

# **The Impacts of Foreign Direct Investment on the Socioeconomic Outcomes of Jamaican Citizens**

Ahliaa Moore

April 28, 2021

Faculty Advisors:

Professor Adam Honig

Professor Mesay Gebresilasse

*Submitted to the Department of Economics at Amherst College in partial fulfillment of the requirements for the degree of Bachelor of Arts with honors*

## Abstract

Foreign Direct Investment (FDI) is one of the most prominent methods for achieving socioeconomic development in emerging economies. Since the 1980s, the creation of Special Economic Zones (SEZs) has been a popular method of incentivizing more foreign investment into specific geographic areas, under the assumption that this will increase the socioeconomic development of those areas. In this paper, I test the assumption that the increased presence of SEZs, and by proxy FDI, results in improved socioeconomic outcomes by testing the impact of recently created SEZs in Jamaica. Using a panel regression with area and time fixed effects, I determine the impact of SEZs onto some important socioeconomic indicators: school attendance, health insurance, home ownership and receipt of public assistance. I confirm that the presence of SEZs has a significant positive impact on the percentage of families owning their own homes but find a negative effect on health insurance and little effect on public assistance and school attendance. Placed within political context, these results suggest that the increase in SEZs, and by proxy FDI, does follow the theoretical assumption of positive improvements for some social outcomes, but not all, depending on government policies.

*JEL Classification:* O12, O15, F63

*Keywords:* Household Development, Human Development, Foreign Direct Investment

## **Acknowledgements**

I first want to express my gratitude and appreciation to my faculty advisors who guided me through this thesis process and allowed the work over this year to come to fruition. Thank you to Professor Honig, whose advice, review, and guidance made this thesis possible. Thank you to Professor Gebresilasse, whose support helped to inspire the framework of this project.

Thank you to Professor Reyes for her guidance and teaching throughout the fall semester, allowing this project to begin with a more secure foundation. Thank you to Professor Sims for her cheerful support and encouragement. Thank you to Ricardo, who made Stata less intimidating.

Thank you to Professor Kingston, my academic advisor, for supporting me throughout the economics major and for encouraging me to write an Economics thesis.

Thank you to those outside of the Economics department who supported me, including but not limited to my friends, family, and Amherst faculty. Your support, check-ins, and love have been very motivating throughout this process.

# Table of Contents

<b>I.</b>	<b>Introduction</b>	<b>1</b>
<b>II.</b>	<b>Literature Review</b>	<b>6</b>
<b>III.</b>	<b>Data Sources</b>	<b>11</b>
<b>IV.</b>	<b>Methodology and Data Review</b>	<b>13</b>
	A. Model	13
	B. Variable Review and Measurement	16
	1. Dependent Variables	18
	2. Independent Variable	22
	3. Control Variables / Covariates	23
<b>V.</b>	<b>Results and Discussion</b>	<b>26</b>
	A. Results for School Attendance	26
	B. Results for Health Insurance	29
	C. Results for Home Ownership	32
	D. Results for Public Assistance	35
<b>VI.</b>	<b>Robustness Check</b>	<b>37</b>
	A. Using SEZs frequency rather than SEZ dummy variable	37
	B. Addressing geographic biases pf SEZ locations with area fixed effects	38
	C. Separating Kingston and St. Andrews parishes from the data	39
	D. Limitations of survey data and observational studies	43
<b>VII.</b>	<b>Conclusion</b>	<b>43</b>
	<b>Appendix</b>	<b>47</b>
	<b>References</b>	<b>48</b>

## **I. Introduction**

Despite theories on the potential benefits Foreign Direct Investment (FDI) can have in developing and emerging economies, research on the effects of FDI on host countries remains conflicted. Where there are studies of effective FDI implementation resulting in improved infrastructure and increased human capital, there are also studies revealing little evidence of market stimulation or technological spillover. This uncertainty surrounding the impact of FDI on a host country is especially prevalent within the Caribbean basin, where research on FDI impact has been limited up until the turn of the century. In addition, most studies measuring the effect of FDI remain constrained to impacts on businesses and their productivity but do not explore the effects on socioeconomic outcomes of citizens within the host country. There continues to be no complete consensus on how FDI impacts individuals, especially in the Caribbean. This paper hopes to bridge some of the gap between FDI research within the Caribbean basin and research on the socioeconomic impacts of FDI. Focusing on the country of Jamaica, this paper will address changes in average outcomes before and after the passing of public policy that increased FDI in specific geographic locations, specifically, the Special Economic Zones Act. As countries within the Latin American and Caribbean region grow into economic hubs and influential international players, it will be important for these nations that rely heavily on foreign capital inflow to understand the full impact of their policies on the economy and their citizens.

As one of the leaders in FDI inflows within the region, Jamaica stands as an important representative of the potential impacts of foreign investment on locals. To better understand the results in this paper, it is beneficial to understand some background information about Jamaica and its economic development. Classified as an upper-middle

income country by The World Bank, Jamaica is the largest and most populated island in the English-speaking Caribbean and, therefore, one of the most developed economies for the region. Despite this, Jamaica continues to struggle with many of the same national issues as other emerging economies. With low economic growth, high public debt, environmental vulnerability, and little defense against external and international shocks, Jamaican development has been inconsistent. With a public debt of nearly 140% of national GDP in 2012, Jamaica passed an immense reform program to “stabilize the economy, reduce debt, fuel growth, and gain international support” (World Bank 2020). Hoping to move its economy away from agriculture and manufacturing, the Jamaican government continues to promote service-oriented and high skilled industries, investing more in human capital and international competitiveness, and implementing new policies to incentivize foreign investment (Wilson 2008). It is through these measures that the national debt was able to dip below 100% in 2018 and living standards seemed to improve.

Even so, despite having lower inequality than most countries in the Latin America and the Caribbean region, poverty in Jamaica remained as high as 19% in 2017. Secondary education participation continues to struggle as high costs of attendance deter parents from sending their children to school consistently (Trines 2019). Moreover, public and external debt has begun rising once again since 2017 (World Bank 2020). In contrast, after years of increasing prior to 2013, Jamaica’s unemployment rate reached a historic low in 2019, while GDP has maintained an upward trend for over half a decade (World Bank 2020).

With such conflicting indicators on whether Jamaican society is moving in the correct direction, it is important that Jamaica’s government examines its implemented policies and understands their impacts on the nation’s socio-economic trends. For this reason, this paper

will investigate the recently passed Special Economic Zones Act, which was passed with the intention of attracting more FDI and foreign capital into specific locations within Jamaica for the purpose of increasing employment opportunities, increasing investment in infrastructure and improving the development of the local community.

Understanding Special Economic Zones and Foreign Direct Investment is vital. Foreign Investment can come in two forms: Direct and Indirect. Indirect represents the inflow of portfolio investments and stock ownership of a company, and thus has a reputation of being very volatile and unreliable for longer term development. In contrast, Direct Investment refers to the inflow of foreign capital and infrastructure development, as foreign businesses are established within the host country or foreign owners take over a struggling company. With a more physical component, Direct investment is considered the more desirable form of investment, as foreign companies have stronger stakes in the host country and cannot as easily retreat when economic shocks occur, in comparison to indirect investment. In theory, FDI assists in building the host country's industry and stimulating economic growth through the introduction of new technology and business strategies, investments in the labour force and domestic infrastructure, spillover effects and increased job opportunities, and general economic activity, all while increasing the flow of money within the local market. When it comes to FDI, there is an assumed "rising tide lifts all boats" mentality, so that both investors and investees benefit.

The implementation of SEZ regimes, however, are extremely costly for the host countries, particularly in regard to the forgone tax income. With Jamaica's SEZ policy incentives including decreased Corporate Income Tax rates, Customs Duty Relief, Employment Tax Credits and Capital allowance, there is a lot of potential government

income given up for the sake of attracting more foreign companies. For this reason, Jamaica and other developing nations cannot afford to implement these policies across the nation as one regime, but instead limits these less regulated regimes to specific areas that are likely to be highly productive and contribute enough to economic activity and GDP to overcome the loss in government income. Understandably, underdeveloped and rural areas, with few natural resources or industries to invest into, are not prioritized in the creation of new zones.

Due to these perceived benefits of FDI, many emerging economies have adopted costly public policies and strategies to encourage and incentivize foreign investment. For Jamaica, one such policy is the establishment of Special Economic Zones (SEZs). The Special Economic Zone policy is not unique to Jamaica and can be seen across various emerging economies, such as India and China. Designated to specific geographic areas within a country, SEZs allow for favorable rules for conducting business and unique incentives that cannot be found elsewhere in the country. The emergence of SEZs started in China during the 1980s and aided in the drastic expansion of China's economy. Henceforth, SEZs have become widely popular.

For Jamaica, the implementation of SEZs replaced the now repealed Jamaica Export Free Zone Act, which was established in 1976 and 1985 for the region of Kingston and Montego Bay. With the introduction of SEZs in 2016, many of the Free Trade Zones (FTZs) were replaced and redefined to become SEZs themselves. Under this new regime, new incentives such as a Corporate Income Tax rate of 12.5% - only half the standard rate -, duty-free importation into the zones, expedited business services and many more are enjoyed by the companies established within the area. Such policies expand the market reach of companies, reduce income taxes on businesses, and increase profitability of investments.



Outside of incentivizing foreign companies to start new operations within these zones, the expectations for SEZs are that they will increase domestic employment, increase exports, and contribute to the development of the local community, thereby providing a guiding direction for future policy creation in hopes of creating sustainable economic development. As of the time writing this study was conducted, the Jamaica Special Economic Zone Authority (JSEZA) reports that there are 131 entities operating within Jamaica's Special Economic Zones, with a total investment of over 1 Billion USD (JSEZA).

In this paper I will challenge the assumption of SEZ effectiveness in increasing the positive effects of FDI. Using a difference in difference model, I track the trends of various socioeconomic outcomes between Jamaican constituencies that were affected by the SEZ policy implementation, the treatment, against constituencies that were unaffected, the control. The emergence of the zones will act as the distinctive moment in which a change of FDI can be observed, and therefore its impacts measured. In this model, I investigate impacts on the percentage of home ownership within the area, consistency of children's school attendance, access to health insurance, and need for public assistance. In addition to controlling whether the region was impacted by the SEZ policy, I will be tracking geographic characteristics such as whether the constituency is coastal or inland, urbanization level, political affiliation, access to major transportation, percentage of the labour force in Jamaica's specific major industries.

Using the raw data from the annual Survey of Living Conditions, this paper will average outcomes for most of the constituencies, with only the exclusion of those with inconsistent measurement due to their small size. This paper will consist of data from the 2000 to 2018, with some exemptions in years due to inconsistent tracking or lack of data, as

in the case of 2011. Though this paper seeks to use SEZs as a proxy for FDI, there is a limitation of how accurately these zones can capture how FDI would change in the absence of SEZs.

Section II of this paper will discuss the general findings of previous studies regarding FDI impacts, required characteristics for host countries, and the effectiveness of SEZs in achieving their intended purpose. Section III will discuss the data sources. Section IV will address the specific methodology of this paper and review the variables of this study. Section V will discuss the data and results. Section VI will check the robustness of the study. Section VII will conclude.

## **II. Literature Review**

Governments of developing and emerging economies seek Foreign Direct Investments (FDI) for the inflow of foreign capital in the form of infrastructure, new technology, expanded labour opportunities, development of workers' skills, and increased market competition that FDI usually entails. Under the assumptions of the Neoclassical Growth Theory of macroeconomics, FDI should increase a country's output in the short-run, while providing financial stability, promoting technological advancements, and increasing social wellbeing for the long-run (Ekholm 2017). Expanding on the claim of "technological advancements and increased social wellbeing," the theory of "spill-over effects" assumes that when more developed nations establish advanced infrastructure within host nations, the developing industries can observe and acquire these business strategies, technologies, and human capital and apply them not only to the foreign firms but to domestic firms as well, thereby increasing productivity overall. A panel data study by Zhiqiang Liu found that for a range of Chinese businesses, there was some level of technological spillover between foreign

businesses and the domestic industry, which increased the productivity levels of the domestic firms in the long-term (Liu 2008). Furthermore, Worrell (1993) explains the theory of a “flexible accelerator” effect due to foreign investments into certain sectors since these investments act as a signal to domestic firms (and other potential investors) of the profitability of these sectors.

Working under this perspective, it is understandable for host governments to seek out foreign investment, but it is important to recognize that FDI is not a miracle cure for struggling industries nor capable of creating prosperity from thin air. Empirical research has found positive impacts of FDI are conditional on prerequisite country and labour force characteristics. The strength and stability of domestic financial infrastructure plays a large role in both attracting FDI and seeing its impacts on the economy. Effectiveness and volatility of FDI are partly influenced by banking systems and government regulations, where poor infrastructure can act as a tax on the potential impacts and improvements FDI could have brought (Buchanan, Quan, and Rishi 2012). For the Caribbean Community (CARICOM) region, development of the financial system is relatively weak and has failed to attract the preferable levels of FDI inflows (Mohan and Watson 2014). A substantial level of domestic investment within the host country on the part of the host government is expected for the inflow of foreign capital to be effective; therefore, an organized and uncorrupt government is also required. While Jamaica and other Caribbean countries have been improving their issues with government corruption, this characteristic will still play a part in how FDI impacts a country.

Additional characteristics of the CARICOM region, including weak political stability in the eyes of foreign investors, the need for liberalized trade regimes and improved human

capital conditions, as well as a relatively small “pool” of adequately educated and skilled labourers can also reduce the inflow of FDI and the effectiveness of its impact. (Zhang 2001; Griffith 2005)

As for tracking the direct impacts of FDI, various studies have resulted in some competing understandings on the effectiveness of FDI as a form of economic development. Some studies have found that in countries like post-civil war Cambodia, clear positive impacts can be seen, as the aftereffects of war make any level of investment in physical capital result in significant increases in productivity and GDP (Sothan 2016). While on the other hand, other studies have shown no significant effects for a host country, such as in the case of Spain where empirical models for economic growth over a 26-year time span fail to find evidence of FDI stimulating growth, despite Spain possessing a highly developed financial sector and educated labour force (Carbonell and Werner 2018). Rather, Carbonell and Werner’s study reveals a “crowding-out effect” for domestic firms and their investment, thereby minimizing their capabilities. Evidence of declining productivity for domestic plants as foreign investment increases, due to “market-stealing” effects, brings to question at what point does attracting more FDI become more harmful than good to a local economy and its people (Aitken and Harrison 1999).

This consideration becomes especially important in the cases where FDI negatively impacted socioeconomic outcomes of host citizens, such as in the analytical review of previous FDI research papers conducted by Bornschier, Chase-Dunn, and Robinson. In this study, it was found that the impacts of FDI often increased inequality within the host country, even in the cases where there was evidence of positive economic growth (Bornschier, Chase-Dunn, and Robinson 1978). In concurrence, research has found that FDI inflows have

significant negative impacts on national savings within host developing countries (Fry 1993).

It is possible that these conflicting results from FDI inflow stem from not only a host country's socioeconomic and governmental characteristics, but also from the ways in which FDI is attracted and incorporated into the host economy. In the case of Special Economic Zones (SEZs), the implementation of policies varies between countries. One example is in China, where SEZs have allowed FDI to increase by 58% and be mainly focused into export-oriented industries (Wang 2013). But the placement of SEZs were specifically into areas where foreign investors were already attracted, and more favorable government policies simply ensured investment (Graham 2005). Chinese SEZs were initiated along the coastal provinces within cities with good markets, and thus were already ensured to bring in FDI. Their successes did more to encourage policy reform for the rest of the nation than anything else. China's success, however, should not be the comparative bar for other developing nations, who do not possess comparable size, labour force, high skilled and educated population, and domestic investment capabilities. This narrative is similarly true in India, where the most effective SEZs for drawing in FDI inflows are in areas with large markets, coastal ports, and developed cities connected to various means of transportation (Chakraborty, Gundimeda, and Kathuria 2017). For Jamaica, there is not an official preferred location for the creation of SEZs, with the JSEZA declaring any area that meets the commercial and regulatory requirements are eligible to be established as an SEZ (JSEZA). Foreign businesses interested in establishing within a SEZ can influence where these new SEZs are established, and therefore have an interest in ensuring these zones are within areas with desirable FDI conditions, such as urban centers and along coasts, similarly to China.

Even so, Jamaica lacks the labour force, land size, or developed transportation infrastructure to be comparable to China.

Overall, SEZs are very effective in taking a country's strengths and making them better, but where there exist developmental struggles, SEZs offer little aid (Sigler 2014). In the case of Panama, SEZs have acted as a roadblock for the Panamanian society, as high-quality labour becomes cheaper to import than to invest locally. In fact, Sigler predicts that without true attempts to ameliorate poverty and inequality from the Panamanian government, SEZs will not only fail to achieve social development, but they will instead exacerbate inequality (Sigler 2014). In addition, tax breaks allow foreign investors to withhold a lot of the wealth generated within the SEZ and bring back to the investing nation, rather than the host economy. Thus, there is a real risk of SEZs promoting a one-way relationship that does not benefit its host country at any level.

Under this context, it is very reasonable to reevaluate the use of SEZs within CARICOM nations and within Jamaica, as their demographic characteristics and governmental capabilities fall more in line with Panama than with China and India. It remains true that no clear consensus has been reached amongst scholars and policymakers as to whether SEZs give the results and outcomes that were intended (Brun et al. 2002). Therefore, critical and frequent analysis must be maintained to understand the impacts of SEZ locations and FDI inflow. The overall literature strongly concludes that, despite theoretical assumptions, positive FDI impacts are largely dependent on country-specific characteristics, including government and macroeconomic stability, development of human capital, and financial infrastructure, and the capabilities of SEZs lie in its ability to emphasize a country's pre-existing strong suits. The uncertainty within empirical research on the positive or negative

effects of FDI or the success rates of SEZs is significant to understanding effective policy implementation and where government resources should be going towards. Regardless, across the world for large and small countries alike, SEZs continue to be major parts of government policies as FDI incentivization plays a large role in projecting economic development.

### **III. Data Sources**

This study follows the trends of different socio-economic outcomes and indicators of citizens living within the various constituency areas of Jamaica. The information regarding these constituencies is derived from the raw data collected in the Jamaican Survey of Living Conditions, which is collected annually by the Statistical Institute of Jamaica (STATIN). STATIN is an agency within Jamaica's Ministry of Finance and the Public Service and was established in April 1984 under the Statistics Amendment Act and holds all the powers previously held by the Department of Statistics and Bureau of Statistics. STATIN is responsible for collecting, compiling, and publishing the statistical information relating to "the commercial, industrial, social, economic, and general activities and condition of the people" (Statistical Institute of Jamaica). It is the main agency for conducting all national census within Jamaica and consistently collaborates with the Planning Institute of Jamaica (PIOJ) in analyzing social and economic trends, advising government on major public policies, and initiating plans and programs for "the economic, social, cultural, and environmental development" of Jamaica. Most of the raw data and statistics were derived from the combination and collaboration of these two government agencies. With this understanding of the history of these two agencies, I am confident of the validity and authenticity of the data. In addition to these two sources, I also drew information from the

Special Economic Zone Authority (JSEZA), which works with the businesses established within SEZs zones and businesses applying for admission. The JSEZA tracks the SEZ registry but is limited in its publication of the businesses' data to the public.

The Survey of Living Conditions is the source of most of the raw data and variables used in this study. Conducted as an interview, the Survey is administered at the household level, using the results of a small percentage of the population to determine the national trends in living conditions. The identifiers for every survey include each Parish, Constituency, and Enumeration District, with the districts being the smallest geographic level. Unfortunately, due to not only the extensive number of districts (averaging around several hundreds), but the inconsistent way in which they are tracked, districts were not a viable unit of area measurement for this paper. Fortunately, however, the constituencies provided a much more accurate and consistent geographic area to focus on over the span of 19 years. The number of observations for each year averages around 2,000, but with some outliers of years with significantly more observations, due to the individual household members being accounted for with individual unique ID codes, as opposed to one household ID. This occasional change does not impact the data collection for this paper, however, as the data is being examined at the constituency level, rather than the household level, for which this would have been a significant issue.

Limitations of the survey includes the reliability of the respondents. Though there are survey officials who interview the household for accurate information and full understanding of the questions, the data will ultimately be limited to the extent at which respondents are comfortable releasing information. Additionally, the year 2011 was exempted from the study, as no JSLC was conducted that year. In addition, some of the questions asked by the survey



were not consistently presented every year, therefore this paper was limited to questions that were consistently asked in every annual survey, thereby shaping which socioeconomic outcomes can be tracked. The demographics of the survey are limited by the interviewer's access to the interviewee and retraceable household; therefore, the survey likely fails to properly account for those living in extreme poverty or remote locations. As much of Jamaica's land continues to be rural, with a mountainous region to the East, it is likely that the demographic distribution is not entirely accurate, with more household samples being readily available in Jamaica's more urban areas and cities than in Jamaica's rural constituencies.

In regard to the SEZs, most of the zones are focused on coastal ports and major cities within Jamaica. There are very few zones in the rural sections of Jamaica, with some rural Parishes lacking an SEZ entirely, as in the case of St. Mary and Westmoreland. Some parishes are more heavily populated, such as St. Andrew and Kingston. From these population dense areas, a concentration and clustering of SEZs is to be expected and predicted, similarly to India, where zones are concentrated along the Indian coast with occasional clustering around major cities. While this could be a conflict to the unbiased regressions, this study accounts for these geographic differences through area fixed effects.

## IV. Methodology & Data Review

### *A. Model*

The model being used for the paper is as follows:

$$Y_{t,a} = \beta_0 + \beta_1 * [SEZs] + \beta_2 * [Year\ Dummy]_{t,a} + \beta_4 * [Area\ Fixed\ Effects]_{t,a} + \beta_5 * [Covariates]_{t,a} + \varepsilon_{t,a}$$

I am regressing the different socioeconomic outcomes on the frequency of economic zones, year dummy variables, area dummy variables, and a series of control covariates. The Dependent variables in which socio-economic trends will be understood are the percentage of homeownership within the constituencies, level of school attendance for minor children, access to healthcare insurance, and percentage of households receiving public assistance. As four separate dependent variables, there will be four distinct differences in difference results derived from their changing trends, though the overall model will remain the same with the only change being what the “Y” variable is representing. The “t” indexes time, while the “a” indexes geographic area.

The initial coefficient represents the baseline average within the model, with each additional coefficient allowing for more specification and control. The first independent variable “[SEZs]” refers to the frequency of SEZs in each constituency. As a continuous variable, this regression can look at the impacts of not only the areas “treated” against the “controls” but can determine how higher levels of ‘treatment’ - higher frequencies of SEZs - will impact household outcomes. Allowing for a distinction between the presence of a few zones and the presence of several zones within a single constituency acknowledges that SEZ areas are often small and not the full size of the constituency, and so the effects of a few zones may have a different significance relative to the effects of several zones. Additionally, up to the year 2015, in which zones began being established in different geographic areas, every constituency has a “SEZ” value of zero.

The first fixed effects variable is Year Dummy, which allows the model to highlight the trends of each area over time. The time series variable will consist of the 19 dummy variables representing the 2000 - 2018 timespan in which the data was collected, with the

exclusion of Year-dummy<sup>12</sup>; which represents 2011, in which no data was collected, as the Survey of Living Conditions was not conducted, due to the census. An additional fixed effect variable is Area Fixed Effects, which specifies which constituency the model is looking at. This ensures that the geographic characteristics of the different constituencies that are time invariable, are controlled for within the regression.

Additional control variables regarding the characteristics of each of the areas will be included to account for geographic differences that do change over time and will influence either the presence of zones or the socioeconomic outcomes. These control variables are included in the model under “[Covariates]” and will include characteristics such as the access to major transportation, population percentages engaged in the main industries of Jamaica, and political affiliation. Regarding political affiliation, Jamaica currently has two major political parties, the People’s National Party and the Jamaica Labour Party. While the parties’ history is complicated, they both compete against each other for Parliament seats in the general election held approximately every 5 years. With the strong degree in which both parties fluctuate, it may be interesting to control for what party the constituency is controlled by and determine whether there are potential effects there.

This model reflects the intuitive understanding of difference in differences regression and is effective for observational data over a time series. The allowance for area indexes ensures that the study is properly comparing the different constituencies to each other with acknowledgment of their distinct geographic differences, as opposed to looking at over generalized trendlines over time, of which the impacts on socioeconomic outcomes may be too vague to understand. This model also allows for the constituencies to begin the time series at different outcome levels, in the case that prior to 2000, some areas were naturally

doing better than others. With the inclusion of Covariates, the model will account for some changes that are due simply to dynamic area traits unrelated to the implementation of SEZs.

### *B. Variable Review and Measurement*

Table 1: Summary Statistics						
Variable	Definition	N	Mean	Standard Deviation	Min	Max
Dependent Variables						
School Attendance	Number of Days in a month student attends school	786	18.619	1.235	12	20
Health Insurance (%)	Percentage of pop. with health insurance	725	23.565	14.407	0	82.61
Families Renting Home (%)	Percentage of pop. renting their homes	835	17.554	11.582	0	70.59
Families Owning Home (%)	Percentage of pop. owning their homes	836	79.758	12.763	25	100
Public Assistance (%)	Percentage of pop. Receiving public assistance	835	7.9	9.619	0	72.73
Independent Variables						
SEZs	Number of SEZs within a constituency	1,082	0.398	1.885	0	19
Control Variables						
Roads	Number of major highways running through the constituency	1,083	1.48	1.116	0	4
Population in Agriculture (%)	Percentage of the pop. employed in agriculture	775	23.991	22.405	0	100
Population in Construction or Mining (%)	Percentage of the pop. employed in Mining or Construction	775	19.486	10.362	0	71.43
Political Affiliation	Political party under which the constituency is controlled	1,002	0.532	0.499	0	1

Table summarizing the variables used in the regression model, including their definition, number of observations, average, standard of deviation, minimum and maximum.

Some of the most limiting conditions in conducting this study was the availability of data recorded by Jamaica's Statistical Institute and accessible to the public, both in regard to the special economic zones themselves and household averages at the constituency level. With the SEZ Authority having control over the information available, raw data about the businesses within the SEZs is not publicly available, nor are the area coverages of each of the SEZs easily accessible. Unfortunately, the SEZ Authority does not release the number of people employed by each of the SEZs, so determining the percentage of the population employed within the Zones is uncertain. Ultimately, SEZs remain a new policy within

Jamaica and the limitation of available data and government transparency is an issue that must be overcome for future research.

An additional problem is in Jamaica's Statistical Institute's method of measurements, which tends to defer measurements to two main levels. The first level is at Parishes overall, a unit of measurement that would be too large for this study to highlight distinctions between the control areas and the treated areas. The second common level of measurement breaks down regions into "Kingston Metropolitan Area", "Urban Centers", "Rural", and "Other towns", a geographic breakdown and classification that is too disorganized and generalized for the purposes of this study. Thus, this paper was limited to data available for the smallest but most consistent geographic measurement available - constituencies - of which the Survey of Living Conditions best measures.

Within the Living Conditions surveys over the time period of interest, there were some interesting but rare questions regarding employment training, self-identification of economic class, and school training policies. While questions like these would have been desirable for the study, their presence in the surveys was very inconsistent, where they would be asked in one year, but not asked for several of the years preceding and following that year, thereby making them difficult to track over time. Thus, in choosing variables for this study, they must fulfill two requirements: (1) related to an interesting aspect of socioeconomic development and (2) were asked throughout the time period of interest.

Some contextual background to Jamaica financial indicators is as follows: In 2014, the year prior to SEZ authorization, net FDI inflow was about US\$ 582 million, making up 4.1 percent of Jamaica's GDP for that year. This was during the process of overcoming the extreme economic destruction that the 2008 economic recession had on Jamaica's GDP and

FDI inflow, which saw net FDI falling to US\$172 million in 2011. In 2015, with the creation of special economic zones, the net FDI inflow was US\$ 925 million, making up 6.5 percent of Jamaica's GDP, a near doubling of FDI inflow for that relative to the year prior. Since that time, FDI inflow has slowed, with 2018 seeing a net FDI inflow measured over US\$ 774 million, making up 5% of Jamaica's GDP for the year. Alongside increasing FDI inflows relative to the inflows prior to the passing of the SEZ policy, Jamaica's GDP overall has also been improving with the years. Additionally, Jamaica's unemployment rate as a percentage of the total labour force has been experiencing a decrease since 2013, after a steep increase due to the 2008 global recession. Starting at 15.25 percent in 2013, the unemployment rate had fallen only to 13.51 percent by 2015, a difference of 1.74 percentage points. After the passing of the SEZ policy, the decreasing trend of the unemployment rate accelerated considerably, falling to 9.1 percent in 2018 and hitting a historic low in 2019 at 7.72 percent, a difference of 4.41 and 5.79 percentage points since 2015, respectively.

The data observations for most of the variables were found through the Survey of Living Conditions raw data sheets. Below is a description of each variable this study examines.

### *1. Dependent Variables*

The first dependent variable and socioeconomic outcome of interest is School Attendance of minor children. Within the survey, households, with minor children receiving primary education, are asked how often within a month does their children attend classes. With classes being 5 days a week, households answers can range between 0 and 20, and therefore the variable for school attendance also has a potential range of 0 to 20, measuring units of days. Primary education refers to grade levels up to 7th grade. After this, additional

years of education, but not including collegiate education, is considered Secondary education and is not legally required within the country. Therefore, the survey accounts for only Primary children, who are theoretically required to attend school. Regions with high levels of urban development have high levels of school attendance, and thus the average of all the regions remains at a respectable 18.6 days. However, in regions that are underdeveloped and rural, school attendance can become as low as 12 days a month, with the reasons for the lack of attendance ranging from truancy, working outside the home, transportation problems/costs, and the family unable to afford to send the child to school every day. This is where SEZs should theoretically improve the options available for households. Under the theoretical assumptions, SEZs have a chain effect of creating new jobs and improving wages in their surrounding areas, which should decrease the circumstances causing children to miss school. If SEZs fulfill their expectations in improving household income, then more children should be able to attend school without financial reasons holding them back. However, SEZs may have the reverse effect, increasing the number of employment opportunities available for adults in the area, and leaving a gap in the demand and supply of workers for domestic work and retail industries. It is domestic work that is lowest skilled and poorest wages, yet also commonly filled with child labourers. The shifts in occupational employment due to SEZs may also inspire more families to send their children to work, and therefore not attend schooling. For these potentially conflicting results, SEZ impact on school attendance will be interesting.

Similarly, if we accept the assumption that increased foreign direct investment results in more employment and development, then another important socioeconomic variable is the accessibility of health insurance to the local community, as an indicator of accessibility to

affordable and quality healthcare services. Health insurance is a variable that is valued in either the affirmative (1) or negative (2). This paper measures the percentage of the households within a constituency confirming ownership of health insurance each year. While surveys in the years following the 2011 census began to break down insurance between the three available insurances - Ni gold, private, and public – for the purpose of this study and for consistency for the years preceding 2011, this paper only measures whether it is an affirmation in general. As can be seen in the table, access to health insurance is extremely limited on average in Jamaica, as the mean is 23.56 percent of a constituency has health insurance. The presence of health insurance is unbalanced as some rural areas will record little to no one possessing health insurance, while developed constituencies with multiple urban centers may record levels of health insurance as high as 82.61%. Within Jamaica, public health care is available to all citizens, but public hospitals and centers suffer from the issues of extensive lines and inaccessible medications. For that reason, private healthcare and hospitals are preferred across the nation, but are extremely expensive. This requires citizens to cover the costs either out of pocket - impossible for most of the population - or through health insurance, whose cost makes insurance inaccessible for a large part of the local community. As is reflected in the United States' constant battle for accessible and affordable health care, access to health insurance is important for the development of an equal and healthy nation, and thus determining whether SEZs are aiding to achieve this goal is important.

Home Ownership in Jamaica can fall under 7 different categories: owned, leased, privately rented, government rented, rent free, squatted, or other. For the purpose of this study, I looked at the four most common forms of home possession: ownership & rent free,



and private & government renting. Ownership was determined by survey values of 1 or 5, - own or rent free - since they anecdotally served the same result of the family having final possession of the land and household. Likewise, renting was determined by values of 3 or 4 – private renting or government renting, respectively– as the result would not be any ownership of property for the individual household. Within the model, ownership and renting are separated into two different variables, because though they are mutually exclusive within the survey, they are not the exhaustive list of options for residency. They are both measured as percentages of the population within the constituency. Within the data, private renting was significantly more common than government renting throughout the constituencies, while the divide between the ownership and leaned in favor of ownership was not as one-sided. On average, household ownership of the home is much more common than renting property, with an average of 79% against 17% respectively. Homeownership in relation to SEZs is interesting because it could theoretically go in either direction. With the predominant number of SEZs centering around urban areas, this may motivate families to leave their home to rent in urban centers, especially if the increase in SEZs does not reflect a change in available housing stock. On the other hand, SEZs may lead to the reverse, with the increase in SEZs allowing more families the resources and opportunities to buy their homes and have more secure and stable property. The increase in employment opportunities may also improve flexibility for workers to find employment opportunities without moving from their home, though the trends of increasing urbanization may not support this.

Public assistance is perhaps the most controversial but unique socioeconomic outcome this paper will be investigating, as it would presumably have a bigger relevance with the control variables than SEZs. However, there is a case to be made that SEZs bringing

new employment and wages may decrease the necessity of public assistance for households. Looking at this outcome in relation to access to health insurance may give a better indication of whether SEZs are improving poverty levels by increasing health insurance access and decreasing public assistance receipt in tandem. However, a conflicting trend for health insurance may reflect a different reason for changing levels of public assistance that does not suggest improving poverty conditions. With the extremely low access to public assistance - with an average of 7.9 percent across the nation - it is most clear of all that the government is not efficient in its distribution of security funds and aid. In the case of this paper, public assistance is measured as the percentage of the constituency population that receives confirmed public assistance during the year. While the overall average is very low, 7.9%, across the constituencies, there are years where the percentage levels rose significantly, up to 72.73%, such as following the 2008 economic crisis.

## *2. Independent Variable*

The independent variable of interest and “treatment” to distinguish constituencies against the control, is the number of Special Economic Zones held with a constituency. As a continuous variable, this measurement accounts for the exact number of SEZs formed in the area. While there is information regarding the number and location of SEZs, the exact borders the SEZs reach is regulated within the SEZ Authority and not readily available public information. Therefore, to maintain a consistent way of measuring SEZs other than tracking area impacted by zones, this paper measures using frequency, taking note of the number of SEZs within each constituency for each year after the policy enactment. Regarding the Difference in Difference regression models, the number of SEZs within all the constituencies is zero prior to 2015, as the policy had not been enacted and therefore no SEZs implemented.

Starting in 2015, waves of locations were made into SEZs, with the number within some constituencies increasing over the years. These areas where the number of zones is above one or more act as the treatment group for the Difference-in-Difference model, while the regions that remain at zero are the controls. In 2018, there were a total of 101 SEZs spread across Jamaica, with the cities of Portmore and Kingston Metropolitan Area, and their respective constituencies, having the highest concentration of SEZs in one area. In addition, for 2018, at least one SEZ was present in 27 of the 57 constituencies recorded in this paper, revealing that over half of the country's regions, 30 in total, remained as part of the control.

### *3. Control Variables / Covariates*

The control variables are also technically independent variables within the regression and are what was contained in the “Covariates” section of the model. The most important control variable for the regression is the Area Fixed Effects. Controlling for area characteristics was very important for ensuring that area-specific invariable traits across the time panel were not influencing the results unseen. Some of the characteristics that were accounted for through these fixed effects includes whether the constituency was located along the coast or inland within the country, their access to ports, shipping airports, and railways – of which no new major investments have been made between 2000 to 2018. Additionally, geographic qualities including whether the area was Mountainous or containing large, protected areas, is being controlled for. The number of major cities and urban centers, as well as other unforeseen characteristics will be largely accounted for through these fixed effects. These area-specific traits have the potential of impacting socioeconomic outcomes through the way it shapes societies formed within the constituencies, the distribution of

population and poverty, accessibility of school systems, and many other ways. Thus, more than any other variable, controlling for area fixed effects is paramount.

Another important control variable is the frequency of major roads within the constituency. This variable was measured using the specific naming system employed by the Jamaican government for roads under government regulation. The naming system operates where the major freeways and highways are labeled with either a “T”, an “A”, or a “B”, followed by a corresponding number (i.e., T1, A1, A2, B2, etc.). All other roads are named in a similar way as town roads are in the United States. The distinction between the major highways and normal town roads is in the way these major highways are regulated and maintained by the central government, while their authorization and construction is determined by a national agency, similarly to the approval and authorization of SEZs by the SEZ Authority. These roads are considered roads of “national importance” (UNICEF 2018). In contrast, town roads are maintained and constructed by the local town governments and rarely travel the same lengths as the national highways, nor connect major urban centers nor travel across parishes. For these distinctions, national roads will have a strong impact on opening access between different regions and increasing flexibility of opportunities. This is especially true for those living in rural areas, as increasing major roads should theoretically increase the opportunities available for citizens not living in urban centers to travel to schools or find affordable housing without compromising employment. Through this opening up of access and increased flexibility, the frequency of roads becomes an important factor to consider in its impact on socioeconomic outcomes outside of SEZ presence.

Another interesting factor to control for is the two important occupations in Jamaica: Agriculture and Construction & Mining. Within Jamaica’s records, jobs related to agriculture

are contained within occupational codes beginning with 6, while jobs related to construction and mining are contained within occupational codes beginning with 7. While there are other industries labeled under codes 1-5 and 8-9, these two are the most interesting for this study due to their relations with SEZs and foreign investment. This paper will measure the population percentage employed within these two occupations, using the same methods as previous variables using population percentages. Agriculture is interesting because this is historically Jamaica's largest industry and accounts for a significant amount of land usage, remaining as one of the most prominent forms of employment in Jamaica's rural areas. Government policies hoping to modernize and industrialize Jamaica have addressed the prominence of agriculture, hoping to push the workforce away from agriculture and towards industry, as agriculture's contribution to national GDP falls and becomes unstable. Without foreign investment inflows into the industry, the continued prominence of agriculture as a common occupation reveals how difficult it is to break into other industries. In contrast, the industries receiving the vast majority of Jamaica's FDI inflow include mining and construction, as well as tourism and telecommunications. Therefore, an increase in the percentage of households working in Mining or Construction alongside an increase in SEZs may reflect increased FDI inflow bringing new jobs. With agriculture and construction & mining's contrasting relationship with FDI, their impacts on socioeconomic outcomes may signal whether the specific industry being funded matters to socioeconomic trend lines. With Agriculture being aligned with more rural areas and construction and mining being aligned with more urban and industrial areas, they will also be an underlying urbanization indicator impacting the socioeconomic outcomes.

Finally, the last control variable that this paper considers is political affiliation. Jamaica's parliamentary system of government is historically controlled by two national parties: The People's National Party (PNP) and the Jamaica Labour Party (JLP). Within this study, political affiliation is controlled as a dummy variable, of which "1" represents the PNP and "0" represents the JLP. Political affiliation can play a significant role in the policies created for public education and social welfare. The PNP aligns closer to democratic socialism compared to the conservative JLP. Where the PNP has a strong focus on social welfare programs and increased secondary education opportunities to rural Jamaicans, the JLP is pro-businesses and would have a strong stance on economic policies for further development, not excluding the promotion of SEZs. Thus, there stands to chance, a political correlation and possible impact on the socioeconomic outcomes as different parts of social welfare and development are focused on. Though, due to Jamaica's flawed government system in which the political parties are violently adversarial, the expectation for this variable is not high as the implementation of policies by the corresponding political parties is somewhat inconsistent.

## **V. Results and Discussion**

### *A. Results for School Attendance*

Table 2: Equation (1) - Panel Estimation with Area and Time Fixed Effects												
Dependent Variable: School Attendance												
	(1)		(2)		(3)		(4)		(5)		(6)	(7)
SEZs	0.01 (0.04)		0.01 (0.04)		0.01 (0.04)		0.01 (0.04)		0.01 (0.04)		0.01 (0.04)	0.01 (0.04)
Roads			-0.85** (0.34)								-0.85** (0.34)	-0.85** (0.34)
% of Pop. in Agriculture					0.00 (0.00)						-0.00 (0.00)	-0.00 (0.00)
% of Pop. in Mining or Construction							-0.01 (0.01)				-0.01 (0.01)	-0.01 (0.01)
Political Party									0.14 (0.20)			0.13 (0.19)
Constant	17.31*** (0.26)		18.61*** (0.56)		17.29*** (0.25)		17.51*** (0.31)		17.25*** (0.25)		18.87*** (0.58)	18.81*** (0.58)
# of Observations	691		691		691		691		691		691	691
# of Areas	57		57		57		57		57		57	57
R2	0.235		0.244		0.235		0.241		0.236		0.25	0.25

Notes: Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table listing the coefficient values of each variation of the regression model, the first 5 of which look at SEZ in combination with one of the control variables, variation 6 being all but the Politics dummy control, and variation 7 being the regression with all controls in place.

Looking at the regression results for the effects of Special Economic Zones on School Attendance, SEZs do not play a significant role in changing how students are able to attend school. Not only are the coefficients statistically insignificant, but they are also small, as the increase of one additional SEZ only means 0.01 days increase in the number of days students attend schools. This could certainly be due to the high rate of school attendance already present in Jamaica, which can be attributed to campaigns to promote childhood education by third party organizations and the local government.

In contrast, the significant but negative coefficient of Roads implies that as major highways increase in access, students attend 0.85 days less of school, perhaps due to the easier access to work outside the home. It is understood that increased number of roads and options for transportations results in more flexibility in work options and living options, as people become able to access more from different locations. This would be true for students as well, whose increasing access to different areas could reflect either an increase in school options or an increase in employment options, depending on the needs of the family. Since

the number of schools opened during this time period is negligible overall – with some parishes having closed some down - the increasing number of roads may be a resulting in more access to employment rather than schools (Data Zoa).

A limitation to this variable is that it solely considers primary schooling, which only covers elementary and junior high education. For many developing countries, education through to Jr. High is understood as important, but the emphasis of secondary schooling - which includes high, technical, and trade schools - is not as strong. Jamaica reflects this unequal prioritization between primary and secondary schooling in the fact that most parishes only have a quarter of the number of public secondary schools as they do public primary schools, as shown in table 3 in the appendix. (UNICEF 2018). In addition, the percentage of school age children getting a secondary education at all was 73 percent, meaning over a quarter of these children were not attending secondary school at all (UNESCO Institute for Statistics). Considering that the Survey of Living Conditions prioritizes children attending school, it is likely that several children not enrolled at all are being lost in the interview process.

The 2016 Youth Activity Report revealed that 8.1 percent of Jamaican children “aged 5-17 years were engaged in economic activities” (Jamaica Youth Activity Survey 2016 Report). These percentages were higher in rural areas, at 10.5 percent, compared to the 5.7 percent in urban centers. (Jamaica Youth Activity Survey 2016 Report). This is exacerbated by the fact that the number of available schools are more concentrated in urban centers, thereby giving children living in urban areas more opportunities to attend school, as well as more options. Meanwhile in rural areas, children are not only twice as likely to be working outside the home – and therefore not attending school – with less options for schools. SEZs



in Jamaica are highly concentrated in urban areas – in fact, the two locations with the highest concentrations of SEZs, Kingston Metropolitan Area (Kingston and St. Andrew) and Portmore (St. Catherine), have the highest number of private and public primary and secondary schools available compared to the other parishes, as shown in table 3 in the appendix (UNICEF 2018). Thus, the impact of SEZs on education in these urban areas - who are better off in access and participation than rural areas – would be predictably small.

Ultimately, these results follow a common thread that many other empirical studies regarding SEZs have found. That is, rather than theoretically improving school attendance due to general improvements in living conditions overall, SEZs have small and insignificant impacts on the socioeconomic outcome. In practice, the areas impacted by the SEZ policy simply continue to follow their socioeconomic trends that were already in place prior to becoming a zone.

### *B. Results for Health Insurance*

Table 4: Equation (1) - Panel Estimation with Area and Time Fixed Effects													
Dependent Variable: Percentage of Families with Health Insurance													
	(1)		(2)		(3)		(4)		(5)		(6)		(7)
SEZs	-0.51 (0.33)		-0.55 (0.34)		-0.50 (0.33)		-0.51 (0.34)		-0.51 (0.33)		-0.54 (0.34)		-0.54 (0.34)
Roads			-6.60 (4.46)								-6.36 (3.98)		-6.34 (3.91)
% of Pop. in Agriculture					-0.11 (0.07)						-0.16** (0.07)		-0.15** (0.07)
% of Pop. in Mining or Construction							-0.06 (0.06)				-0.14** (0.07)		-0.14** (0.07)
Political Party									-1.03 (2.85)				-0.93 (2.61)
Constant	25.63*** (1.68)		35.75*** (7.07)		28.49*** (2.19)		26.86*** (2.06)		26.10*** (2.10)		41.95*** (6.69)		42.35*** (7.00)
# of Observations	635		635		635		635		635		635		635
# of Areas	57		57		57		57		57		57		57
R2	0.087		0.093		0.098		0.089		0.088		0.111		0.111

Notes: Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table listing the coefficient values of each variation of the regression model, the first 5 of which look at SEZ in combination with one of the control variables, variation 6 being all but the Politics dummy control, and variation 7 being the regression with all controls in place.

Turning attention towards SEZs' impact on the percentage of households possessing health insurance, once again the regression finds that SEZs do not have a statistically significant coefficient effect. In fact, the regression does not find a significant coefficient for any of the control variables until the regression controls for the two occupational variables, at which point, it is found that the coefficients of these two industries are statistically significant, while the coefficient of SEZs remains insignificant.

It is only the variables accounting for the constituency's population percentage employed in these specific industries that have significant coefficients, specifically negative coefficients in relation to Insurance. In other words, as the percentage of people working in Agriculture or Mining and Construction increases by one percentage point, the percentage of families possessing health insurance decreases by 0.15 percentage points and 0.14 percentage points, respectively. For agriculture, this relationship is understandable, as many of those within this industry hold the "Own Account worker" employment status, which means rather than working under a private or government office, they control their own employment and therefore their own benefits. Industries that employ citizens under private or public offices are more likely to provide benefits, including health insurance, as well as have relatively higher wages than occupations in agriculture. So why does Mining and Construction, in which citizens work under mining and construction companies, also have a negative relationship with insurance?

One explanation may be reflected in the concerns of researchers and policy advocates who fear that the establishment of a distinctly different – and oftentimes laxer – regulatory economic regime distinct from the rest of the country results in a poorer quality of social and labour conditions. With more lenient regulations, the persistence of undesirable employment

arrangements and discouragement of unions is a real concern for the labour force.

Additionally, though SEZs open new opportunities for employment at potentially higher wages than other available employment, these jobs remain mostly low skilled and elementary occupations. This is especially true for the industry of Construction and Mining in which a lot of Jamaica's FDI inflows, meaning that those who do become employed due to SEZs are still unable to afford the high costs of private health insurance, signifying how impactful SEZs are in pulling labourers out of poverty. This also emphasizes how poor Jamaica's medical system and infrastructure is, in that regardless of these new economic policies and employment, the low skilled local community is not paid enough to buy into the objectively better private healthcare system. For the agricultural industry, not aided by FDI inflow and predictably more insecure in wages, the access to healthcare falls even greater, as poverty becomes an even larger obstacle.

Within this time period, Jamaica's total labour force unemployment rate has experienced historical lows, with the rate falling nearly 5 full percentage points from the year the SEZ policy was passed in 2015 to 2018. In contrast, the difference in unemployment between 2000 and 2014, is only 1.8 percent, meaning that there is an acceleration in the decreasing unemployment trend around the time SEZs were created, along with other reform minded policies by the Jamaican government. Thus, in a scenario in which Jamaicans are increasingly finding employment, the lack of accessibility in affordable healthcare reflects both insufficient wages and an extremely weak healthcare system. Moreover, for those not following the migration to urban centers and remaining in rural areas to work in agriculture, the access to affordable healthcare is even less while the public healthcare facilities are distinctly poorer.

The fact is a large part of the Jamaican local community is unable to afford the private healthcare and insurance that provides more adequate and timely care. Public healthcare facilities are underfunded by the government and understaffed, with the unaffordability of health insurance adding to the overcrowding of public facilities (Expat Financial). As mentioned before, urban centers are where health insurance possession is highest, are also the locations in which comprehensive medical care is most available. These results reveal that, despite the increasing numbers of those employed in these industries, their wages are not allowing people to overcome the levels of poverty that prevent them access to basic services. This study shows that the increased employment from SEZs alone will not be sufficient for increasing healthcare access through comparatively better wages since the starting point is extremely low. Only a thorough reformation and restructuring of the healthcare system and direct government policies increasing public and private healthcare quality and access are likely to see significant changes.

### C. Results for Home Ownership

Table 5: Equation (1) - Panel Estimation with Area and Time Fixed Effects												
Dependent Variable: Percentage of Families Renting their Home												
	(1)		(2)		(3)		(4)		(5)		(6)	(7)
SEZs	-0.55** (0.21)		-0.55** (0.21)		-0.55** (0.21)		-0.55** (0.21)		-0.56** (0.21)		-0.54** (0.21)	-0.55** (0.21)
Roads			0.00 (2.99)								0.22 (3.06)	0.14 (3.20)
% of Pop. in Agriculture					-0.07* (0.04)						-0.08* (0.04)	-0.08* (0.04)
% of Pop. in Mining or Construction							-0.01 (0.05)				-0.05 (0.06)	-0.04 (0.06)
Political Party									2.72 (2.27)			2.76 (2.27)
Constant	14.66*** (1.35)		14.66*** (4.99)		16.32*** (1.64)		14.79*** (1.41)		13.45*** (1.61)		17.23*** (4.73)	16.04*** (5.24)
# of Observations	687		687		687		687		687		687	687
# of Areas	57		57		57		57		57		57	57
R2	0.094		0.094		0.101		0.094		0.099		0.102	0.107

Notes: Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table listing the coefficient values of each variation of the regression model, the first 5 of which look at SEZ in combination with one of the control variables, variation 6 being all but the Politics dummy control, and variation 7 being the regression with all controls in place.

Table 6: Equation (1) - Panel Estimation with Area and Time Fixed Effects							
Dependent Variable: Percentage of Families Owning their Home							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
SEZs	0.56** (0.24)	0.57** (0.24)	0.56** (0.23)	0.56** (0.24)	0.57** (0.24)	0.57** (0.24)	0.58** (0.24)
Roads		1.70 (3.33)				1.56 (3.41)	1.65 (3.56)
% of Pop. in Agriculture			0.05 (0.04)			0.06 (0.05)	0.06 (0.05)
% of Pop. in Mining or Construction				-0.00 (0.06)		0.03 (0.07)	0.02 (0.07)
Political Party					-3.03 (2.47)		-3.09 (2.45)
Constant	82.59*** (1.25)	79.98*** (5.39)	81.39*** (1.50)	82.59*** (1.59)	83.93*** (1.56)	78.29*** (5.17)	79.62*** (5.79)
# of Observations	688	688	688	688	688	688	688
# of Areas	57	57	57	57	57	57	57
R2	0.106	0.106	0.109	0.106	0.111	0.11	0.115

Notes: Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table listing the coefficient values of each variation of the regression model, the first 5 of which look at SEZ in combination with one of the control variables, variation 6 being all but the Politics dummy control, and variation 7 being the regression with all controls in place.

The home ownership results are interesting not only because of SEZs' significant impacts on homeownership but because of the reversal of their impacts. Where the regression for homeownership reveals a positive and significant coefficient for SEZs, the regression for renting reveals a negative and significant coefficient of nearly the same value. With the increase of one SEZ in a constituency, these regressions predict a 0.58 percentage point increase in home ownership and 0.55 percentage point decrease in renting. As was mentioned earlier, while renting and home ownership are mutually exclusive to each other in the survey they are not the exhaustive list of options for housing. Therefore, these seemingly mirrored trends in home ownership and renting does not guarantee that all those who are moving away from renting are necessarily moving to owning their homes. There remains the possibility that, as renting goes down, ownership and leasing, as well as squatting though unlikely, are increasing in response.

One of the most significant parts about SEZs implementation is the investments in infrastructure, either through the government, who uses increased investment into the areas

as an incentive for businesses to move into those areas, or by businesses themselves investing in the infrastructure of the area and creating a favorable environment for themselves. In either case, development of the local infrastructure is a paramount part of SEZ creation, and the increase of business properties would theoretically result in the increase of private dwellings to work in these new business properties. Looking at the National Housing Trust (NHT) – the main government body for increasing available housing stock for Jamaica – there is a clear change in the number of public and private construction projects initiated each year after the passing of SEZ policy. From 2010 to 2014, the average number of projects was 1,555 each year, whereas from 2015 to 2018, the number of projects was 2,809 projects each year, rising to 3,322 projects on average each year when looking at just 2016-2018 (Bank of Jamaica). Though this number is for Jamaica entirely and not disaggregated to constituencies, it reflects the extensive jump in the number of properties opening for private dwellings at the same moments that economic zones were created, leading to increased home ownership opportunities. With more opportunities comes more available affordable housing in locations where job openings are increasing. Knowing this, it is understandable that SEZs will have a significant and positive relationship in this way for increasing the number of Jamaican's owning their homes.

In addition to this, the NHT was given a significant US\$ 40 billion budget for the financial budget for 2019 through to 2020, the largest budget in 43 years, with an additional budget of \$13.4 billion for 2020 to 2021, for the purpose of a 20,000 house and residential lots project that began early April and is planned for completion early 2023 (Delmendo 2021). Within this project, St. Catherine – the Parish with the second highest number of SEZ concentration in Jamaica – will be receiving 56.22 percent of these planned housing units

(Delmendo 2021). These figures can be seen in Table 7 in the appendix. With the urbanization of St. Catherine increasing over the years, it is logical to predict these housing units will be focused where the population is migrating to, thereby increasing housing options in areas where SEZs are opening, giving legitimacy to the regressions' findings. In this way, this study reflects a positive improvement in the case of housing due to SEZs.

#### *D. Results for Public Assistance*

Table 8: Equation (1) - Panel Estimation with Area and Time Fixed Effects													
Dependent Variable: Percentage of Families Receiving Public Assistance													
	(1)		(2)		(3)		(4)		(5)		(6)		(7)
SEZs	0.12 (0.25)		0.15 (0.25)		0.12 (0.25)		0.13 (0.25)		0.11 (0.25)		0.15 (0.25)		0.15 (0.25)
Roads			4.87* (2.91)								4.81 (3.00)		4.73 (3.12)
% of Pop. in Agriculture					0.04* (0.02)						0.02 (0.03)		0.02 (0.03)
% of Pop. in Mining or Construction							-0.06 (0.05)				-0.05 (0.06)		-0.04 (0.06)
Political Party									3.09*** (1.06)				2.88*** (1.07)
Constant	5.96*** (1.18)		-1.49 (4.22)		4.96*** (1.39)		7.17*** (1.41)		4.59*** (1.17)		-1.06 (4.45)		-2.30 (4.70)
# of Observations	687		687		687		687		687		687		687
# of Areas	57		57		57		57		57		57		57
R2	0.235		0.24		0.238		0.239		0.242		0.245		0.251

Notes: Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table listing the coefficient values of each variation of the regression model, the first 5 of which look at SEZ in combination with one of the control variables, variation 6 being all but the Politics dummy control, and variation 7 being the regression with all controls in place.

The final socioeconomic outcome looked at in this study is public assistance, which predictably is more related to the Political Party in power for the constituency than the number of SEZs present. Though the regression found a positive relationship between SEZs and Public Assistance, meaning contrary to what would be expected with the creation of more jobs, more people are receiving public assistance, but this coefficient is statistically insignificant. Both political parties recognize the importance of social services, but the actual reception of public assistance is still significantly little. With the average level of public

assistance across Jamaica prior to the passing of the SEZ policy being 8.26 percent and 5.55 percent after the policy was passed, the country is to some extent moving away from assistance. However, once broken down by the treated and controlled areas, the constituencies unaffected by the policy reveal a lower reception of public assistance. Rather than a signal of SEZs causing an increased reliance of public assistance, it is more logical to infer that location correlation is once again at play. In other words, the locations in which SEZs are formed – most commonly urban centers – are also where access to public assistance is relatively more available.

Regarding the statistically significant Political Party Dummy, when the constituency is ruled by the Jamaica Labour Party (JLP), the variable is valued at 0. When the ruling party is switched to the People's National Party (PNP), then the variable is valued at 1. Therefore, in the case of the regression, a one unit increase in Political Party represents the ruling party of the constituency moving from the JLP to the PNP. With this change of power to the PNP, the percentage of the population receiving public assistance is expected to increase by 2.88 percentage points. This prediction is very understandable, because as was explained earlier, the PNP is the more leftist, social welfare-oriented party in contrast to the pro-business, conservative JLP. Therefore, this regression result does align with the party goals, though there may be room to argue that the size of the political dummy coefficient, 2.88, reflects how ineffective in implementing these policies the PNP party is. Since the politics variable is not continuous, but instead limited to either 0 or 1, the increase of one unit can occur only once for this variable. Therefore, a switch in political party towards the PNP means only an additional 2.88 percent of the population will receive public assistance, regardless of the actual need within the country.



Making the distinction that this is not an issue of necessity, but an issue of access is very important for this variable. In explaining the drop in public assistance received after the policy implementation, this is likely more correlated with the specific years rather than this specific policy passed, as the 2000 through 2014 time period includes the major global economic recession of 2008. While the years following 2015 have not been entirely economically secure, they certainly did not require as extensive a government reaction as the late 2000s. In addition, it is extremely inaccurate to claim that households in the rural areas of Jamaica need less public assistance, as the rural areas are historically where a lot of poverty is concentrated for Jamaica. Rather, it is in urban centers where inequality between the highest quintile and lowest quintile is more prominent and thus the availability of “equalizing” public assistance services is being more focused in urban areas, rather than sent out to rural areas, which would require more structural improvements beyond government payments. Thus, as supported by the insignificance of the SEZ coefficient, this paper cannot conclude that SEZs increase the need nor the reception of public assistance, but rather sheds light to the unequal access to public assistance within Jamaica, due to an inefficient and disorganized government and political system.

## **VI. Robustness Checks**

### *A. In Using SEZ Frequency rather than an SEZ Dummy Variable*

Originally, this study was going to measure SEZ presence as a dummy variable to distinguish the control and treatment groups. This would limit the values of SEZ to “0”, for areas with no zones across the time period, and “1”, for areas with at least one zone. However, this method of measurement ignores the fact that some areas have a significantly higher concentration of SEZs than others. Capturing the specific acreage covered by each

zone was not possible due to Jamaica's opaque administration but measuring the frequency of SEZs within a zone offered a way to account for differences in SEZ concentration and coverage. Thus, the dummy variable was replaced with a continuous variable that would measure the frequency of SEZs and allow for an additional distinction between 'treated' areas with few zones against 'treated' areas with several zones.

*B. Addressing Geographic Biases of SEZ Locations with Area Fixed Effects*

Geographic biases in the concentration of SEZs was a large concern for the validity of the study, but through area fixed effects, some of the more significant area characteristics were able to be accounted for. Jamaica has a very diverse landscape including mountain ranges that limit development. Through the area fixed effects, area characteristics such as whether the region is mostly mountainous, along the coast, inland, and near major rivers, would all be accounted for. Other features, such as major transportations including ports, railways, and airports were also checked to determine whether they were invariable overtime. Test regressions were conducted with these different modes of transportation being included as separate variables and were always omitted due to collinearity; therefore, this study can conclude that shipping ports, railways, and cargo airports have been included into area fixed effects. Another area characteristic that was investigated was urbanization of each constituency. This variable was measured by determining the percentage of the population living in the constituency's capital and urban centers. There was a limit to how effective this variable could be as most population data was derived from the census, which is conducted once every ten years. Overall, many factors were considered and tested to ensure that area fixed effects accounted for a wide range of area traits that had the possibility of impacting SEZs or the socioeconomic outcomes.

### *C. Separating Kingston and St. Andrews Parishes from the Data*

A unique characteristic of Jamaica is the Kingston Metropolitan Area (KMA), which covers the entire Kingston parish and most constituencies within St. Andrews. The amalgamated Kingston and St. Andrews area is significantly more heavily urbanized than any other region in the country, which is reflected in the way many of Jamaica's geographic information separates the KMA area into a separate entity from other urban centers.

With an unparalleled percentage of its population living in urban areas, the KMA has an urbanization percentage of 88.25 percent as of 2011. This means that 88.25 percent of the people living in Kingston and St. Andrews combined, live in the Metropolitan area. The second highest urbanized population is in St. James at Montego Bay, with a level of 59.9 percent and significantly less area and population total. In other words, the KMA is a densely populated urban outlier compared to the rest of Jamaica. This also makes it a hotspot of SEZ creation, as it contains the constituency with the highest concentration of SEZs. Therefore, in the interest of seeing SEZ impact in the area with the most desirable conditions for FDI, this section will briefly explain how the socioeconomic trend rates differ once the KMA has been removed from the data set.

Starting with School Attendance, removing the KMA does not reveal a significant difference between school attendance overall at first, with the KMA having an average of 18.86 and the rest of Jamaica averaging at 18.53 overall. However, once we make the distinction of SEZ policy implementation by checking the average after the policy was passed, the difference becomes most distinct as the average increases to 19 days for the KMA but decreases to 17.85 days on average for the rest of the parishes. With such a large shift in percentages after 2015, the KMA had a strong impact on the regression results of the study,

when looking at the country overall. Additionally, when looking at the regression for SEZs onto School Attendance with all control variables included, the study reveals that when we remove the KMA, the SEZ coefficient becomes negative, entirely flipping direction.

Meanwhile the regressed SEZ coefficient for KMA alone remains positive, though for both regions their coefficients remain insignificant. In other words, SEZs become a hindrance to school attendance in the less urbanized Jamaica, while continuing to have a positive relationship in the highly urbanized KMA, though remaining statistically insignificant. The inclusion of the KMA alone had overpowered the rest of Jamaica by keeping the School Attendance and SEZ coefficient positive in the regression for the country overall. While in the case of school attendance, the insignificance of the coefficient results means that this study cannot conclude too much, it does suggest that looking at the rest of Jamaica's results without the KMA may be important for other socioeconomic outcomes.

For Insurance, the coefficient becomes negative and very large, with a very strong level of significance when looking at SEZ impact of all other parishes. Meanwhile, for KMA alone, insurance is negative, but not significant. In line with what is expected, the average level of insurance in the KMA region is as high as 29.64% across the time panel and rising to 30.71% on average after the passing of the SEZs policy. After 2015, the constituencies impacted by the SEZs policy experienced an insurance average of 31.4%, while constituencies unaffected only had an average of 28.75%. In other words, the areas with zones were also the areas with more households affording health insurance. This does not mean the SEZs helped to provide insurance, but rather, the areas of these two conditions coincide. Meanwhile, for the country surrounding the KMA region, the average percentage for the population possessing insurance was 21.4%, rising to 23.88% after the passing of the

policy, a significant difference to Kingston's levels. Looking at post 2015 areas impacted by the policy, insured population was 21.08% while the unimpacted areas were 25.67%, reflecting the negative relationship that was found in the regressions. Even so, these percentages are significantly lower than those in KMA after 2015, regardless of SEZs.

For Home Ownership, 68.86 percent of households living in KMA owned their home and 26.87 percent rented, while 83.6 percent owned, and 14.26 percent rented their homes in the rest of Jamaica. After 2015, with the passing of the SEZ policy, these percentages change to 75.24 percent owning and 20.09 percent rented in KMA, and 85.8 percent owning and 12.17 percent renting in the rest of Jamaica. When looking at the percentages after 2015 for areas affected and unaffected by the SEZ policy, there is very little difference between the treated and controlled group for areas outside of KMA. In the regression, the SEZ effect on owning is positive and almost significant at the 10 percent level – actual level being 10.2 -, while the effect on renting is negative as expected, but not significant. For the KMA region, there is a 3 percentage point decrease in home ownership for policy treated areas, and 1.5 percentage point increase in renting for policy treated areas compared to untreated areas. This change in home ownership is understandable with urban areas, but regardless the SEZ coefficient for the Home ownership regression remains positive though is insignificant, while renting regression remains negative and having no significant impact.

Finally, for public assistance, as explained previously, while there was a decrease in population receiving public assistance after the passing of the SEZ policy, it remains more accessible to the urban regions impacted by SEZ policy than the areas that were unaffected by the SEZ policy. For the KMA, public assistance drops significantly from 4.27 percent prior to the policy pass to 1.9 percent afterwards. Yet, between areas impacted by the policy

and the control areas the public assistance receipt is 2.16 and one 1.16 percent, respectively. Meanwhile, for the rest of Jamaica, public assistance percentage was as high as 9.66 percent prior to 2015 but fell to 6.89 percent after. For the constituencies with economic zones, public assistance was 8.89 while for constituencies without, public assistance was 6.89. This is a strong reflection of what the country's trends overall look like, so the assumption that assistance is distributed more in urban areas – including those containing SEZs – is not unsupported. One challenge to this notion may be in the fact that the KMA – the pinnacle of Jamaica's urbanization – has an extremely small receipt percentage for both policy affected and unaffected areas relative to the rest of Jamaica. This, however, can be justified by not only the KMA's inequality, with some of the richest residents of Jamaica in total residing within the area, but also the population difference. The KMA is the most densely populated location in Jamaica, and thus, even with lower percentages, may have a total number that exceeds the other constituencies. Looking at the regression results of SEZs on Public Assistance while controlling for all variables, for the rest of Jamaica excluding the KMA, the relationships remain the same as before. The SEZ coefficient is positive but insignificant while the politics dummy is positive and very significant, once again indicating that the switch of power from the JLP to the PNP results in a higher percentage of the population receiving public assistance. In contrast, for the SEZ regression on Public Assistance for the KMA alone, the politics dummy becomes very insignificant, though remains positive. Meanwhile, the coefficient for SEZ is positive and significant with a probability of 0.075. The sudden significance of SEZs on the percentage of the population receiving public assistance may reflect the government's unique focus on the zoned areas in general, going further in ensuring the success of the area, which may reflect more public assistance

distribution to the region. This could be for the sake of keeping the area desirable for businesses who more than likely do not want high levels of poverty within the area or may be a reaction to higher percentages of impoverished people concentrating around SEZs as employment opportunities, thereby increasing the need for public assistance within the area. In either case, this change in significance of coefficients between the KMA and the rest of Jamaica supports the notion that KMA is unique relative to the rest of the country.

There is no doubt that the Kingston Metropolitan Area has a significant impact on the overall trends and accounted for changing the outcomes of some of the regressions.

#### *D. Limitations of Survey Data and Observational Studies*

As is expected with any observational and survey based empirical study, the accuracy of the results is limited to the accuracy of the survey records and observations. There is not much that this paper can do to account for an inaccurate survey outside of only observing the variables that meet a certain quality requirement. For the sake of this study, some of the requirements for the variables was consistent tracking throughout the time period, unfortunately eliminating some relevant but rarely asked variables from the study.

## **VII. Conclusion**

One of the most important factors impacting both this study and various other studies on the effects of SEZs is the lack of publicly accessible data regarding SEZ performances and the businesses established within the zones. Information regarding employment, productivity, or investment monetary amounts are not always open for public access from the government branches regulating the zones. With every country having free reign on how SEZs are regulated and measured, the result is the absence of consistent ways of measuring SEZ effectiveness across countries. Therefore, looking within the country at cross-regional

comparisons is the next best way of determining the effectiveness of these zones.

Unfortunately, this method remains limited by the inconsistent level of data available and suffers from the biased nature in which SEZ locations are chosen. While this paper uses area fixed effects to account for some of the biases derived from geographic landmarks, modes of transportation, and urbanization, as explained in the robustness section of this paper, this remains an obstacle to achieving an entirely unbiased report. Ultimately, economists are limited to what nations allow the public to observe. If developing nations and emerging economies desire more accurate studies on the effectiveness of Special Economic Zones, then a reformation in administration and regulation of zones is paramount. Developing nations must be encouraged to collect the same level of data across the board, so that important conversations about SEZs and their inflow of FDI can be had across nations, especially considering the significance that these zones hold for so many countries.

This is especially true for Jamaica, whose SEZ Authority remains relatively new and unorganized, with many aspects of SEZs remaining inaccessible for public research. With the high expectations that FDI inflow has for developing the infrastructure and economy for surrounding areas, and the assumption of increased employment and wages for the local community, it is very important for the government to determine whether citizens are experiencing these improvements in living conditions, considering the costs of implementing the zones. In the case of this study, the creation of these zones, and the subsequent increase in FDI inflow, is not a miraculous solution to the deeply ingrained systems of poverty and inequality within Jamaica's society. While SEZs can act as the signal for more government focus and reform into struggling areas, SEZs alone will not ameliorate the issues plaguing local communities. SEZs are only capable of magnifying the policies and trends that are



already in place for these geographic areas. That is why, for the variety of socioeconomic outcomes looked at in this paper, of those that SEZs played a significant role, other government policies and structural conditions were impacting the trends.

In the case of School Attendance, within the urban locations who already benefit from higher number of public and private institutions to choose from, the implementation of SEZs corresponded with higher attendance, but for the more rural locations with less schools, school attendance fell. With children working outside the home and inability to afford school being two of the largest reasons for children missing school, SEZs are unable to overcome the issue that many families rely on child labour in domestic work for survival. It is only when these conditions are addressed by government reform primary school attendance will improve within rural areas.

Similar findings were made in the case of home ownership, in which the increasing number of Jamaican households owning property as opposed to renting can be connected both to SEZs but also the significant reforms of in available housing stock, as the National Housing Trust (NHT) is entrusted in building thousands of new private dwellings for the nation, majority of which was concentrated around special economic zones. Ultimately, there is reason to believe that where there is a positive SEZ impact, there are also government policies in place to address structural inequality and improve household outcomes. When SEZs fall short with no or potentially adverse effects on socioeconomic outcomes, there is a clear lack of government reform. This is true in the case of accessibility of Health Insurance, as regardless of potential employment increases that SEZs could bring, the private health care system remains extremely expensive and inaccessible to the majority of the local community. Due to this, most of Jamaica is forced to rely on a low-quality, understaffed, overcrowded

public health system that routinely fails to accommodate and treat most of the community. Requiring citizens to continuously pay out of pocket for quality private health care is simply unsustainable, but few policies have been raised to address this issue.

Understanding the importance of SEZs as a complimentary system for improvement alongside government reformation policies is essential because according to the report conducted by the World bank, the acceleration of developmental improvements due to SEZs does not last forever. In fact, the growth experienced within zones becomes difficult to sustain, as “the economic dynamism of the most successful zones happens in their early years and slows overtime” (World Bank). Therefore, if the government hopes to take advantage of increased FDI inflow and economic activity, then these things must be addressed sooner rather than later. Luckily, Jamaica’s SEZ system and many of the zones are still relatively new. The potential for accelerated development and growth is still available, but it absolutely requires the central government to take an active role in launching reform programs in historically underdeveloped areas. The effects of the 2020 pandemic have unquestionably injured Jamaica’s economy, as FDI has fallen, public debt has increased once again, and the unemployment rate trend has shifted directions. With these added obstacles due the pandemic, government organization and policies will be more important than ever, as potential SEZs effectiveness falls.

## Appendix:

Table 3: Distribution of Public and Independent/Private Schools within each education region of Jamaica for 2016. Sourced from the UNICEF 2018 report.

School/Education Region	Public Institution		Independent Institution	
	Sec. School	Primary, etc.	High School	Prep. & Kin.
I – Kingston: Kingston and St. Andrew	40	112	99	83
II - Port Antonio: St. Thomas, Portland and St. Mary	21	140	4	22
III - Brown's Town: St. Ann and Trelawny	15	100	12	21
IV - Montego Bay: St. James, Hanover and Westmoreland	26	139	34	54
V – Mandeville: St. Elizabeth and Manchester	24	135	22	26
VI - Old Harbour: Clarendon and St. Catherine	40	189	30	41

Primary = Infant, Primary, Primary and Junior High, All Age and Special

Secondary = Agricultural High, Technical and Secondary with Preparatory and Vocational High Schools

NHT PROJECTS UNDER CONSTRUCTION			
Project Name	Location	No. of Units	Date of Completion
Colbeck Castle	St. Catherine	1,323	2021
Colbeck Castles 3&4	St. Catherine	4,401	2021
Friendship Phase 1	St. Elizabeth	873	
Silver Sun Estate	St. Catherine	1,200	2023
The Estuary, Phase 1	St. James	1,500	2020
Vineyard Town	St. Andrew	14	2020
Brompton Manor	St. Elizabeth	54	2020
Hummingbird Meadows (Sevens 1)	Clarendon	846	2020
Industry Manor (formerly Industry Cove)	Hanover	63	2020
Linvale Housing Development	St. Ann	52	2021
Monymusk 2	Clarendon	175	2021
Monymusk Glades (formerly Jacksonville)	Clarendon	35	2021
Ruthven Housing Development (Phase 1)	St. Andrew	372	2021
Savannah Park	Westmoreland	1,408	2021
Source: National Housing Trust			

Table 7: Table of the recently implemented housing construction plan initiated by the National Housing Trust in Jamaica. This table notes the parish location, number of private dwellings in construction and completion dates for this project.

## References

- Aitken, Brian J. and Ann E. Harrison. 1999. "Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela." *American Economic Review* (89): 605-618.
- Bank of Jamaica. 2004-2019. "Housing Units Started and Completed." (Accessed April 2021) [http://www.boj.org.jm/statistics/econdata/stats\\_list.php?type=11](http://www.boj.org.jm/statistics/econdata/stats_list.php?type=11)
- Bornschier, V., Chase-Dunn, C., and Robinson, R. 1978. "Cross-national evidence of the effects of foreign investment and aid on economic growth and inequality: A survey of findings and a reanalysis." *American Journal of Sociology* 84 (3): 651-83.
- Brun, Jean-Francois, et al. 2002. "Are there Spillover Effects between Coastal and Non-Coastal Regions in China?" *Centre Detudes et de Recherchés Sur le Developpement International* 1-18.
- Buchanan, Bonnie G., Quan V. Le and Mennakshi Rishi. 2012. "Foreign Direct Investment and Institutional Quality: Some Empirical Evidence." *International Review of Financial Analysis* 21(1) 81-89.
- Carbonell, Jorge Bermejo and Werner, Richard A. 2018. "Does Foreign Direct Investment Generate Economic Growth? A New Empirical Approach Applied to Spain." *Economic Geography* 94(4) 425-456.
- Chakraborty, Tamali; Gundimeda, Haripriya; Kathuria, Vinish. 2017. "Have the Special Economic Zones Succeeded in Attracting FDI? Analysis of India." *Theoretical Economics Letters* 7(3).
- Data Zoa. "Total Number of Schools by Parish." Accessed from <https://www.datazoa.com/mydz/mydz.asp?tabidx=0>
- Delmendo, Lalaine. 2021. "Jamaica's Housing Market Remains Resilient." *Global Property Guide*
- Ekholm, Caroline. 2017. "Foreign Direct Investment's Effect on Economic Growth in Developing Countries: Cross-Border Mergers and Acquisitions versus Greenfield Investments." *Lund University: School of Economics and Management*.
- Fry, Maxwell. J. 1993. "Foreign direct investment in a macroeconomic framework: Finance, efficiency, incentives, and distortions." Working Paper 1141. *Washington, DC: World Bank International Economics Department*.
- Graham, Edward. 2005. "Do Export Processing Zones Attract FDI and its Benefits? Experience from China and Lessons for Russia." *Internationalization and Economic Policy Reforms in Transition Countries* 251-272.
- Griffith, Winston H. 2005. "Can Caribbean Education Attract Knowledge-Based Foreign Direct Investment?" *Journal of Economic Issues* 39(4) 973 - 993
- Goncalves, Reinaldo. 1986. "Technological Spillovers and Manpower Training: A Comparative Analysis of Multinational and National Enterprises in Brazilian Manufacturing." *Journal of Development Economics* 11(1) 119-132.
- Gulbis, Ivo. 2018. "Foreign Direct Investment and Special Economic Zones in Latvia." *Baltic Journal of Real Estate Economics and Construction Management*. 240-252.
- Herzer, Dierk; Klasen, Stephan; Nowak-Lehmann D., Felicitas. 2006. "In search of FDI-led growth in developing countries." IAI Discussion Papers, No. 150, *Georg-August-Universität Göttingen, Ibero-America Institute for Economic Research (IAI), Göttingen*

- Hope, Kempe R. 1989. "Private Direct Investment and Development Policy in the Caribbean: Nationalism and Nationalization Scared Away Foreign Investors but Reagan Initiative's Luring Them." *The American Journal of Economics and Sociology* 48(1) 69-78.
- Jamaica Special Economic Zone Authority. JSEZA.com
- Jamaica Youth Activity Survey 2016 Report. 2018. *International Labour Office; Statistical Institute of Jamaica* 1-124.
- Liu, Zhiqiang. 2008. "Foreign Direct Investment and Technology Spillovers: Theory and Evidence." *Journal of Development Economics* 85(1) 176 – 193.
- Mohan, Preeya S. and Watson, Patrick K. 2014. "CARICOM Foreign Direct Investment Flows" *Social and Economic Studies* 63(3) 281-306.
- Sigler, Thomas J. 2014. "Panama's Special Economic Zones: Balancing Growth and Development" *Bulletin of Latin American Research* 33(1) 1 -15.
- Sothan, Seng. 2016. "Causality between Foreign Direct Investment and Economic Growth for Cambodia." *Cogent Economics and Finance* 5(1) 1-13.
- Statistical Institute of Jamaica (STATIN) – Statinja.gov.jam
- Sultanuzzaman, Md Reza, et al. 2018. "The role of FDI inflows and export on economic growth in Sri Lanka: An ARDL approach." *Cogent Economics & Finance* 6(1).
- Trines, Stefan. 2019. "Education in Jamaica." *World Education News and Review: World Education Services*.
- UNESCO Institute for Statistics. "Participation in Education: Jamaica." United Nations Educational, Scientific, and Cultural Organization.
- United Nations. 2019. "World Investment Report 2019: Special Economic Zones." *United Nations Conference on Trade and Development* 1-49.
- United Nations Children's Fund (UNICEF). 2018. "Child Road Safety Assessment: Jamaica." 1-70.
- Wang, Jin. 2013. "The Economic Impact of Special Economic Zones: Evidence from Chinese Municipalities." *Journal of Development Economics* 101(1) 133-147.
- Wilson, C. 2008. "The Food Crisis: Jamaica's Reality." *The Gleaner*.
- World Bank Group. 2017. "Special Economic Zones: An operational Review of Their Impacts". *Competitive Industries and Innovation Program* 1 – 174.
- World Bank Group. "Country Overview: Jamaica."
- Worrell, DeLisle. 1993. "Investment in the Caribbean." *Social and Economic Studies* 42(2) 243-259.
- Zhang, Kevin H. 2001. "Does Foreign Direct Investment Promote Economic Growth? Evidence from East Asia and Latin America." *Contemporary Economic Policy* 19(2) 175 - 185.