countries.

**Mean Years of Schooling**



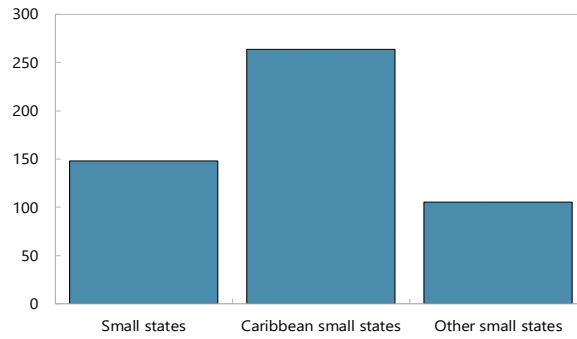
Source: United Nations' UNDP Database.



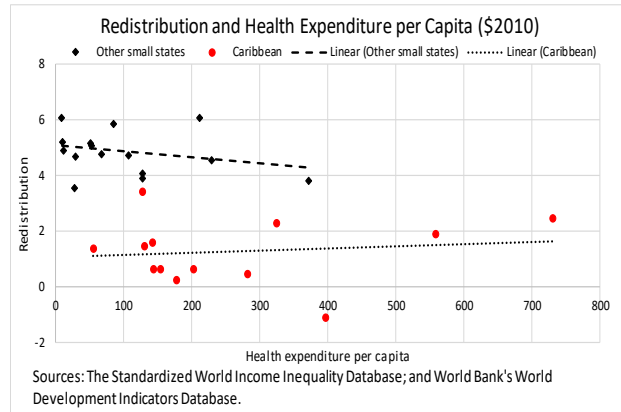
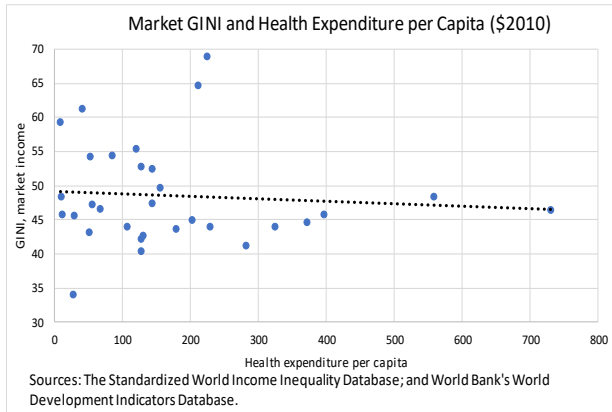
The Caribbean region also has higher levels of health expenditure per capita than other small states. In aggregate terms, higher health expenditure is also associated with lower market income inequality. Similar to the results on education levels, higher health expenditure is associated with more redistribution in Caribbean countries, although that result does not hold for other small states.



**Domestic Health Expenditure per Capita, 2000-14**  
(2010 US\$)

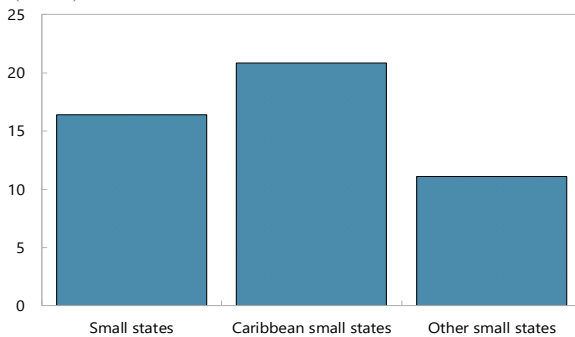


Source: World Bank's World Development Indicators Database.



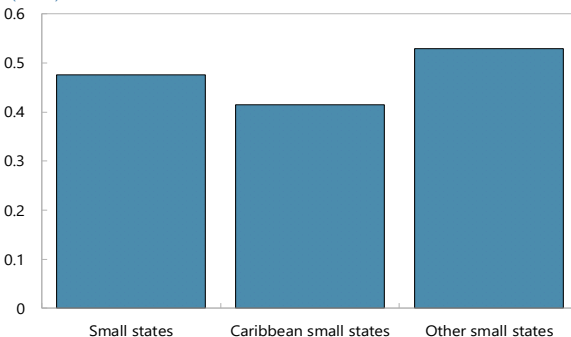
Crime, violence and gender inequality have negative effects on socio-economic development. Crime and violence are costly to tackle, burdening both public and private sectors with the significant cost of prevention and monitoring and resulting in losses in output (Jaitman, Khadan, and Sutton, 2017). Crime and violence as measured by homicide rates are on average higher in the Caribbean than in other small states, as observed below. Preliminary correlations suggest that, in aggregate terms, higher crime rates are associated with both higher market income inequality and lower absolute redistribution. However, this must be interpreted cautiously; in independent samples of “Caribbean” and “other [small] states” other factors in combination with crime may play an important role in explaining its variance. For instance, it is important to note that the interactions of other control variables such as debt (see below) and other sociodemographic determinantss, such as health and

**Homicide Rates, 2000-14**  
(Percent)



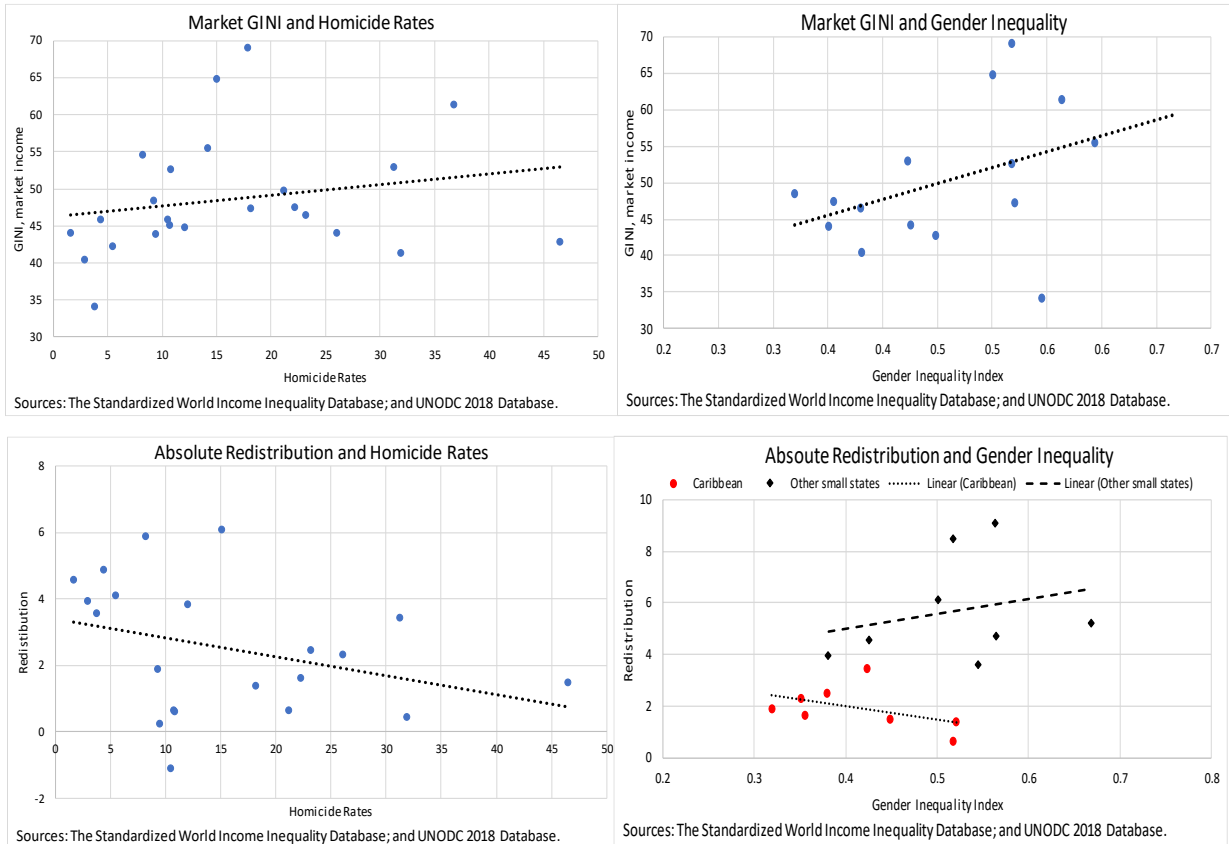
Source: United Nations' UNODC 2018 Database.

**Gender Inequality Index, 2000-14**  
(Index)



Source: United Nations' UNDP Database.

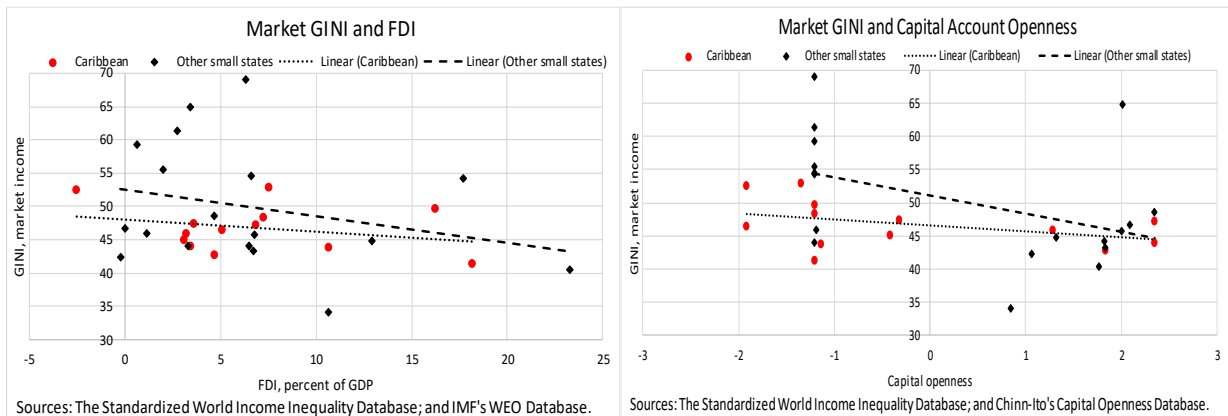
education as seen earlier, contribute to explaining the indirect effects on inequality. Moreover, gender inequality is on average lower in the Caribbean than in other small states and, unsurprisingly, the data suggest that higher gender inequality is associated with higher market income inequality in both the Caribbean and other small states. Finally, gender inequality is also associated with lower absolute redistribution for the Caribbean sample, although this relationship is unclear for the other sample groups.



#### D. Globalization and Openness

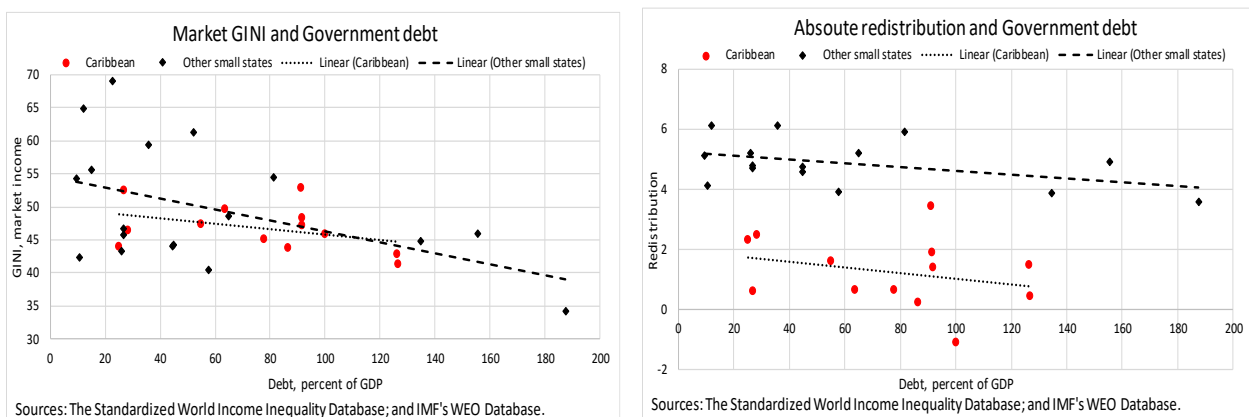
Foreign direct investment (FDI) and its effects on income inequality have been widely studied in the literature. Although the overall conclusion is that higher FDI is associated with higher income inequality, in small states and particularly in the Caribbean, the data suggest the opposite association. In terms of redistribution, the results are up to this point inconclusive. Similar to FDI, capital account openness as measured by the Chin-Ito index has been widely studied; Although the broad view suggests that higher financial openness is also associated with higher market income inequality, for small states the data also suggest that higher capital openness is associated with both lower inequality and higher redistribution. Our preliminary analysis suggests that for many small island states, FDI and capital account openness could reduce inequality because external capital flows finance most of the economic activity in these countries. For instance, many Caribbean countries are dependent on tourism flows related to FDI and these investments have a significant impact on

employment. This interdependence may help lower income inequality, implying that openness and financial integration could be important policy measures for inequality reduction in small states.



## E. Public Debt

Finally, unsustainable debt levels significantly limit government's capacity to invest in health, education, and other social programs that might help narrow the inequality gap. Our analysis indicates that for Caribbean countries, and particularly for other small states with much lower levels of debt-to-GDP than Caribbean countries, higher levels of public debt are associated with lower market income inequality. The absolute redistribution measure of inequality appears to be in line with the broad view of the literature which suggests that higher -debt-to-GDP ratios are associated with lower redistribution. The preliminary results suggest that lower or sustainable levels of debt can help reduce inequality, while in countries with high debt like the Caribbean region, lower debt does not appear to help with inequality reduction. These dynamics are explored in the next section.



In summary, a broad set of determinants used in the literature and simple bivariate relationships with the two chosen inequality measures have been presented. The study will further analyze these preliminary results and try to shed light, in a more comprehensive and

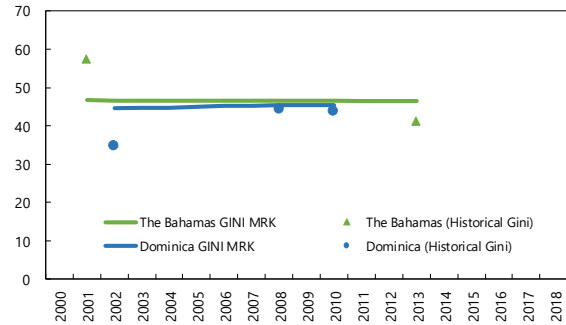
controlled setting, on the association between the two chosen measures of inequality and their potential determinants.

#### IV. QUANTITATIVE ANALYSIS: THE ASSOCIATION OF INEQUALITY AND REDISTRIBUTION WITH SOCIAL AND ECONOMIC INDICATORS.

##### A. Data Issues

The quality of the data needs careful review for assessing inequality and redistribution in small states in general, and particularly in Caribbean countries. Although a comprehensive panel dataset of inequality and redistribution estimates is available for most small states from the SWIID project database, this analysis is based on their cross-country variance only. This responds to the lack of continuous time series of historical official (and unofficial) measures of inequality and redistribution. Most of the SWIID's time series estimates for small states are based on just a few points of historical data and show scarce variability over time (see Figure 1.) In addition, those estimates have wide confidence intervals which make the statistical significance of any further analysis elusive. Given that inequality is typically a persistent phenomenon, we believe that a cross-section approach provides a balance between the lack of historical data and validity of results. Also, for homogeneity, we exclude from the analysis small states with high income (e.g., large oil exporters and principalities). In that sense, our investigation is a cross-section association analysis exclusively for non-high-income small-states.<sup>3,4</sup>

Figure 1. Gini Index - SWIID Estimates vs Historical Data



Source: SWIID database.

##### B. Econometric Specification

Inequality levels and income redistribution policies vary across regions and countries. This study aims to identify the most significant conditional correlations between these policies and economic and social indicators. Based on our observations in Section III and following related literature (e.g., Ramos et al., 2018, ECLAC), we estimate a general econometric specification to produce evidence on the variables associated with inequality and redistribution. The identified set of indicators from the earlier discussion is employed, namely: economic development (GDP per capita), fiscal policies (revenues, expenditure, transfers), quality of human capital (education and health indicators), public financing stress

<sup>3</sup> Due to the lack of long historical time series data and adequate instruments at cross country level, we do not attempt to identify causes of inequality. Instead, we report and interpret our results as statistically significant relationships.

<sup>4</sup> The list of countries included in the regression is reported in Annex 1.

(debt levels), economic environment (terms of trade, trade and financial openness, quality of governance), and idiosyncratic elements (demographics).<sup>5</sup>

The general specification is as follows:

$$y_{i,t} = \alpha + \beta_1 GDPpc_{i,t} + \beta_2 HS_{i,t} + \beta_3 Educ_{i,t} + \beta_4 FP_{i,t} + \beta_5 Debt_{i,t} + \beta \text{ Other}_{i,t} + u_{i,t}$$

Two alternative variables for the dependent variable are considered:

$$y_{i,t} = \begin{cases} Gini_{market} \sim \text{Inequality (pre taxes/pre transfers) for country } i \text{ in year } t \\ \Delta(Gini_{i,t}) = Gini_{market\ i,t} - Gini_{Disposable\ i,t} \sim \text{Redistribution for country } i \text{ in year } t \end{cases}$$

while the set of independent variables includes:

*GDPpc<sub>i</sub>* = GDP per capita

*HS* = Health spending

*Educ* = Years of schooling

*FP* = Fiscal Policy

*Debt* = Public debt level

*Other* = a vector including the following additional variables and controls: trade and financial openness, terms of trade, and demographics.

### C. Empirical Results: Association between social and economic indicators and inequality

Table 1 shows the results of a between-effects model for the Gini coefficient. The model includes data for 31 countries between 2000 and 2014 and captures 63 percent of the total variance of inequality. This is the preferred specification. As described before, the time series dimensions of the panel data information are truncated and the models are estimated based on their average values for the information available since the year 2000. As robustness checks, estimations were run with other variables to capture alternative dimensions of fiscal policy (direct and indirect tax revenues and transfers), governance quality (control of corruption, regulatory quality), overall economic development (GDP per capita), and human capital quality (years of education). None of these reached a statistically significant association with inequality levels.

The results indicate that lower inequality levels are associated with higher FDI, financial openness, and public health expenditure (Table 1):

- In most Caribbean countries, financial openness and FDI inflows facilitate investments in tourism, a labor-intensive sector. In many countries, FDI inflows have been vital to the growth and expansion of the tourism sector, providing significant employment opportunities and ensuring income to a large share of the workforce. Those large foreign investments, which usually exceed local private sector capacity, might contribute to

<sup>5</sup> We also explored the potential association between inequality and redistribution with crime, gender gaps and natural disaster indicators. They were not included in any of our final specifications because none of them showed statistically significant results.

inequality reduction via their positive impact on employment. Similarly, financial openness is a pre-condition to promote FDI and safeguard operations of foreign companies. An increase of 1.0 percentage points of GDP in FDI inflows is found to be associated with a Gini coefficient 0.4 points lower (scale 0-100); also, a one-standard deviation higher level of financial openness is linked to lower inequality levels by about 3 points.<sup>6</sup>

- Regarding public health expenditure, it is well known that appropriate health systems are a pre-requisite for strengthening human capital. A healthier population implies a more uniform and better prepared labor force. Those factors directly determine employment and income levels. An additional 1.0 percent of GDP assigned to health expenditure is associated with a Gini index 3.1 points lower.

Higher public debt is likely to be linked to lower inequality but not when it reaches a certain high or unsustainable level. Increased public debt could contribute to reducing income inequality, but not in all cases. The results suggest that additional public debt for countries with moderate and sustainable debt levels can be associated with lower inequality levels. That is not the case for Caribbean countries, which have in recent history recorded higher and mostly unsustainable public debt paths than other small states, partly because of their high exposure to external shocks (e.g., large tourism sector and frequent and destructive natural disasters). The estimates show that for Caribbean countries, the beneficial relationship between public debt and inequality is muted (See Table 2<sup>7</sup>). Public debt in the Caribbean represents, on average, 76 percent of GDP compared to 55 percent of GDP in other small states.

**Table 1. Identifying Variables Associated with Inequality (Gini Index)**

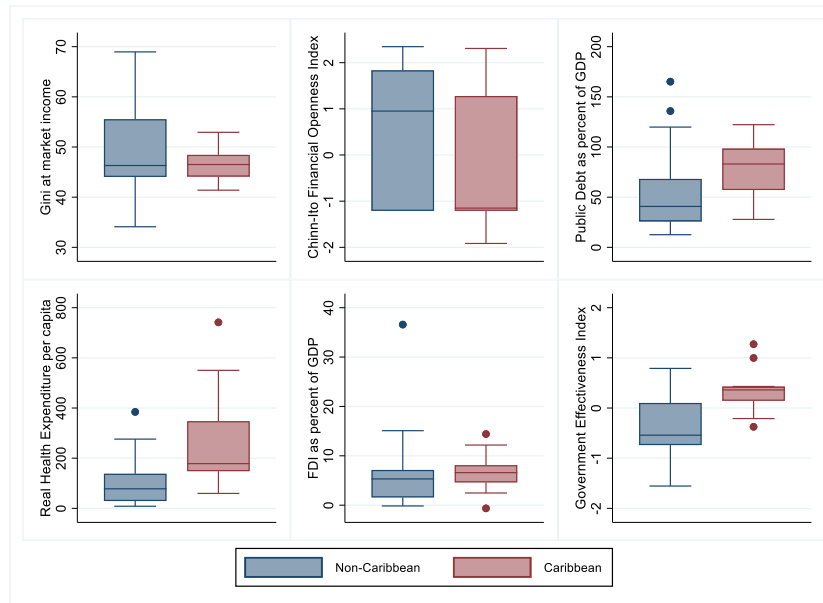
Number of Observations	31		
F-Stat	4.16		
R-Squared	0.63		
<b>Gini at Market Income (0-100)</b>	Coef.	P-value	Standardized Beta
Financial Openness	-2.82	0.00	-0.58
Caribbean Dummy	-11.54	0.02	-0.77
Public Debt/GDP	-0.11	0.00	-0.59
Public Debt/GDP*Caribbean	0.10	0.04	0.60
Domestic Public Health Expenditure/GDP	-3.10	0.09	-0.48
FDI/GDP	-0.40	0.06	-0.37
Government Effectiveness	10.17	0.03	0.94
Government Effectiveness*Caribbean	-10.34	0.01	-0.45
Constant	77.37	0.00	

Source: Author's calculations.

<sup>6</sup> The Chinn-Ito Financial Openness index is a normalized measure, so the coefficient in the regression represents the marginal effect of a change in one standard deviation of the world sample.

<sup>7</sup> Table 2 shows explicitly the differences between Caribbean and non-Caribbean countries implied by the coefficients reported in Table 1.

**Figure 2. Box Plots of the Variables Included in the “Inequality” Regression**



Further analysis of the association between economic development and inequality would help identify potential channels for inequality reduction. The specification in Table 1 does not include GDP per capita—a typical variable reflecting the level of economic development—in the set of controls. However, it includes an index of government effectiveness. The correlation between GDP per capita and government effectiveness is about 0.65 in the sample and suggests that the government effectiveness index also serves as a good proxy for economic development. The results show that higher government effectiveness (i.e., better economic outcomes) is usually associated with more inequality. However, as in the case of public debt, that result applies to non-Caribbean small states only. In other words, no statistically significant effect of government effectiveness on inequality is found for Caribbean countries (see Table 2).<sup>8</sup> Finally, it is important to underscore that the idiosyncratic Caribbean binary variable is not significant after controlling for other covariates, which suggests that the other controls included in our specification capture the main differences between the Caribbean and non-Caribbean small states.

<sup>8</sup> As related IMF research suggests (see Grigoli and Robles, 2017; and Grigoli et al., 2016) the empirical relationship between inequality and economic development is inconclusive. If income is not highly concentrated, an increase in inequality can provide incentives for countries to be more productive. If highly concentrated, that same increase can lead to rent-seeking behaviors. Thus, the relationship between inequality and economic development is likely to be non-linear. The impact of income inequality on economic development is positive for values of a net Gini below a certain threshold but that impact becomes negative for values above it, and null elsewhere.

**Table 2. Inequality Regression: Additional Marginal Effects**

		Coeff.	P-value
Caribbean Dummy		-3.41	0.2
Public Debt/GDP	Overall	-0.065	0.012
	Caribbean	-0.004	0.91
	Non-Caribbean	-0.11	0.01
Government Effectiveness	Overall	5.84	0.097
	Caribbean	-0.17	0.95
	Non-Caribbean	10.17	0.03

Source: Author's calculations

To summarize this sub-section, inequality levels are associated positively with government effectiveness, but only for non-Caribbean countries. On the other hand, higher levels of financial openness, public health expenditure, FDI, and public debt are all associated with lower inequality levels. However, for the latter indicator – public debt – the effect is only statistically significant for non-Caribbean countries.

#### **D. Empirical Results: What country characteristics are linked to higher levels of redistribution?**

Like the previous section, we employed a between-effects regression for the level of absolute redistribution, measured in terms of changes to the Gini coefficient. The preferred specification is reported in Table 3, and the main findings are explained below.

Countries with higher income and public debt levels appear to be more likely to redistribute less. The relationship between income and redistribution might appear intuitive. Richer countries may have a higher share of people and workers with higher income and better living conditions such that redistribution policies might not be as necessary or would apply to a smaller fraction of their population.<sup>9</sup> The results show that small states with a GDP per capita 10 percent higher are expected to have lower inequality by 0.05 percentage points owing to income redistribution policies, a modest relationship.<sup>10</sup> Regarding public debt, a negative association was found between it and redistribution levels. A plausible explanation is that countries with higher levels of public debt are more likely to face higher debt service and thus less fiscal space to implement redistribution policies. The results show a statistically significant coefficient, although its magnitude is not substantial. An increment of 10 percent of GDP in public debt is associated with less redistribution, but just equivalent to a Gini coefficient 0.1percentage points lower.

<sup>9</sup> However, if we consider redistribution levels in advanced economies, this tentative explanation is at least controversial. Income redistribution policies in most advanced European countries are much larger, indeed, on average, they represent a reduction in the Gini coefficient of around 20 points (the difference between Gini at market income and Gini at disposable income). As stated in previous sections, redistribution levels in small states represent on average about 3 points of their Gini inequality index.

<sup>10</sup> Note that the interpretation of the coefficients in Table 3 is not straightforward. Redistribution is not measured in terms of changes in income but instead in terms of the change of Gini coefficient due to changes in income connected to payments of direct taxes and receipts of direct transfers (i.e. redistribution through fiscal policies).

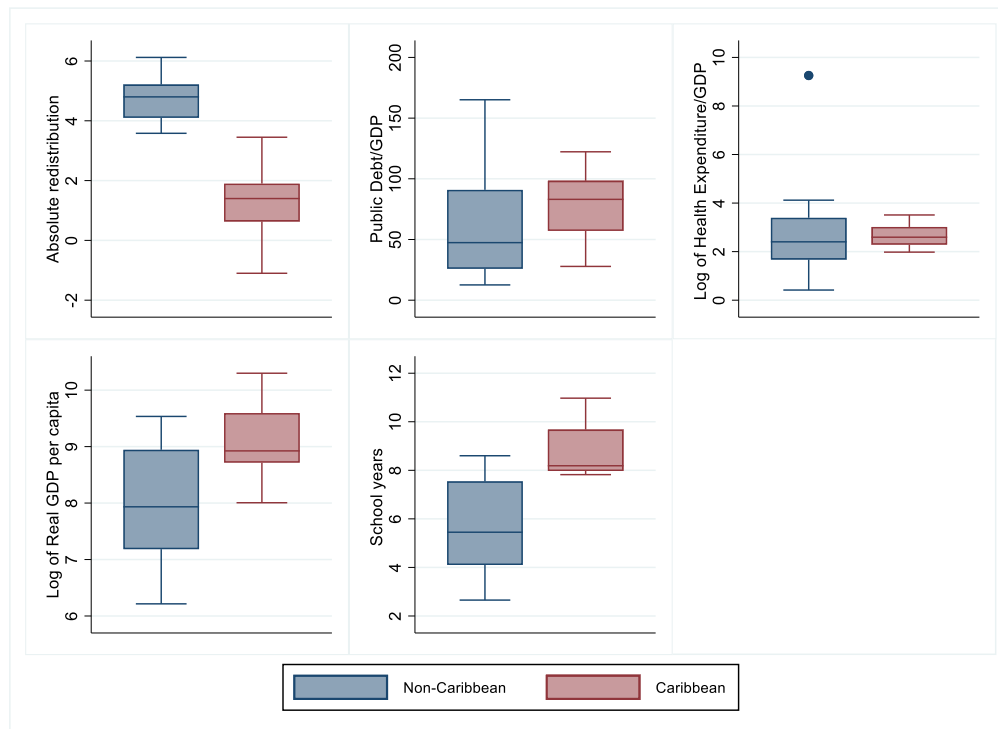


**Table 3. Identifying Variables Associated with Inequality Reduction as a result of Fiscal Policies**

Number of Observations	28		
F-stat	30.23		
R-Squared	0.85		
Absolute Redistribution	Coef.	P-value	Standardized Coefficients
Caribbean Dummy	-3.59	0.00	-0.88
Public Debt/GDP	-0.01	0.09	-0.15
Domestic Public Health Expenditure/GDP	-0.20	0.10	-0.15
Log of Real GDP per capita	-0.55	0.07	-0.28
Years of schooling	0.31	0.10	0.33

Source: Author's calculations

**Figure 3. Box Plots of the Variables Included in the “Absolute Redistribution” Regression**



Countries with higher education levels are more likely to redistribute more. While the connection between these two variables may be unclear, a possible intuition on the relationship between these variables includes the following: the size of the informal sector is substantial in small-states and usually made up of mostly low-skilled workers.<sup>11</sup> Moreover, low-skilled workers in the informal sector are less likely to benefit from fiscal redistribution policies given they do not fall in the tax net. Thus, a more educated labor force would provide a larger base of potential beneficiaries. The results show that one additional year of

<sup>11</sup> According to Medina and Schneider (2018), the size of the informal economy in small states could be as much as twice the observed in advanced economies.

education is linked to an increase in redistribution (i.e., a reduction of inequality) of about 0.3 percentage points.

Countries with higher public health expenditure are, however, likely to redistribute less. Tentatively, two mechanisms could be at work in this relationship: from the supply side, higher public health expenditure, or any public expenditure in general, reduces fiscal space and availability of resources to be re-distributed. From the demand side, a healthier population would have less need to receive direct fiscal transfers. The model above projects that countries with health expenditure 1.0 percent of GDP higher are associated with less redistribution—by about 0.2 percentage points.

Even though the set of regressors chosen jointly captures most of the variance of the proxy of redistribution, additional explanatory factors are yet to be identified. Compared with the rest of the world, small state economies exhibit lower levels of redistribution. Compared with other small states, Caribbean countries redistribute even less. The model's economic and social variables capture just a fraction of the variability of redistribution in Caribbean countries. Indeed, the Caribbean dummy variable, which is not associated with any specific economic or social variables, plays an important role in explaining cross-country differences in the level of redistribution.<sup>12</sup>

In summary, the small states presented in the sample indicate that increased openness and deeper economic integration, including financial market openness, will lower inequality, whereas elevated debt levels limit fiscal space and are associated with higher inequality. In addition, well targeted social sector spending aimed at improving education and health indicators would support increased redistribution.

## V. CONCLUSIONS AND POLICY IMPLICATIONS

There are important caveats to the empirical analysis in this study. First, the results reflect association, not causation, therefore care must be taken in drawing conclusions and policy implications. Second, the results indicate that inequality levels in Caribbean countries could not be fully captured by the set of controls featured in the models. Indeed, the results suggest the presence of other idiosyncratic elements.

Taking into consideration these caveats, the analysis indicates that Caribbean countries exhibit lower levels of inequality compared to other small states. Equally important, in trying to explain redistribution patterns, expenditure variables are found to be more important than revenue or tax policy variables. Specifically, health expenditure is associated with lower levels of inequality measured at market income, and possibly, lower needs for redistribution. A plausible explanation is that higher levels of health spending lead indirectly to lower inequality since it increases the availability and quality of public health services, allowing families to increase consumption on other goods and services. Also, improvements in education indicators could increase the amount of resources that are redistributed. With higher levels of educational attainment, people generally achieve higher living standards and

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<sup>12</sup> Without the Caribbean dummy, the model's goodness of fit (R-Squared) would reduce to 0.55, while only including it, the R-Squared would already be almost 0.8.

more move from the informal to formal sector. Taken together, this implies that policy towards reducing inequality in the region should place greater emphasis on implementing efficient and prioritized expenditure policies aimed at meeting targeted improvements in social indicators (e.g., number of years of schooling). Strengthening public financial management systems will also be fundamental to ensuring effective and targeted social sector spending that can lower inequality and that is efficiently delivered.

Foreign direct investment plays an important role in the development of the export sector, including regional tourism. The results indicate that FDI has a positive impact on reducing inequality, providing support to the policy of pursuing increased openness, and deepening integration with the regional and global economy.

In contrast, high levels of public debt, as observed in the Caribbean, are usually associated with higher levels of inequality. High debt levels significantly reduce fiscal space and constrain the government's ability to implement productive policies—including the expenditure policies noted above—that reduce inequality. The adoption of credible medium-term macroeconomic frameworks aligned with a long-term debt target and implementation of structural reforms to strengthen potential growth are needed to place the region's economies on a downward debt-to-GDP trajectory, thereby creating the fiscal space for targeted social sector spending that will reduce inequality.

Finally, the preliminary analysis demonstrates that there is considerable merit in doing more detailed empirical work on the Caribbean and other small states using micro data from country level anonymized household budget surveys. Although collecting this information requires time and regional coordination, this would facilitate a deeper understanding of the determinants of inequality and greater insights into developing well targeted policies to reduce inequality.

**ANNEX 1: COUNTRY SAMPLE – 31 COUNTRIES**<sup>13</sup>

**Caribbean small states (13):** Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, The Bahamas, Trinidad and Tobago

**Other small states (18):** Botswana, Cabo Verde, Comoros, Djibouti, Equatorial Guinea, Gabon, Guinea-Bissau, Kiribati, Lesotho, Maldives, Mauritius, Micronesia, Namibia, São Tomé and Príncipe, Seychelles, Swaziland, The Gambia, Vanuatu

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<sup>13</sup> Initially, we followed the IMF's criteria for small developing states, that is for states with populations under 1.5 million. However, data availability was an issue and some countries had to be omitted. To compensate for this "similar small states" were added to the sample with populations around 2 million.

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