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### **A Back-Of-The-Envelope Calculation On the Economic Risk of An Ebola Scare In The Caribbean**

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**December 2014**

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“The only thing we have to fear is fear itself.”

Franklin D. Roosevelt

### **Abstract<sup>1</sup>**

This brief presents simulations of an Ebola scare in the Caribbean, including three highly tourism-dependent economies, The Bahamas, Barbados, and Jamaica. On the basis of the experience of Mexico in 2009 with swine flu, we simulate a short but sharp drop in tourist arrivals resulting from tourists’ worries about Ebola. The Caribbean is special in that tourism contributes directly and indirectly up to half of its GDP. The simulations indicate that the volatility of tourism combined with that dependence creates significant vulnerability for the region. Under the worst-case scenario, a noticeable impact could be expected even in countries with a smaller dependence on tourism. In addition, declines could also be expected for employment and revenues. However, ‘pandemic scares’ can be short-lived and the simulations indicate that the Caribbean would be able to absorb a short tourism drop. The intensity and duration of the outfall in tourism would depend on the real and perceived preparedness of the affected countries, highlighting that countries in the Caribbean need to not only avoid or minimize any Ebola cases but also ensure that tourists perceive these countries as safe places.

**JEL codes:** L83, O190, O540

**Keywords:** Tourism, Ebola, pandemic, economic development and growth

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<sup>1</sup> The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent. Corresponding author: [jpschmid@iadb.org](mailto:jpschmid@iadb.org).

## **Introduction**

The recent Ebola outbreak already has important consequences in several countries. Guinea, Liberia, and Sierra Leone have experienced thousands of deaths, and the required measures to contain the further spread of the deadly disease have a devastating economic effect in countries that are among the poorest in the world (World Bank 2014). The effects also start to spread to other countries with several European countries and the United States experiencing contagions and a potential for a health and economic crisis.

Authorities worldwide have started to react to the Ebola threat to avoid a significant spread of the disease. However, there are countries with highly vulnerable economies, even if they manage to remain without any cases of the disease, or manage to contain them rapidly. Among those are the three tourist-dependent Caribbean countries—The Bahamas, Barbados, and Jamaica—that are part of the Caribbean Country Department (CCB) at the Inter-American Development Bank (IDB). The other members of CCB— Guyana, Suriname, and Trinidad and Tobago—depend less on tourism even though they still have an important number of visitors each year and have been growing their tourism industry.

Tourism makes countries especially vulnerable for a pandemic such as the one that Ebola can become. It implies that there is a disproportionately high flow of people into the country. In the case of Jamaica, Barbados, and The Bahamas, the equivalent of 80, 190, and 450 percent of the population visit the islands every year, respectively (if including cruise passenger arrivals, the same numbers are 120, 400, and 1700 percent, respectively). The ratios are much smaller in other CCB countries, ranging from 23 percent in Guyana to 45 percent in Suriname. The former three countries' dependence on tourism also makes them economically vulnerable, because tourism in these countries contributes up to 10.9 percent directly and up to 46 percent indirectly to GDP, excluding potential effects on human life or costs for containing the disease. Reflecting the importance of tourism for these small island economies, direct employment from tourism represents up to 28.5 percent of employment, whereas indirect employment represents more than half in The Bahamas (Table 1).

To depend so strongly on tourism can present a challenge because tourism can be adversely affected by fears of a pandemic. At the height of the swine flu outbreak in May 2009, Mexico experienced a fall of more than half in tourist arrivals compared with the year before. However, compared with the small Caribbean countries, Mexico is a diversified economy, and

tourism is only central for a few specific areas of the country. As the subsequent analysis shows, even a small Ebola scare could severely impact the Caribbean.

The Ebola virus disease (formerly known as *Ebola hemorrhagic fever*) is extremely dangerous for the affected countries.<sup>2</sup> Ebola is a severe—often fatal—illness with a death rate of up to 90 percent. The illness affects humans and nonhuman primates (monkeys, gorillas, and chimpanzees). Ebola first appeared in 1976 in two simultaneous outbreaks—one in a village near the Ebola River in the Democratic Republic of Congo and the other in a remote area of Sudan.

While Ebola is introduced into the human population through close contact with infected animals, infections can also occur between humans through direct contact (broken skin or mucous membranes) with the blood, or other bodily fluids or secretions (stool, urine, saliva, semen). Infection can also occur if broken skin or mucous membranes of a healthy person come into contact with environments that have become contaminated with an Ebola patient’s infectious fluids such as soiled clothing, bed linen, or used needles. The *incubation period*—the time interval from infection to onset of symptoms—is 2 to 21 days. The patient becomes contagious only after he or she begins to show symptoms; the patient is not contagious during the incubation period.

**Table 1. Tourism Industry in Caribbean Countries**

	Jamaica	Barbados	The Bahamas	Guyana	Suriname	Trinidad and Tobago
Population	2,784,000	279,000	356,000	777,646	552,821	1,328,019
Visitors (2013)						
Stayover	2,008,409	508,520	1,363,487	176,642	249,102	409,416
Cruise	1,288,184	570,263	4,709,236	-	-	-
Ratio visitor/population	1.18	3.87	17.06	0.23	0.45	0.31
Contribution						
GDP, direct	7.7%	10.9%	20.4%	3.0%	0.9%	3.1%
GDP, indirect	25.6%	36.2%	46.0%	7.6%	2.3%	8.2%
Employment, direct	7.0%	11.1%	28.5%	3.3%	2.1%	4.4%
Employment, indirect	23.4%	38.0%	54.5%	8.0%	2.1%	4.5%

Source: World Travel and Tourism Council, and Caribbean Tourism Organization 2014.

<sup>2</sup> This section is based on World Health Organization (2014).

The Ebola virus can be confirmed only through laboratory testing, and severely ill patients require intensive supportive care. These patients are frequently dehydrated and need intravenous fluids or oral rehydration with solutions that contain electrolytes. There is currently no specific treatment to cure the disease, but some patients recover with the appropriate medical care.

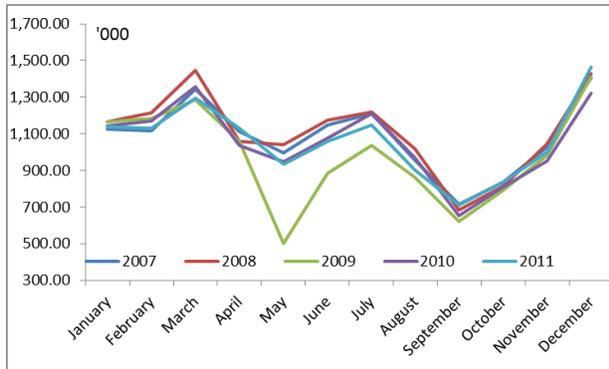
At present, the disease is concentrated in three African countries—Guinea, Liberia, and Sierra Leone. In addition, Mali, Nigeria and Senegal have reported cases of infected individuals, but the spread of the virus has been contained so far. In addition, direct contagion has occurred in Germany, Spain, and the United States whereby health workers who were caring for sick health workers (who had been repatriated for treatment) were infected.

### **Potential Economic Impact**

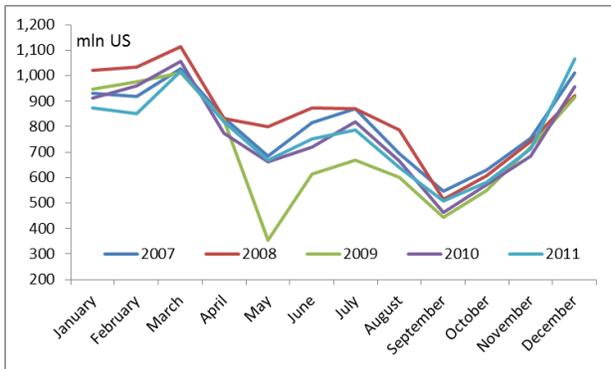
As indicated, some countries in the Caribbean are at risk of a backlash in tourism as a reaction to an Ebola fear. Even if countries remain free of the Ebola virus or if its spread is contained, the perception alone of a risk could be sufficient for tourists to avoid these countries. The economic impact of an Ebola pandemic in these countries would have additional human and economic consequences and transmission channels and would have to be studied separately.

A recent example of a shock to tourism from a health scare is the 2009 swine flu outbreak in Mexico. A global campaign of fear and insecurity was unleashed following the World Health Organization's April 2009 announcement of a phase 5 pandemic with origin in Mexico. In addition, the European Union advised their citizens against travel to the United States and Mexico. The effect on tourism peaked in May 2009 but was quickly contained. In May 2009, arrivals dropped by more than 50 percent compared with the previous year. At the same time, expenditures by tourists dropped more than arrivals with 56 percent, probably because of discounted prices to attract visitors. Tourism recovered quickly with arrivals in October 2009 only 3 percentage points less than October 2008 values. However, expenditures remained more depressed, probably because of offers to attract more tourists and because of increased competition resulting from the lower tourist numbers.

**Figure 1a. Monthly International  
Tourism Arrivals, 2007–12**



**Figure 1b. Monthly International  
Tourism Expenditures, 2007–12**



Source: Consejo Nacional Empresarial Turístico.

While it is impossible to predict how Ebola could affect tourism demand, there is already anecdotal evidence that the fear of the Ebola virus can have an effect. For example, a recent poll found that 45 percent of Americans said they would avoid international travel in order to avoid the illness.<sup>3</sup> Similarly, tour operators for East and Southern Africa report effects on inquiries and bookings even though the affected countries are thousands of miles apart.<sup>4</sup> Conversely, it seems that the case of a New York doctor that tested positive for Ebola after returning from Africa did not affect travel to the city.<sup>5</sup> The latter case probably shows that the effects of negative news can be contained if they are well-managed.

For the Caribbean simulations, we assume an event that would trigger fear of the Ebola virus and thus a sharp drop in tourism arrivals for 3 months. We concentrate our analysis on 3 months to focus on the effect of a small scare. As mentioned earlier, this could be the case of adverse news that someone in the Caribbean has contracted the disease. We simulate two scenarios with declines of 25 percent and 75 percent. A 25 percent drop in arrivals in one country seems reasonable if a short-lived outbreak occurs that the authorities credibly contained, whereas 75 percent could happen if a country experiences a more intense outbreak with questionable containment. A recovery could happen quickly even from a 75 percent drop if the outbreak is quickly controlled.

<sup>3</sup> <http://www.reuters.com/article/2014/10/16/us-health-ebola-poll-idUSKCN0I51Q920141016>

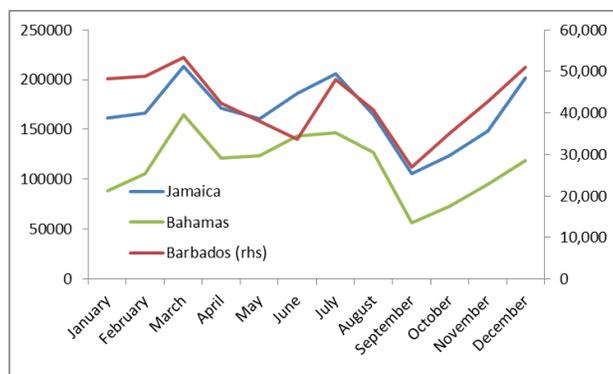
<sup>4</sup> <http://www.ibtimes.com/africas-tourism-industry-hit-hard-ebola-even-far-virus-outbreak-1707048>

<sup>5</sup> <http://www.usatoday.com/story/money/business/2014/10/24/ebola-spencer-case-new-york-tourism/17850637/>

Caribbean tourism arrivals depend strongly on the season with peaks in spring, summer, and Christmas (Figure 2). We combine this information with estimates of contribution of tourism to GDP to calculate monthly tourism GDP for each month.<sup>6</sup> We then apply shocks to these monthly GDP values, varying the time in the year when the shock starts to differentiate the high from the low season.

For fiscal effects, we assume that the shock to revenues is proportional to the shock to overall GDP.<sup>7</sup> For employment, we assume that employment reacts proportional to the decline in arrivals.

**Figure 2. Tourism Arrival, by Month, 2013**



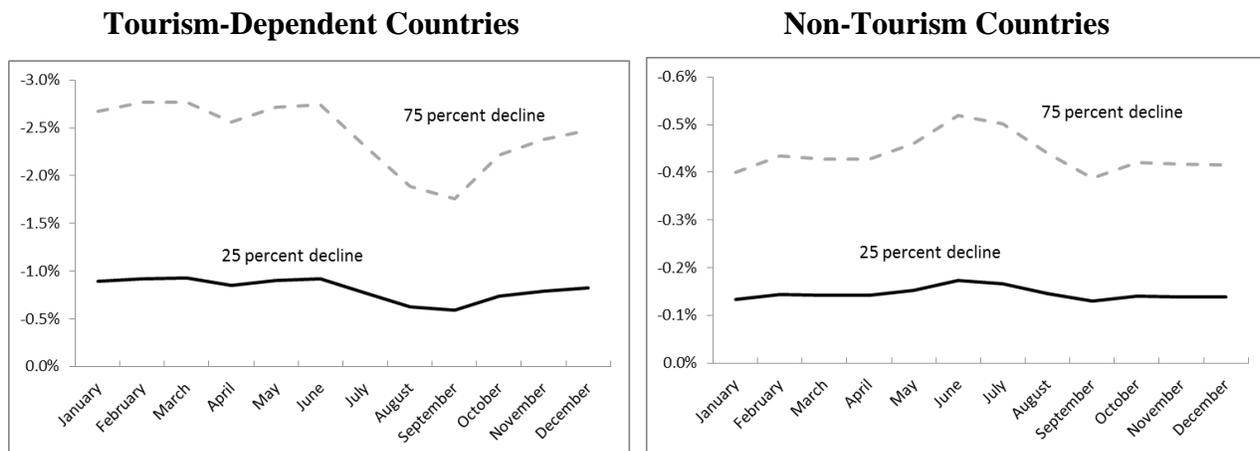
Source: Caribbean Tourism Organization, 2014.

Results vary substantially depending on the season and the size of the shock (Figure 3). Among the three tourism countries, the average cost in GDP from the 25 percent drop in arrivals would be between 0.6 percent and 1 percent, depending on the season. For the larger drop in arrivals of 75 percent, GDP would decline in average between 1.75 percent and 2.9 percent. Among the non-tourism-dependent countries, the maximum average shock would trigger a fall in GDP of 0.6 percent. The average fall in GDP for the smaller shock be between 0.1 percent and 0.2 percent for the low and high season, respectively.

<sup>6</sup> Alternatively, we could use monthly variation in tourism spending but the results would be unchanged as arrivals and spending are highly correlated (90 percent and higher).

<sup>7</sup> While this assumption facilitates comparison, it is not without question. Given the variety of tourism taxes in all countries, it would be beyond this study to obtain comparable tourism taxes. This must be kept in mind when analyzing the results.

**Figure 3. Potential GDP Decline From Drop in Tourism Arrivals**



Source: Calculations based on World Travel and Tourism Council 2014 and Caribbean Tourism Organization 2014.

Even though these values include only the effect of a fall in tourism for 3 months, tourism-dependent countries could experience falls in GDP that are not too far off recent simulations (World Bank 2014) for the loss in GDP of a high Ebola scenario for Guinea (2.3 percent of GDP), Liberia (11.7 percent of GDP), and Sierra Leone (8.9 percent of GDP), highlighting the vulnerability in countries with a high dominance of the tourism sector.

The decline in tourism would affect not only GDP but also revenues, fiscal targets, and employment. The upper half of table 2 presents potential effects of an Ebola scare in the tourism countries depending on the size of the drop and the time of the year (low season vs. high season). The lower half of table 2 shows the potential effect on GDP and unemployment on the other CCB countries. Again, it is clear that a scare could have important socioeconomic consequences on tourism-dependent economies. While the effect of a scare should be contained to a short period, it would add stress on economies that are already in a vulnerable position, lowering GDP growth and revenues while increasing debt and unemployment. The rightmost column presents the average effect of the worst-case scenario, reflecting a sharp decline in tourist arrivals during the high season, delaying an already-weak recovery with accompanying adverse socioeconomic and fiscal effects.

**Table 2. Summary of Potential Impact of an Ebola Scare With Different Scenarios**

Country		Baseline	25 percent Decline		75 percent Decline High Season
			low season	high season	
Tourism	<b>GDP growth</b>	0.6%	-0.6%	-1.0%	-2.9%
	<b>Revenue (% GDP)</b>	22.3%	-0.1%	-0.2%	-0.6%
	<b>Debt (% GDP)</b>	108.5%	109.2%	109.6%	112.0%
	<b>Unemployment %</b>	14.1%	0.7%	2.1%	3.5%
Non-Tourism	<b>GDP growth</b>	3.8%	-0.1%	-0.2%	-0.6%
	<b>Unemployment %</b>	8.0%	0.1%	0.3%	0.7%

*Sources:* IMF World Economic Outlook 2014 and own calculations.

*Notes:* Simulations represent direct contribution to GDP and employment.

Table 2 also indicates that even the tourism dependent countries would be able to absorb a short shock to tourism. An important conclusion from the 2009 swine flu epidemic is how fast tourism numbers recovered as it became obvious that the epidemic had been contained. As could be expected, the economic impact on non-tourism-dependent countries would be contained, especially the smaller one with a 25 percent decline.

These simulations consider only the direct effect of tourism on GDP. Indirect and induced contribution of tourism to GDP are less susceptible to short-term fluctuations because they include activities such as investment, food production, housing, and government spending on tourism that would not stop immediately.<sup>8</sup> Although it would be more difficult to simulate these effects, it is important to keep in mind that tourism is linked to the rest of the economy. A prolonged fall as opposed to a short scare would do substantial harm to these economies.

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<sup>8</sup> See WTTC reports for method to calculate direct and total contribution to GDP.

## Conclusion

This brief presents simulations of an Ebola scare on the Caribbean, focusing on tourism-dependent economies. On the basis of the experience of Mexico in 2009 with swine flu, we simulate a short but sharp drop in tourist arrivals because of worries of tourists about Ebola. The Caribbean is special in that tourism contributes directly and indirectly up to half of GDP. The simulations indicate that the volatility of tourism combined with that dependence creates vulnerability for these countries. The lower scenario with a fall in arrivals of 25 percent in the low season would decrease direct contribution to GDP of tourism on average by 0.6 percent. In the worst-case scenario of a 75 percent drop in the high season, average GDP could decline 2.9 percent. Similar declines could be expected for employment and revenues.

A worst-case scenario, which could be triggered by a short outbreak of Ebola in any of these countries, would also have a noticeable effect on non-tourism dependent countries.

Including indirect contributions of tourism to GDP, the simulated adverse effects would be substantially higher. However, it is safe to assume that the indirect effects would be felt only with a lag and not to the full extent (e.g., agriculture, construction). As such, we concentrate on the direct effects. Indirect effects would be relevant if the Ebola epidemic would become a prolonged issue, adversely affecting tourism over many years.

These scenarios indicate that the Caribbean has to protect itself from the Ebola crisis. In addition, authorities also need to take into account perceptions, convincingly showing that they are prepared to deal with any potential case of the disease to their countries.<sup>9</sup> In light of the potential damage, recent efforts to establish emergency procedures and infrastructure have to be continued.

At the same time, the simulations also indicate that the Caribbean countries could absorb a short scare. In a world that is as connected as today's and with the dependence of these countries on visitors, the risk of having Ebola cases cannot be excluded completely. However, the reaction of the local health system to deal with such a case would determine the length of the

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<sup>9</sup> Two recent cases in the United States highlight the varied responses to Ebola threats: In the first case, an American nurse travelled in a plane just before having symptoms of Ebola. A poll following the incident led to 47 percent of respondents say they would avoid air travel. Conversely, the New York doctor who tested positive after returning from Guinea did not have negative effect on the tourism industry of the city. The authorities did not seem to be in control of the situation in the first case but they were in the second.

adverse effect, pointing again to the importance of emergency procedures in addition to prevention.

It is important to note that the simulations did not include any potential effects on human life or costs for containing the disease. While extremely important, we wanted to show that even if Caribbean countries are successful in avoiding the Ebola virus itself, they remain at risk of losing one of their main sources of income.

## References

- Caribbean Tourism Organization. 2014. "Latest Statistics 2013." Caribbean Tourism Organization, Bridgetown, Barbados.
- World Bank. 2014. "The Economic Impact of the 2014 Ebola Epidemic: Short- and Medium-Term Estimates for West Africa." World Bank, Washington, DC.
- World Health Organization. 2014. "Frequently Asked Questions on Ebola Virus Disease." World Health Organization, Geneva, Switzerland.
- World Travel & Tourism Council. 2014. "Travel & Tourism: Economic Impact 2014 Bahamas." World Travel & Tourism Council, London, England.
- World Travel & Tourism Council. 2014. "Travel & Tourism: Economic Impact 2014 Barbados." World Travel & Tourism Council, London, England.
- World Travel & Tourism Council. 2014. "Travel & Tourism: Economic Impact 2014 Jamaica." World Travel & Tourism Council, London, England.

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