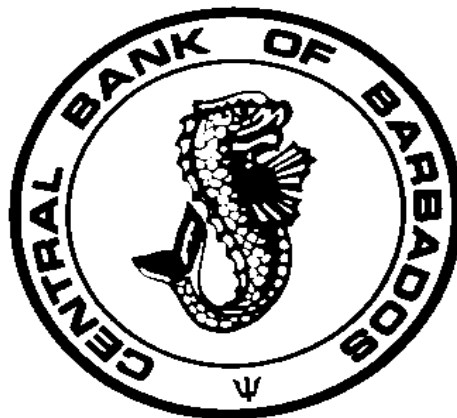


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**SOVEREIGN DEBT CHALLENGES IN THE COMMONWEALTH  
CARIBBEAN: STOCK MARKET REACTION TO SOVEREIGN  
DEBT RESTRUCTURINGS AND CREDIT RATING REVIEWS**

BY

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**CENTRAL BANK OF BARBADOS**

# **Sovereign Debt Challenges in the Commonwealth Caribbean: Stock Market Reaction to Sovereign Debt Restructurings and Credit Rating Reviews**

Justin Robinson\* and Prosper Bangwayo-Skeete\*\*

## **Abstract**

This study investigates the reaction of stock prices to sovereign debt restructurings and credit rating reviews in six frontier stock markets. The study uses the event study methodology corrected for the impact of thin trading to investigate stock market reaction to sovereign debt restructurings and credit ratings reviews in the Commonwealth Caribbean region. The study finds that stock markets in the region do not generally react to sovereign debt restructurings and credit ratings reviews. There was a positive reaction to the Jamaica 2010 sovereign debt restructuring, a negative reaction to the St. Kitts and Nevis 2013 sovereign debt restructuring, and no reaction to any of the other eight sovereign debt restructurings or seventeen sovereign credit rating reviews that occurred over the sample period January 1 2001 to June 30 2015. In cases where there was a stock market reaction, the reaction was delayed, pointing to a degree of semi-strong form market inefficiency.

On the surface, the results suggest that despite the prominence given to sovereign debt restructurings and credit rating reviews, equity investors in the Commonwealth Caribbean either view these events as having negligible impact on corporate profitability and the returns on their investments, fully anticipate these events hence little or no stock market reaction to the announcement of the event, or there are structural features of the stock markets that render them semi-strong form inefficient. We suggest that the lack of a stock market response to events of significant economic impacts in the vast majority of cases, and a delayed reaction where one exists, may point to semi-strong form efficiency in Commonwealth Caribbean stock markets due to market microstructure weaknesses such as trading costs, information asymmetry faced by minority investors and high ownership concentration amongst long term strategic investors. If this is so, market prices may not be reflective of current or recent information about firms' prospects, and the usefulness of these prices to a variety of stakeholders may be questionable.

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## **1. Introduction**

While sovereign debt restructurings and credit ratings have always been major issues, researchers' interest in these matters and their impact on financial markets has intensified in the wake of the global financial crisis of 2007-2008. The heightened interest is in part due to the fact that in the wake of the financial crisis a broader range of countries have been facing the issue of rising debt and hence the spectre of debt defaults and restructurings, whilst the frequency of reviews and changes in the credit ratings of countries and corporations has also exploded.

It is widely known that the Commonwealth Caribbean is home to some of the most highly indebted countries in the world, hence the issues of sovereign debt restructurings and credit ratings take on particular significance in this part of the world. Das, Papaioannou, and Trebesch (2012) in a comprehensive International Monetary Fund survey of sovereign debt defaults and restructurings, report that over the period 1950 to 2010 there were over 600 cases of sovereign debt defaults and debt restructurings in over 95 countries, and thirty of them have been in the Commonwealth Caribbean. Over the period 1950 to June 2015 Jamaica experienced fifteen (15) debt restructurings, Guyana five (5), Trinidad and Tobago three (3), Belize two (2), Grenada two (2), and Antigua & Barbuda, Dominica and St. Kitts & Nevis one each.

These sovereign debt restructurings and credit rating reviews have attracted a great deal of attention among academics, policymakers and the general public. The literature and discussion has tended to focus on the desirability of debt restructuring, debt sustainability, the accuracy and fairness of credit ratings and issues of equity and fairness surrounding fiscal adjustment programs. As far as the author is aware the reaction of financial markets in the region to these developments has not been the subject of systematic study. In this study we seek to add to the literature on the sovereign debt issues by examining how stock prices in small emerging markets respond to sovereign debt defaults and credit rating reviews. This will provide insights into the impact of the above on equity investors, as well as the workings of the stock markets and provide some evidence on the semi-strong form efficiency of these markets. The rest of the paper proceeds as follows: section 2 of provides a brief overview of sovereign debt restructuring and the Commonwealth Caribbean experience, section 3 provides a review of prior research on the economic and financial impact of sovereign debt restructurings and stock price reactions to

sovereign credit rating reviews, section 4 the empirical framework and data, section 5 presents and discusses the results, and lastly section 6 provides a conclusion.

## **2. Overview of Sovereign Debt Restructurings & Commonwealth Caribbean Experience**

A sovereign debt restructuring can be defined as a forced or voluntary exchange of outstanding debt instruments for cash or new debt instruments through a legal process. In categorizing and analyzing sovereign debt restructurings researchers and analysts typically focus on a number of features. These include:

- a. Is the debt restructuring launched after a default event (post default ) or prior to a default event (pre-emptive) and is the debt exchange voluntary or forced;
- b. Does the restructuring involve a reduction in the face value of the outstanding debt or is simply a debt rescheduling involving an extension of maturities and/or lowering of interest rates;
- c. Did the restructuring involve both external and domestic debt;
- d. Did the restructuring involve official debt and conducted under the auspices of the Paris Club, or did it involve commercial debt involving bank debt (under the auspices of the London Club) or a bond exchange;
- e. How successful was the restructuring in terms of the length of the negotiation, creditor holdout and litigation, the participation rate in the debt exchange and the level of debt relief achieved;

Over the sample period of January 1 2000 to June 30 2015, there were ten sovereign debt restructurings in the Commonwealth Caribbean. These were, Antigua & Barbuda (2010), Belize (2007, 2012), Dominica (2004), Grenada (2005, 2013), Guyana (2004), Jamaica (2010, 2013) and St. Kitts & Nevis (2013), while there were thirty nine credit rating reviews by international credit rating agencies (Of the Commonwealth Caribbean countries, Barbados, Bahamas, Guyana, Jamaica and Trinidad & Tobago are rated by Standard & Poors and, Moodys).

The sovereign debt restructurings in Antigua & Barbuda 2010, Dominica 2004, Grenada 2005 & 2013, and St. Kitts & Nevis (2013) involved the exchange of official debt under the auspices of the Paris Club, as well as commercial debt exchanges of both bonds and bank debt,

but the bank debt was not restructured under the auspices of the London Club. On the other hand, the Belize (2006 & 2013) and Jamaica (2010 & 2013) debt exchanges involved only commercial debt in the form of bonds. Jamaica has limited its debt exchanges to domestic bonds, Belize to external bonds, whilst the other Commonwealth Caribbean nations undertaking debt restructurings over the sample period have restructured both domestic and external bonds and domestic and external bank debt (see table 1).

The sovereign debt restructurings in the Commonwealth Caribbean have primarily been preemptive (i.e., launched prior to a default) in nature except for those in Dominica 2004, and Grenada's 2004, however, the debt restructurings have all been forced as opposed to voluntary debt exchanges and they have not involved cash payments (see table 2). The debt exchanges in Belize (2006) and Jamaica (2010 & 2013) did not involve haircuts and were limited to the extension of maturities and reduction in coupon rates, while the other sovereign debt restructurings in the Commonwealth Caribbean over the sample period have involved all three elements (see table 2).

With the exception of Dominica 2004, and the ongoing Antigua and Barbuda 2010 restructuring, the debt restructurings in the Commonwealth Caribbean have taken less than a year and achieved participation rates in excess of 90% (see table 3), which is in line with recent trends as outlined by Das, Papaioannou, and Trebesch (2012). The Dominica 2004 case has been the most protracted one, and the only one involving creditor litigation.

The level of debt relief achieved as a result of the sovereign debt restructurings in the Commonwealth Caribbean has been mixed (see table), with St. Kitts & Nevis 2013, being the most successful in terms of total debt relief, leading to a substantial reduction in the stock of debt (see tables 4&5). In the case of Belize and Jamaica, the relief has been more in the form of liquidity relief in terms of the amount and timing of payments, with the actual stock of debt left largely unchanged. The other cases of sovereign debt restructuring in the Commonwealth Caribbean over the sample period have resulted in some modest reduction in the stock of debt, but the major relief has been in the form of liquidity relief in terms of the amount and timing of payments (see tables 4&5).

In the cases where the Commonwealth Caribbean countries' debts have been rated by international credit rating agencies, ratings had been declining in the build up to the debt restructuring, were downgraded to "selective default" with the advent of the debt exchange, and

upgraded slightly in the aftermath (see table 6). The data suggests that in the case of the Commonwealth Caribbean debt restructurings have not led to significant improvements in sovereign credit ratings, which is consistent with the earlier literature as reported in Das, Papaioannou, and Trebesch (2012).

### **3. Literature Review**

There is a relatively large academic literature on sovereign debt default and restructurings and sovereign credit ratings, but the literature on the financial market impact of these phenomena is much smaller. In terms of the relevance of sovereign debt default and restructurings and sovereign credit ratings for financial markets and stock markets in particular three questions or issue seem to arise. Firstly, what are the likely consequences of sovereign debt default and restructurings for corporate profitability and returns on equity investments and hence the portfolio allocation and asset pricing decisions of equity investors? Secondly, are sovereign credit rating reviews viewed as credible signals for sovereign debt default and restructurings and hence likely to influence the portfolio allocation and asset pricing decisions of equity investors? Thirdly, are the consequences of sovereign debt default and restructurings for corporate profitability and returns on equity investments and outcomes of credit rating reviews widely anticipated, or do the occurrence of the events themselves and/or ratings announcements convey new information that can inform the portfolio allocation and asset pricing decisions of equity investors?

In terms of the likely consequences of sovereign debt default and restructurings for corporate profitability and returns on equity investments, the literature generally suggests that periods of sovereign default and restructuring are associated with a range of negative economic consequences that are likely to have negative consequences for corporate profitability and returns on equity investments. In one of the earliest and seminal papers addressing these issues, Eaton and Gersovitz (1981), theorize that defaults and restructurings have negative consequences in credit markets. Later authors such as Aguiar and Gopinath (2006), Amador (2009), Arellano (2008), Asonuma (2010), Mendoza and Yue (2008), Tomz and Wright (2007) and Yue (2010) also present theoretical arguments supporting this view. However, the early empirical literature suggests that capital markets have short memories and the impact on borrowing costs and exclusion from capital markets is negligible. Borensstein and Panizza (2009) find that sovereign

defaults and debt restructurings affect risk spreads only in the first and second year after the restructuring, while Gelos et al. (2004) and Richmond and Dias (2009) find that most defaulters regain access to new credit within one or two years after a crisis.

However, in a recent influential study, Cruces and Trebesch (2011) find that sovereign debt restructuring can have large and long lasting negative impacts. Cruces and Trebesch (2011) find that the impact depends primarily on the size of haircut or creditor losses. The authors find that the size of the haircut is the main predictor of post restructuring bond spreads. Cruces and Trebesch (2011) find that a one standard deviation increase in the haircut (20 basis points) is associated with a bond spread post restructuring that is 170 basis points higher than the baseline. Cruces and Trebesch (2011) also find that the size of the haircut has an impact on future access to capital markets where a one standard deviation increase in haircuts is associated with a 50% lower likelihood of being able to re-access international capital markets in any year after the restructuring.

A number of studies also investigate the extent of output losses in periods of sovereign default and restructuring. Sturgenzer (2002) estimates output losses at around 2 percent of GDP. De Paoli, Hoggarth and Saporta (2009) suggest that output losses in times of sovereign default and restructuring can be as high as 5 percent a year, and last up to ten years depending on the duration of arrears and negotiations. De Paoli, Hoggarth and Saporta (2009) suggest that the size and duration of the losses depends on whether or not debt crises occur alongside banking and currency crises, where “twin” or “triple” crises are associated with larger output losses. Rose (2005) finds that trade falls bilaterally by about seven percent after a restructuring and the negative effects can last for up to fifteen years. Martinez and Sandleris (2008) also find a general decline in trade after Paris Club debt restructurings lasting up to five years.

The literature also suggests that a sovereign debt crisis can also impact negatively on an economy’s crucial financial services sector especially banks, pension funds, social security schemes, insurance companies, mutual funds and other financial services providers. Das, Papaioannou, and Trebesch (2012) argue that banks and financial institutions can be affected by a sovereign debt restructuring in a variety of ways. Firstly, the asset side of balance sheets can be impacted negatively if the entity holds restructured assets, as the new assets contain terms and conditions less advantageous to the lender. The authors argue that “Buy and Hold” investors of long term bonds are likely to be the most adversely impacted group, while investors who trade

their asset regularly and mark to market may take the opportunity of an impending restructuring to offload the assets. The low levels of government bond trading in the Commonwealth Caribbean would suggest that the vast majority of investors in the region are of the “buy and hold” variety and would be vulnerable to a debt restructuring. Das, Papaioannou, and Trebesch (2012) also argue that on the liabilities side, banks can experience a spike in deposit withdrawals and interruptions in interbank credit lines which can negatively impact the ability to mobilize resources at a time of stress. These disruptions in bank financing flows can impact negatively on other financial service providers who depend on bank financing lines. Studies by Cornell and Shapiro (1986), Bruner and Simms (1987), Solvin and Jayant (1993), Fissel et al (2006) and Arezki et al (2011).

A small branch of the literature analyzes the impact of episodes of sovereign debt default and restructurings on the private sector, in particular, with regard to two types of spill overs: (1) foreign direct investment, and (ii) private sector access to external financing. Fuentes and Saravia (2010) find that countries that undergo a debt restructuring see their foreign direct investment flows reduced by up to two percent of GDP per year. Arteta and Hale (2008) find that sovereign debt crises and restructurings with official creditors have a stronger impact on investment flows than those involving private creditors. Arteta and Hale (2008) document a drop of more than twenty percent in foreign loans and bond issuance by domestic firms. Das, Papaioannou and Tresbech (2010, 2011), find a forty percent drop in private sector external borrowing compared to what it would have been otherwise. They find that defaults involving private creditors have a greater negative impact than default on official debt. In addition they find that other risk measures, such as higher sovereign bond spread and lower sovereign credit ratings have a strong negative impact on private sector borrowing even without a formal default. Importantly for this study, Cruces (2007) finds sizeable sovereign risk related to equity premia. He finds that corporations in countries with credit ratings in the default range are forced to offer much higher expected rates of return compared to companies in countries with non-default range ratings.

Therefore, the consensus in the academic literature suggests that debt restructuring especially those involving haircuts tend to have large and long lasting impacts on a sovereign’s borrowing costs and access to international capital markets, negative impacts on output, trade, foreign direct investment, private sector access to external credit and increases in equity risk premia. As such

sovereign debt restructurings can have negative consequences for the profitability of firms operating in that economy, returns on equity investments and can trigger portfolio reallocations and asset pricing decisions by equity investors.

However, these studies have not tended to separate the economic consequences of a build up to a sovereign debt restructuring versus the aftermath of the exercise. In theory, a successful debt restructuring may signal the resolution of a period of economic instability, reduce debt overhang, improve public finances and create fiscal space for growth enhancing policies. As such these outcomes can create the potential for greater economic and financial stability in the future which can enhance corporate profitability, lower equity risk premia which can enhance returns on equity investments and can trigger portfolio reallocations and asset pricing decisions by equity investors.

Sovereign credit ratings are widely used as indicators of the likelihood of sovereign default, and reviews and changes in these credit ratings attract major attention in the investment community. Sovereign credit ratings can impact directly on corporations and other projects in the economy in that the sovereign credit rating typically serves as a ceiling for the credit rating of private entities in an economy. Hence, a sovereign credit rating change has implications for firms and projects within an economy.

Several event studies examine the impact of changes in sovereign credit ratings on corporate stock and bond markets. Cantor & Packer (1996), Kaminsky & Schmukler (2002), Reinhart & Rogoff (2004), Bissoondyal-Bheenick (2004), Kim & Wu (2004), Norden, & Weber (2004), Brooks et al (2004), Pukthuanthong-Le et al (2007), Hooper et al (2008). Brooks, Faff, Treepongkaruna & Wu (2011), Klimaviciene (2011), Michaelides, Milidonis, Nishiotis & Papakyriacou (2012) and Ftanassi, Ftiti and Hasnaoui (2014) all provide evidence that asset prices are affected by variations in sovereign credit ratings. Brookes et al., (2004) and Ferreira and Gama (2007) are two exceptions in that they suggest asset prices are not impacted by sovereign credit ratings. The above-mentioned literature normally finds that sovereign credit ratings changes significantly affect both bond and stock markets, however, as can be expected, the impact is greater on bond prices. Further there is general consensus that the impact is asymmetric, in that stock and bond markets react significantly to downgrades but not upgrades. The literature also suggests that the largest price impact occurs on the announcement day even

though there is some anticipation of the event. The evidence suggests that there can also be a significant market reaction prior to the announcement of the event.

In summary, the literature suggests that episodes of sovereign debt defaults and restructurings have negative consequences for a broad range of economic activity and can adversely impact corporate profits and equity returns. However, a successful debt restructuring exercise may signal a new economic dawn which can enhance the prospects for corporate profits and equity returns. Hence the stock market restructuring to a sovereign debt restructuring can be either negative or positive depending on the context. The literature provides a clear indication that stock markets react negatively to sovereign credit downgrades, but does not react to upgrades or others ratings reviews generally.

## **4. Data and Methodology**

### **4.1 Data and Events Description**

This study explores stock price reaction to sovereign debt restructurings and credit rating reviews on six stock exchanges in the Commonwealth Caribbean over the period January 1 2000 to June 30 2015. The six stock exchanges are the Bahamas International Securities Exchange (BISX), the Barbados Stock Exchange (BSE), the Eastern Caribbean Securities Exchange (ECSE), the Guyana Stock Exchange (GASCI), the Jamaica Stock Exchange (JSE) and the Trinidad and Tobago Stock Exchange (TTSE). Over the sample period the following debt restructurings occurred in the Commonwealth Caribbean, Antigua & Barbuda (2010), Belize (2007, 2012), Dominica (2004), Grenada (2005, 2013), Guyana (2004), Jamaica (2010, 2013) and St. Kitts & Nevis (2013). Over the sample period, Barbados, Bahamas, Guyana, Jamaica and Trinidad & Tobago were the only Commonwealth Caribbean countries rated by international credit rating agencies. The countries were rated by Standard & Poors and, Moodys and there were fifty credit rating reviews.

In the case of sovereign debt restructurings two event dates are utilized, the announcement date and the completion date, while for the sovereign credit rating reviews the actual publication of the rating action is used as the event date. Therefore, there are twenty event studies related to

sovereign debt restructurings and 50 credit rating review events. The dates of these events, the daily closing prices for the 159 securities listed on the six stock exchanges and the stock market indices constitute the basic dataset for the study. The impact of the events on stock prices is evaluated for each of the six stock markets individually as well as against a composite Caribbean share index (the results are the same with either approach but the results reported are based on the individual stock market reactions).

## **4.2 Methodology**

The Financial Economics literature has tended to study stock market reaction to sovereign debt restructurings and credit rating reviews in the context of the Efficient Market Hypothesis (EMH). The EMH identifies three categories or levels of market efficiency as summarized by Fama (1970 & 1976): the weak form, semi-strong form and strong form market efficiency. Weak form efficiency focuses on the efficiency with which the market prices historical information, semi-strong form focuses on the efficiency with which publicly available information is priced, and strong form focuses on the efficiency with which all relevant information, including private information, is priced. In the literature the EMH is taken as an ideal type or benchmark for evaluating the price discovery process in a market. Event studies which examine abnormal returns surrounding a particular event, have been the major research tool used to study semi-strong form efficiency.

### **4.2.1 The Market Model**

In order to investigate the stock price behavior of Caribbean firms (investors) in response to major global or regional events, the empirical analysis adopts the event study methodology typically used in finance studies (see for example Hillier and Marshall, 2002; Gunasekarage and Power (2006, 2002); Dennis and McConnell (1986); Al-Yahyaee, Pham and Walter (2011); Gurgul, Mestel and Schleicher (2003); Harada and Nguyen (2005) and Benartzi, Michaely and Thaler (1997)). However, these studies generally overlook the problem of thin volumes of trading activities, an acute feature in emerging market economies particularly in the Caribbean (see table 8 & Robinson 2006). Thin-trading describes situations where stocks do not trade for a prolonged period of time. In such cases, stock prices cease to immediately reflect new

information. Hence, for robust results, our study adjusts for thin trading following the Geyt, Cauwenberge & Bauwhede (2013) approach.

The event study approach tracks the impact of each event on the stock prices around the occurrence of the event. Each event is presumed to occur on date zero denoted  $t = 0$ . The technique requires first to calculate the “expected *normal* return” using the capital market model. As for the capital market model, stock returns depend on leads, current and lagged market returns instead of only the contemporaneous market return. This adjusted market model was initially introduced by Dimson (1979) but recently familiarized in empirical approaches by Geyt et al. (2013) and Buyschaert et al. (2004). In line with Geyt et al. (2013) and Buyschaert et al. (2004), we add one leading and three lagged market returns to the model:

$$R_{it} = \alpha_i + \sum_{k=-3}^1 \beta_{ik} R_{m,t+k} + \epsilon_{i,t} \dots \dots \dots (1)$$

where  $R_{it}$  represents the return on individual daily stock for firm  $i$  on day  $t$ .  $R_{m,t+k}$  is the adjusted return on the market index for day  $t + k$ . For all the listed companies, the Caribbean market index was used since similar companies appear on various stock exchanges reflecting their regional operations.  $\epsilon_{i,t}$  denotes the error term which also represents the component of returns which is abnormal or unexpected such that the predicted expected or normal returns equation becomes:

$$E(R_{it}) = \alpha_i + \sum_{k=-3}^1 \beta_{ik} R_{m,t+k} \dots \dots \dots (2)$$

$\alpha_i$  and  $\beta_{ik}$  are ordinary least squares parameter estimates. This normal returns model provides the expected returns unconditional on the event. Thus, it is estimated before an abnormal return can be defined. We, therefore estimate it over the sample period of 120 days spanning from day  $t = -31$  to  $t = -150$  prior to the event’s occurrence (and beyond the event window).

The second step involves calculating the stock’s abnormal returns,  $AR_{it}$ , for each firm per day,  $t$  over the event window. The event window is the period of interest reflecting days around the event date which could have spill-over effects from the event. The objective is to analyze the stock return’s behavior during the event window. In order to achieve robust results, five overlapping event windows were used with the widest window being 30 days before and 30 days after the event date. The smallest window is 10 days on either side of the event date. Investigating over different window ranges provides insights into short term versus long term

effects on returns. The daily abnormal returns, i.e. the predicted error, during the event window are computed as:

$$AR_{it} = R_{it} - E(R_{it}) \dots\dots\dots(3)$$

where  $AR_{it}$  is the current day abnormal return;  $R_{it}$  represents the current day actual return and  $E(R_{it})$  the expected normal return obtained from equation (2). This daily abnormal return is a direct measure of the (unexpected) change in stockholder wealth associated with the event.

#### 4.2.2 Aggregating Across Firms

For each individual event, abnormal return observations and relevant statistical tests from each day within the event window are calculated. Drawing overall statistical inference on the abnormal returns observations (i.e. about the reaction of capital markets) to an event requires aggregating the abnormal returns. For each day,  $t$ , in the event window, the sampled average abnormal returns ( $AAR_t$ ) are aggregated over all  $N$  firms as:

$$AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{it} \dots\dots\dots(4)$$

#### 4.2.3 Aggregating over time within the event window

Of another aggregated interest is for testing the persistent effect of an event during the event window ( $T_2 - T_1$ ). This is done by examining whether the average abnormal returns for the days around the event are equal to zero. The average abnormal returns are summed to obtain the cumulative average abnormal returns ( $CAAR(T_1, T_2)$ ) for over  $N$  firms over the event window.

$$CAAR(T_1, T_2) = \sum_{t=T_1}^{T_2} AAR_t \dots\dots\dots(5)$$

#### 4.2.4 Sampling distributions of t-test statistics

We then compute our t-statistic for each day using:

$$t = \frac{CAAR(T_1, T_2)}{\frac{\sigma_{CAAR(T_1, T_2)}}{\sqrt{N}}} \dots\dots\dots(6)$$

where  $\sigma$  denotes standard deviation. The test-statistic is estimated per event day.

However, for an inference over the entire event window, one takes the cumulative average abnormal returns over the period. To address the question of significance we use a more robust

regression approach that controls for robust standard errors. CAAR is regressed on a constant and the estimated constant is the mean of CAAR over the event window. The statistically significant results are the ones reported<sup>1</sup>.

## **5. Results and Discussion of Study**

### **5.1. Stock Market Reaction to Sovereign Debt Restructurings and Credit Rating Reviews**

There were nine sovereign debt restructurings in the Commonwealth Caribbean over the sample period. Equity investors on the Jamaica stock exchange reacted positively to the Jamaica 2010 debt restructuring (there was also a positive reaction on the Caribbean Share Index), while investors on the Jamaica stock exchange reacted negatively to the St. Kitts and Nevis 2013 debt restructuring. The positive reaction to the Jamaica 2010 debt restructuring can be interpreted in light of the fact that it was widely seen as being quite successful at the time in terms of the participation rate, there was no haircut for investors and was widely viewed as creating a platform for improved macroeconomic stability in Jamaica. These factors would likely have outweighed the fact that the debt restructuring was limited to domestic investors and would have led to losses for financial institutions in Jamaica which are heavily represented on the Jamaica stock exchange. However, the stock market reaction was delayed, with the reaction only being significant over the 25 and 30 day windows, pointing to a protracted price discovery process, and a semi-strong form inefficient market response. The lack of any reaction on the Trinidad and Tobago stock exchange is somewhat surprising given the significant exposure of financial institutions listed on that exchange to Jamaican government debt.

Equity investors on the Jamaica stock exchange had a relatively swift negative reaction to St. Kitts and Nevis's 2012 debt restructuring (there was also a negative reaction on the Caribbean Share Index). The stock price change is significant within the ten day event window, which is a relatively quick response. The debt restructuring was very successful in terms of the participation rate, and provided significantly more debt relief than in the Jamaica case (see table 4). The negative reaction can probably be attributed to the fact that the debt restructuring

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<sup>1</sup> The t-statistics and their corresponding p-values for each day (in the event window) are available on request.

involved a sizeable haircut which would have had a direct negative impact on investors exposed to St. Kitts and Nevis's debt. This is consistent with the finding of Cruces and Trebesch (2011) that the size of haircut is the main determinant of the financial market impact of a debt restructuring. Other factors supporting a negative reaction may have been the fact that the debt restructuring was the first in the nation's history as well as the first in the OECS outside of a severe natural disaster. Again, the lack of any reaction on the Trinidad and Tobago stock exchange is somewhat surprising given the significant exposure of financial institutions listed on that exchange to St. Kitts and Nevis's debt. The absence of any reaction on the Eastern Caribbean Securities Exchange is extremely difficult to explain given the importance of St. Kitts and Nevis's in the Eastern Caribbean currency union.

There was no statistically significant reaction on any of the six exchanges (or the Caribbean Share Index) to the Antigua & Barbuda, Belize (2006 & 2012), Dominica, Grenada and Jamaica 2013 debt restructurings. It may be that investors did not view these events as significant or the debt defaults were widely anticipated and had already been priced in by equity investors. The absence of any reaction on the Eastern Caribbean Securities Exchange to any of these events is extremely difficult to explain given the importance of Antigua & Barbuda, Dominica and Grenada in the Eastern Caribbean currency union. Again, the lack of any reaction on the Trinidad and Tobago stock exchange is somewhat surprising given the significant exposure of financial institutions listed on that exchange to St. Kitts and Nevis's debt.

In terms of credit rating actions related to Commonwealth Caribbean countries, the period 2001-2014 saw eleven upgrades, eleven outlook changes, nine affirmations of ratings and nineteen downgrades. In contrast to the stock market reaction in other markets, equity investors on the Barbados, Bahamas, Eastern Caribbean, Guyana, Jamaica and Trinidad & Tobago stock exchanges did not react in a statistically significant way to any of the rating actions. The absence of any reaction to the nineteen downgrades, including a downgrade to non-investment grade in a major economy, stands in stark contrast to the results documented in the academic literature. This could either reflect the fact that ratings and outlook changes are widely anticipated and already priced into the stocks by the time an announcement is made, equity investors in the Commonwealth Caribbean do not view these events as having a significant impact on corporate profitability and the returns on their investments, equity investors react to an unexpected actual debt restructuring as seen earlier, rather than changes in the likelihood of default.

As stated earlier, stock markets around the world typically do not react to outlook changes or rating upgrades, but they do react to downgrades. The absence of a stock market reaction on the Barbados Stock Exchange to any of the downgrades of Barbados government debt, especially the downgrade to non-investment grade status is extremely difficult to explain. The absence of a stock market reaction on the Trinidad & Tobago Stock Exchange and Jamaica Stock Exchange to any of the downgrades given the significant exposure of financial institutions listed on those exchanges to government debt in the Commonwealth Caribbean is rather difficult to explain.

### **5.3.2 Summary and Conclusion**

The evidence from the event studies conducted in this paper suggests that sovereign debt restructurings and credit rating reviews have little or no impact on stock markets in the Commonwealth Caribbean. Equity investors on the Jamaica Stock Exchange reacted to two of the sovereign debt restructurings over the sample period, but ignored the other eight and all of the credit rating reviews. Where there was a reaction, the reaction was delayed, pointing to a slow price discovery process and semi-strong form market inefficiency relative to the ideals of the EMH. The lack of a market reaction to the vast majority of events even with a correction for thin trading is difficult to explain given the economic significance of the events and the high representation of financial stocks among the stock exchanges in the Caribbean. The absence of a market reaction to all credit rating downgrades, even a downgrade to non-investment grade in a major economy stands in stark contrast to the literature and begs further explanation.

Given the pervasive nature of extremely low levels of trading on the six stock exchanges the author would like to suggest that the absence of a market reaction to events of major economic significance may more likely be due to structural features of regional stock markets, rather than the financial impact of the events. As such prices may deviate from values based on a careful analysis of all available, relevant information and such markets are likely to be relatively semi-strong form inefficient. Policymakers, investors and other decision makers may be well advised to question the usefulness of such prices in guiding their decision making. Further research should seek to isolate the causes of the pervasiveness of extremely low levels of trading so as to create a framework for policy interventions to improve the efficiency of stock markets in the Commonwealth Caribbean.

**Table 1. Key Features Of Sovereign Debt Restructurings  
In The Commonwealth Caribbean**

|   | <b>Antigua &amp; Barbuda<br/>2010</b> | <b>Belize<br/>2006</b> | <b>Belize<br/>2012</b> | <b>Dominica<br/>2004</b> | <b>Grenada<br/>2005</b> | <b>Grenada<br/>2013</b> |
|---|---------------------------------------|------------------------|------------------------|--------------------------|-------------------------|-------------------------|
| <b>Default on External Debt</b>         | Yes                                   | No                     | No                     | Yes                      | Yes                     | Yes                     |
| Default on Foreign Currency Bonds       | Yes                                   | No                     | No                     | No                       | Yes                     | Yes                     |
| Default on Foreign Currency Bank Debt   | Yes                                   | No                     | No                     | Yes                      | Yes                     | Yes                     |
| <b>Default on Domestic Private Debt</b> | Yes                                   | No                     | No                     | No                       | Yes                     | Yes                     |
| Default on Official Debt                | Yes                                   | No                     | No                     | No                       | Yes                     | Yes                     |
| <b>External Debt Restructuring</b>      | Yes                                   | Yes                    | Yes                    | Yes                      | Yes                     | Yes                     |
| Foreign Currency Bond Rescheduling      | Yes                                   | Yes                    | Yes                    | Yes                      | Yes                     | Yes                     |
| Foreign Currency Bank Debt Rescheduling | Yes                                   | Yes                    |                        | Yes                      | Yes                     | Yes                     |
| <b>Domestic Debt Restructuring</b>      | Yes                                   | No                     | No                     | Yes                      | Yes                     | Yes                     |
| <b>Official Debt Restructuring</b>      | Yes                                   | No                     | No                     | Yes                      | Yes                     | Yes                     |
| <b>Paris Club Restructuring</b>         | Yes                                   | No                     | No                     | Yes                      | Yes                     | Yes                     |
| <b>London Club Restructuring</b>        | No                                    | No                     | No                     | No                       | No                      | Yes                     |

**Table 1 cont. Key Features Of Restructuring Of Sovereign Debt Restructurings  
In The Commonwealth Caribbean**

|   | <b>Jamaica<br/>2010</b> | <b>Jamaica<br/>2013</b> | <b>Suriname<br/>2008</b> | <b>St. Kitts<br/>&amp; Nevis<br/>2012</b> |
|---|-------------------------|-------------------------|--------------------------|---|
| <b>Default on External Debt</b>         | No                      | No                      |                          | No  |
| Default on Foreign Currency Bonds       | No                      | No                      |                          | No  |
| Default on Foreign Currency Bank Debt   | No                      | No                      |                          | No  |
| <b>Default on Domestic Private Debt</b> | No                      | No                      |                          | No  |
| Default on Official Debt                | No                      | No                      |                          | No  |
| <b>External Debt Restructuring</b>      | No                      | No                      |                          | Yes                                       |
| Foreign Currency Bond Rescheduling      | No                      | No                      |                          | Yes                                       |
| Foreign Currency Bank Debt Rescheduling | No                      | No                      |                          | Yes                                       |
| <b>Domestic Debt Restructuring</b>      | Yes                     | Yes                     |                          | Yes                                       |
| <b>Official Debt Restructuring</b>      | No                      | No                      |                          | Yes                                       |
| <b>Paris Club Restructuring</b>         | No                      | No                      |                          | Yes                                       |
| <b>London Club Restructuring</b>        | No                      | No                      |                          | No  |

**Source: Federal Reserve Bank of Dallas & IMF Sovereign Debt Restructuring Database**

**Table 2. Highlights of Sovereign Debt Restructuring Terms In The Commonwealth Caribbean**

|                        | Pre-Emptive Or Post Default | Outstanding Debt Instruments Exchanged                      | New Instruments            | Debt Exchanged | Nominal Cut In Face Value | NPV Losses |
|------------------------|-----------------------------|---|----------------------------|----------------|---------------------------|------------|
| Belize 2006            | Pre                         | 7 bonds,<br>8 loans   | 1 Super Bond               | US\$3.19bl     | 0.0%                      | 21%        |
| Belize 2012            | Pre                         | 1 Bond  | 1 Bond                     | US\$ 550ml     | 2%                        | 33%        |
| Grenada 2005           | Pre                         | 7 Ext. bonds<br>9 Dom. bonds<br>2 Ext. loans<br>6 Dom loans | 1 US\$ Bond<br>1 EC\$ Bond | US\$210ml      | 0.0%                      |            |
| Jamaica 2010           | Pre                         | 350 US & Jam \$ bonds                                       | 25 US & Jam \$ bonds       | US\$7.8bl      | 0.0%                      | 15-20%     |
| Jamaica 2013           | Pre                         | 28 US & Jam \$ bonds  | 26 US & Jam \$ bonds       | US\$8.90bl     | 0.0%                      |            |
| St. Kitts & Nevis 2010 | Pre                         | 11 Ext. bonds<br>2 Dom. bonds<br>4 loans                    | 1 US\$ Bond<br>1 EC\$ Bond | US\$ 140ml     | 31.8%                     |            |

Source: IMF Sovereign Debt Restructuring Database

**Table 3. Highlights of Sovereign Debt Restructuring Process In The Commonwealth Caribbean**

|                        | Announcement Date | Completion Date | Duration (Months) | Creditor Structure | Creditor Committee | Collective Action Clauses |
|------------------------|-------------------|-----------------|-------------------|--------------------|--------------------|---------------------------|
| Antigua & Barbuda      | June -09          | -               | Ongoing           | Concentrated       | No                 | No                        |
| Belize 2006            | Aug -06           | Feb - 07        | 6                 | Concentrated       | Yes                | Yes                       |
| Belize 2012            | Aug-12            | Mar-13          | 7                 | Concentrated       | Yes                | Yes                       |
| Dominica 2004          | July -03          | July-2012       | 98                | Concentrated       | No                 | No                        |
| Grenada 2005           | Oct- 04           | Nov - 05        | 13                | Concentrated       | No                 | No                        |
| Grenada 2013           |                   | April-2015      |                   | Concentrated       | No                 | No                        |
| Jamaica 2010           | Jan-2010          | Feb-2010        | 1                 | Dispersed          | No                 | Yes                       |
| Jamaica 2013           | Feb -13           | Feb-13          | 1                 | Dispersed          | No                 | Yes                       |
| St. Kitts & Nevis 2011 | June -11          | Apr-12          | 10                | Concentrated       | No                 | No                        |

Source: IMF Sovereign Debt Restructuring Database

**Table 4. Sovereign Debt Restructuring Outcomes In The Commonwealth Caribbean**

|                        | <b>Creditor Losses</b> | <b>Participation Rate</b> | <b>Litigation Cases</b> | <b>Quarters To International Bond Issuance</b> | <b>Pre-Restr Debt to GDP</b> | <b>Post-Restr Debt to GDP</b> |
|------------------------|------------------------|---------------------------|-------------------------|--|------------------------------|-------------------------------|
| Belize 2006            | (21-24%)               | 98%                       | None                    | Not yet  | 92%                          | 90%                           |
| Belize 2012            | (29-33%)               | 100%                      | None                    | Not yet  | 92.5%                        | 87.6%                         |
| Dominica 2004          | (20-30%)               | 72%                       | 1 case                  | Not yet  | 95.3%                        | 70.7%                         |
| Grenada 2005           | (40 – 45)              | 91%                       | None                    | Not yet  | 130%                         | 120%                          |
| Grenada 2013           | (50-75%)               | 92%                       | None                    | Not yet  | 75.1%                        | 81.6%                         |
| Jamaica 2010           | 20%                    | 99%                       | None                    | 4  | 124%                         | 140%                          |
| Jamaica 2013           | 24%                    | 99%                       | None                    | 3  | 147%                         | 143%                          |
| St. Kitts & Nevis 2011 | (40-60%)               | 94%                       | None                    | Not yet  | 154%                         | 117%                          |

**Table 5. Debt Relief Achieved From Sovereign Debt Restructurings In The Commonwealth Caribbean**

|                        | <b>Nominal Hair Cut</b>             | <b>Maturity Extension</b> | <b>Interest Rate Reduction</b> | <b>NPV Losses</b> |
|------------------------|-------------------------------------|---------------------------|--------------------------------|-------------------|
| Belize 2006            | 0.0%                                | 16 years                  | 2.1%                           | 24%               |
| Belize 2012            | 10% (3% after capitalized interest) | 9 years                   | 2.2%                           | 29%               |
| Grenada 2005           | 0.0%                                |                           |                                |                   |
| Jamaica 2010           | 0.0%                                | 3.6 years                 | 2.0% to 6.5%                   |                   |
| Jamaica 2012           | 0.0%                                | 3-10 years                | 0.75% to 5.0%                  |                   |
| St. Kitts & Nevis 2011 | 31.8%                               |                           |                                |                   |

**Source: IMF Sovereign Debt Restructuring Database**

**Table 6. Sovereign Ratings Around The Time of Sovereign Debt Restructurings In The Commonwealth Caribbean**

|              | <b>Restructuring Date</b> | <b>Rating One Year Before Restructuring.</b> | <b>Rating Just Before Restructuring</b> | <b>Rating One Year After Restructuring</b> |
|--------------|---------------------------|--|---|--|
| Belize 2006  | Aug -06                   | Caa1<br>CCC-                                 | Caa3<br>CCC-                            | Caa1<br>B3                                 |
| Belize 2012  | Aug-12                    | CCC-<br>B3                                   | B-<br>Ca                                | B-<br>Caa2                                 |
| Grenada 2005 | Oct- 04                   | NR   | NR                                      | NR   |
| Jamaica 2010 | Jan-2010                  | CCC+<br>Ba2                                  | CCC<br>Caa2                             | Caa2                                       |
| Jamaica 2012 | Feb -13                   | B-<br>B3                                     | CCC-<br>Caa3                            | B-<br>Caa2                                 |

**Source: Moodys and Standard & Poors Sovereign Ratings Actions Databases**

**Table 7: Credit Rating Reviews In The Commonwealth Caribbean**

| <b>EVENTS</b>  | <b>EVENT DATES</b>      |
|--|-------------------------|
| <i>Credit Rating Changes By International Ratings Agencies</i> |                         |
| <b>Barbados credit rating upgraded</b>                         | Feb 8 2000              |
| <b>Barbados credit rating affirmed</b>                         | July 12 2001            |
| <b>Barbados credit rating affirmed</b>                         | Sept 10 2003            |
| <b>Barbados credit rating upgraded</b>                         | May 24 2006             |
| <b>Barbados credit rating downgraded</b>                       | Oct 13 2009             |
| <b>Barbados credit rating upgraded</b>                         | May 24 2006             |
| <b>Barbados credit rating downgraded to junk</b>               | July 17 2012            |
| <b>Barbados credit rating downgraded to junk</b>               | <b>December 20 2012</b> |
| <b>Barbados credit rating downgraded</b>                       | December 20 2013        |
| <b>Barbados credit rating downgraded</b>                       | November 22 2013        |
| <b>Barbados credit rating downgraded</b>                       | June 2 2014             |
| <b>Bahamas outlook changed from positive to stable</b>         | September 6 2001        |
| <b>Bahamas outlook changed from stable to positive</b>         | September 30 2002       |
| <b>Bahamas outlook changed from positive to stable</b>         | June 26 2003            |
| <b>Bahamas credit rating downgraded</b>                        | December 14 2012        |
| <b>Threat to Downgrade Bahamas credit rating to junk</b>       | January 22 2014         |
| <b>Bahamas credit rating downgraded</b>                        | September 2 2014        |
| <b>Jamaica credit rating placed on review</b>                  | April 17 2003           |
| <b>Belize credit rating affirmed</b>                           | June 13 2002            |
| <b>Belize outlook changed to negative</b>                      | August 6, 2002          |
| <b>Belize credit rating downgraded</b>                         | May 28, 2003            |
| <b>Belize credit rating on review for possible downgrade</b>   | June 18 2004            |
| <b>Belize credit rating downgraded</b>                         | August 5, 2004          |

**Table 7: Credit Rating Reviews In The Commonwealth Caribbean cont.**

|  |                  |
|--|------------------|
| <b>Belize credit rating downgraded</b>                           | June 7, 2005     |
| <b>Belize credit rating downgraded</b>                           | June 26, 2005    |
| <b>Belize credit rating upgraded</b>                             | Feb 13 2007      |
| <b>Belize credit rating upgraded</b>                             | Feb 10, 2009     |
| <b>Belize credit rating downgraded</b>                           | Feb 16, 20120    |
| <b>Belize credit rating affirmed</b>                             | June 17, 2015    |
| <b>Jamaica credit rating downgraded</b>                          | May 27 2003      |
| <b>Jamaica credit rating upgraded</b>                            | May 24 2006      |
| <b>Jamaica credit rating placed on review</b>                    | Nov 4 2008       |
| <b>Jamaica credit rating downgraded</b>                          | March 4 2009     |
| <b>Jamaica credit rating downgraded</b>                          | November 18 2009 |
| <b>Jamaica credit rating upgraded</b>                            | March 2 2010     |
| <b>Jamaica credit rating placed on review</b>                    | February 14 2013 |
| <b>Jamaica credit rating downgraded</b>                          | March 6 2013     |
| <b>Jamaica credit rating downgraded</b>                          | March 6 2013     |
| <b>Jamaica credit outlook changed from stable to positive</b>    | February 16 2014 |
| <b>Jamaica credit rating upgraded</b>                            | May 28 2015      |
| <b>Trinidad &amp; Tobago credit rating on review for upgrade</b> | January 11 2000  |
| <b>Trinidad &amp; Tobago credit rating upgraded</b>              | April 6 2000     |
| <b>Trinidad &amp; Tobago credit rating affirmed</b>              | August 28 2001   |
| <b>Trinidad &amp; Tobago credit rating affirmed</b>              | April 16 2002    |
| <b>Trinidad &amp; Tobago credit rating affirmed</b>              | Sept 9 2003      |
| <b>Trinidad &amp; Tobago credit rating affirmed</b>              | November 10 2004 |
| <b>Trinidad &amp; Tobago credit rating upgraded</b>              | August 9 2005    |
| <b>Trinidad &amp; Tobago credit rating upgraded</b>              | July 13 2006     |
| <b>Trinidad &amp; Tobago credit rating affirmed</b>              | January 16 2013  |
| <b>Trinidad &amp; Tobago credit rating downgraded</b>            | April 30 2105    |

**Source: Moodys and Standard & Poors Sovereign Ratings Actions Databases**

**Table 8. Stock Market Capitalization to GDP In The Commonwealth Caribbean %**

| Country Name                                  | 2000 | 2004 | 2009 | 2014 |
|---|------|------|------|------|
| Bahamas, The                                  |      |      |      |      |
| Barbados                                      | 54   | 149  | 95   | 106  |
| Guyana  | Na   | 16   | 14   | 21   |
| Jamaica                                       | 39   | 141  | 51   | 43   |
| OECS  | Na   | 49   | 91   | 93   |
| Trinidad and Tobago                           | 53   | 132  | 57   | 64   |
| Latin America & Caribbean (all income levels) | 29   | 35   | 50   | 45   |

**Source: World Development Indicators**

**Table 9. Stock Market Turnover Ratio (%) In The Commonwealth Caribbean**

| Country Name                                  | 2000  | 2004   | 2009   | 2014   |
|---|-------|--------|--------|--------|
| Barbados                                      | 0.35  | 5.27   | 0.34   | 0.40   |
| Guyana  | Na    | 1.11   |        |        |
| Jamaica                                       | 2.47  | 4.16   | 1.83   | 3.01   |
| OECS  | Na    | 1.92   | 1.51   |        |
| Trinidad and Tobago                           | 3.12  | 3.83   | 2.01   | 0.77   |
| Latin America & Caribbean (all income levels) | 26.83 | 24.38  | 48.87  | 42.65  |
| East Asia & Pacific (all income levels)       | 98.49 | 97.74  | 164.46 | 112.07 |
| Europe & Central Asia (all income levels)     | 84.04 | 114.98 | 108.65 | 80.45  |

**Source: World Development Indicators**

**Table 10. Stock Market Reaction To Jamaica's 2010 Debt Restructuring 1/14/2010**

| Event window | Mean CAR | Robust Std. Err. | t-value | p-value | 95% Conf. Interval |       |
|--------------|----------|------------------|---------|---------|--------------------|-------|
| [-30,30]     | 0.078    | 0.033            | 2.390   | 0.020   | 0.013              | 0.143 |
| [-25,25]     | 0.088    | 0.037            | 2.390   | 0.021   | 0.014              | 0.161 |
| [-20,20]     | 0.065    | 0.042            | 1.530   | 0.134   | -0.021             | 0.150 |
| [-15,15]     | 0.064    | 0.048            | 1.340   | 0.189   | -0.033             | 0.162 |
| [-10,10]     | -0.004   | 0.051            | -0.070  | 0.945   | -0.109             | 0.102 |

**Table 11. Stock Market Reaction To St Kitts & Nevis Debt Sovereign Restructuring 3/18/2012**

| Event window | Mean CAR | Robust Std. Err. | t-value | p-value | 95% Conf. Interval |        |
|--------------|----------|------------------|---------|---------|--------------------|--------|
| [-30,30]     | -0.077   | 0.034            | -2.250  | 0.028   | -0.145             | -0.009 |
| [-25,25]     | -0.082   | 0.040            | -2.040  | 0.047   | -0.162             | -0.001 |
| [-20,20]     | -0.075   | 0.045            | -1.660  | 0.104   | -0.166             | 0.016  |
| [-15,15]     | -0.137   | 0.051            | -2.710  | 0.011   | -0.241             | -0.034 |
| [-10,10]     | -0.135   | 0.053            | -2.530  | 0.020   | -0.246             | -0.024 |

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