Report no. 90748

The Economic Impact of the 2014 Ebola Epidemic:
Short and Medium Term Estimates for Guinea, Liberia, and Sierra Leone

The World Bank
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Highlights

- Beyond the terrible toll in human lives and suffering, the Ebola epidemic currently afflicting West Africa is already having a measurable economic impact in terms of forgone output; higher fiscal deficits; rising prices; lower real household incomes and greater poverty. These economic impacts include the costs of healthcare and forgone productivity of those directly affected but, more importantly, they arise from the aversion behavior of others in response to the disease.

- Using a sector components method, we estimate the **short-term (2014) impact** on output to be on the order of 2.1 percentage points (pp) of GDP in Guinea (reducing growth from 4.5 percent to 2.4 percent); 3.4 pp of GDP in Liberia (reducing growth from 5.9 percent to 2.5 percent) and 3.3 pp of GDP in Sierra Leone (reducing growth from 11.3 percent to 8.0 percent). This forgone output corresponds to US$359 million in 2014 prices.

- The short-term **fiscal impacts** are also large, at U$93 million (4.7 percent of GDP) for Liberia; U$79 million (1.8 percent of GDP for Sierra Leone) and U$120 million (1.2 percent of GDP) for Guinea. These estimates are best-viewed as lower-bounds. Slow containment scenarios would almost certainly lead to even greater financing gaps in 2015.

- **Inflation and food prices** were initially contained but are now showing upward movements in response to shortages, panic buying, and speculation. The food poor in these countries are becoming increasingly vulnerable. Exchange rate volatility has increased in all three countries, particularly since June, fueled by uncertainty and some capital flight.

- As it is far from certain that the epidemic will be fully contained by December 2014 and in light of the considerable uncertainty about its future trajectory, two alternative scenarios are used to estimate the **medium-term (2015) impact** of the epidemic, extending to the end of calendar year 2015. A "Low Ebola" scenario corresponds to rapid containment within the three most severely affected countries (henceforth the "core three countries"), while "High Ebola" corresponds to slower containment in the core three countries, with likely broader regional contagion.

- The medium-term impact (2015) on output in Guinea is estimated to be negligible under Low Ebola, and 2.3pp of GDP under High Ebola. In Liberia, it is estimated to be 4.2pp of GDP under Low Ebola, or 11.7pp of GDP under High Ebola. In Sierra Leone, the impact would be 1.2pp of GDP under Low Ebola, and 8.9pp under High Ebola. These estimates of lost GDP in the core three countries (for calendar year 2015 alone) sum to US$97 million under Low Ebola (implying some recovery from 2014), and US$809 million under High Ebola.

- The take-away messages from this exercise are that the economic impacts are already certain to be serious in the core three countries - particularly Liberia and Sierra Leone – and could become catastrophic under a slow-containment, High Ebola scenario.

- Preliminary estimates suggest that, in the absence of strong containment measures, the epidemic is likely to spread, and both Low Ebola and High Ebola scenarios are likely to result in economic costs numbering in the billions.

- A swift policy reaction by the international community is crucial. With the potential costs so high, containment and mitigation expenditures as high as several billion dollars would be cost-effective, if they successfully avert the worst epidemiological outcomes.

- Finally, these estimates are subject to very considerable uncertainty, arising not only for the usual and well-known problems associated with economic forecasting and data scarcity, but even more from the unusually high uncertainty associated with the future epidemiological path of Ebola, and with people's behavioral responses to it. All of the numbers in this note represent best-effort estimates under documented assumptions and modeling choices, but the margins of error associated with them are inevitably large. The scenarios should be read and interpreted accordingly.

Section 1: Introduction[1]

Overview

The 2014 outbreak of the Ebola Virus Disease[2] in West Africa has taken a horrible human toll. Although the outbreak originated in rural Guinea, it has hit hardest in Liberia and Sierra Leone, in part because it has reached urban areas in these two countries, a factor that distinguishes this outbreak from previous episodes elsewhere. As of September 10, 2014, there had been 2,281 recorded deaths out of 4,614 suspected or confirmed cases of Ebola.[3] Experts fear that the true numbers may be two to four times

[1] This document includes inputs provided by Timothy Bulman, César Calderón, Marcio Cruz, Sebastien Dessus, David Evans, Francisco Ferreira, Yusuf Bob Foday, Errol Graham, Hans Lofgren, Maryla Maliszewska, Mead Over, John Panzer, Cyrus Talati, Hardwick Tchale, Mark Thomas, and Ali Zafar.

[2] Hereafter we use the term Ebola to refer to the virus, the disease or the epidemic outbreak.

[3] OCHA, "West Africa: Ebola Virus Disease (EVD) Outbreak (as of 10 Sep 2014)," September 10, 2014.

larger, due to underreporting.[4] Misery and suffering have been intense, especially in Liberia where doctors have had to turning patients away for lack of space in Ebola treatment centers.

Inevitably, before the outbreak is contained the human impacts will increase considerably over these numbers. Epidemiological estimates are acknowledged as highly uncertain and are not the subject of this note. What is certain is that limiting the human cost will require significant financial resources and a concerted partnership between international partners and the affected countries. Particularly in Liberia and Sierra Leone, government capacity is already overrun and the epidemic is impacting macroeconomic activity and budgetary resources.

This note informs the response to the epidemic by estimating these macroeconomic and fiscal effects. Any such exercise is necessarily highly imprecise due to limited data and many uncertain factors, but it is still necessary in order to plan the economic assistance that must accompany the immediate humanitarian response. The goal is to help affected countries to recover and return to the robust economic growth they had experienced until the offset of this crisis.

Channels of impact

The impact of the Ebola epidemic on economic well-being operates through two distinct channels. First are the direct and indirect effects of the sickness and mortality themselves, which consume health care resources and subtract people either temporarily or permanently from the labor supply. Second are the behavioral effects resulting from peoples' fear of contagion, which in turn leads to a fear of association with others and reduces labor force participation, closes places of employment, disrupts transportation, and motivates some government and private decision-makers to close seaports and airports. In the recent history of infectious disease outbreaks such as the SARS epidemic of 2002-2004 and the H1N1 flu epidemic of 2009, behavioral effects have been responsible for as much as 80 or 90 percent of the total economic impact of the epidemic.[5]

The first of these channels, consisting of the labor force and health expenditure impacts, closely tracks the number of suspected and actual cases of the disease (see Figure 1). The second, or behavioral, channel, is less sensitive to the actual number of cases of Ebola because it is driven by aversion behavior, and it is potentially more sensitive to information and public response. For example, employers who learn how to protect themselves and their workers from contagion will reopen workplaces and resume production and investment, and governments that demonstrate they have controlled the epidemic and have resumed normal activity will inspire confidence in both domestic and international economic agents to resume their former pace of economic activity.

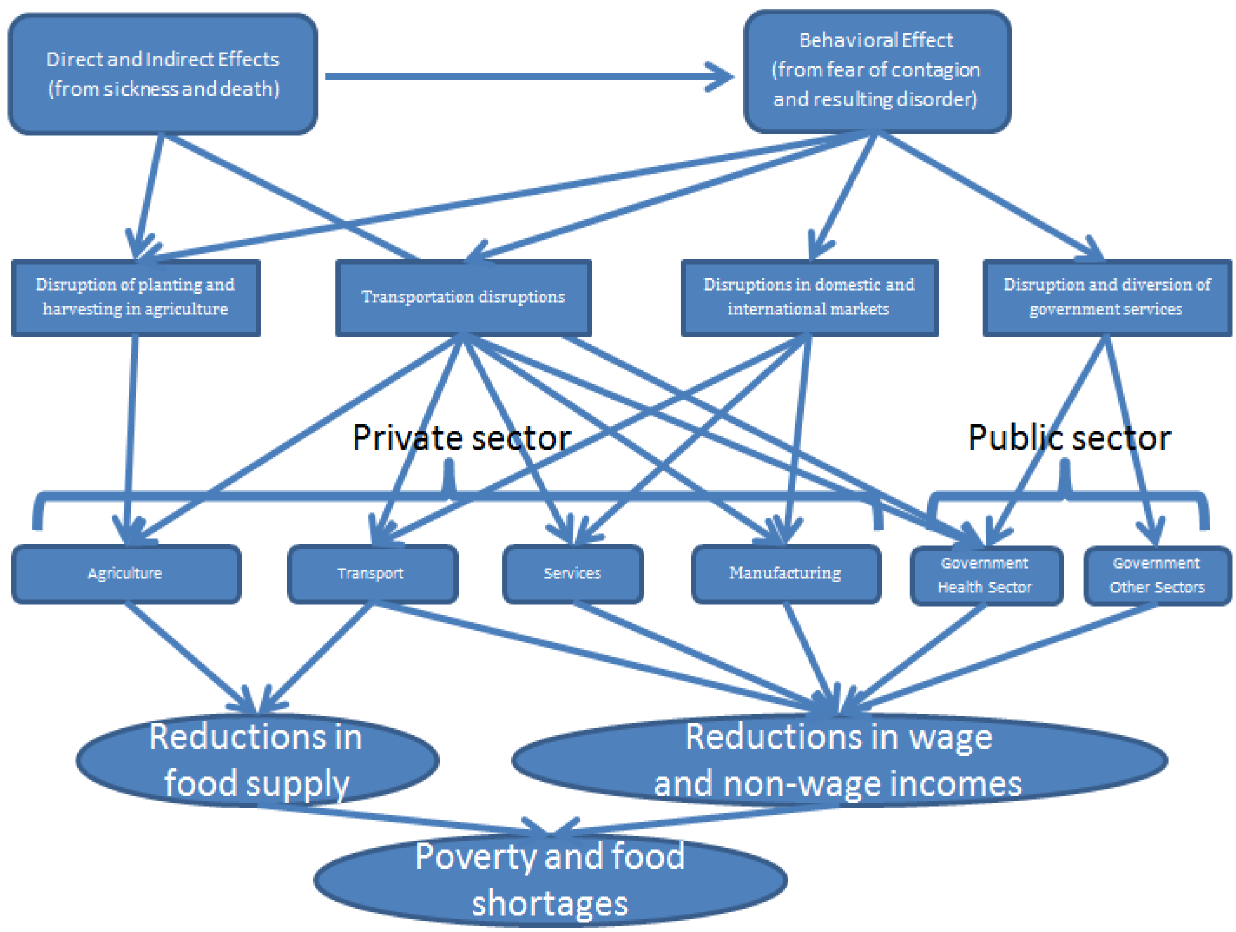
Structure of the Note

This document presents the World Bank's preliminary estimates of the economic impact of the Ebola outbreak in West Africa for 2014 and 2015. Section 2 presents a single set of 2014 estimates for Liberia, Sierra Leone, and Guinea, based on available data on current economic activity as well as assumptions

[4] World Health Organization, "Ebola Response Roadmap," August 28, 2014.
[5] See, for example, Lee & McKibbin, "Globalization and Disease: The Case of SARS," Australian National University Working Paper No. 2003/16, August 2003.

about the near-future impact. It also highlights current data on the limited current impacts on other countries in the region. Section 3 presents estimates for the impact by the end of 2015 for Liberia, Guinea, and Sierra Leone. Because the epidemic and the behavioral responses to it have more time to diverge over the course of 2015, Section 3 presents two scenarios for 2015, which vary in the optimism of their assumptions regarding the epidemic and the success of donor and government policy to control it.

Figure 1: Broad channels of short-term impact



Section 2: Short Term Effects and Fiscal Impacts

The economic impact of the Ebola crisis is being felt acutely right now by the three directly affected countries. Limited impacts are even being felt in the region beyond. Both the limited available survey data and anecdotal evidence suggest impacts on agriculture, mining, services, and elsewhere. In order to transform the limited available evidence into credible measures of the short-term economic impact, estimates of the impact of the crisis for this year – 2014 – for the three countries are built up from sector components, based on the impact seen so far on economic activity. Representatives of economic sectors were contacted to assess changes to economic activity. For example, mining officials provided metrics of the extent to which Ebola was affecting current activity and plans for future investment. The estimates also rely on leading indicators that usually serve as good predictors of economic activity. Cement imports and sales, for example, are used to estimate the impact on construction activity and thereby on services. Data on agricultural exports are used to estimate production shocks. Hotel occupancy rates, airline traffic, and airport activity provide metrics for the transport sector, as does the closure of borders and reductions in recorded cross-border trade.

In all cases, estimates of the impact of Ebola are compared with prior projections by the World Bank and the International Monetary Fund in the absence of Ebola. Other price information is also incorporated: nominal exchange rates, parallel exchange rates (if any), fuel prices, and prices of a few other key goods, all serve as indicators of supply bottlenecks and changes in investor or consumer behavior.

Fiscal impact has been estimated on the basis of actual year-to-date revenues, projected shortfalls, and additional expenditures related to the crisis. Revenue shortfalls are determined by disaggregating government revenues and focusing on areas most likely to be affected by the crisis, such as import taxes and taxes on expatriate personnel. Expenditure estimates are based on spending plans of the Ministries of Finance in each country. These plans include purchase of goods and supplies, core logistics, salaries and hazard pay for emergency workers, training, and investment in rural health centers.

Short-run estimates of the economic impact assume no major disruptions in international supply chains, for example the cutting-off of countries from international shipping, which would exacerbate the above effects. Although it is true that there have been some border closings, these borders tend to be quite porous. Such scenarios are only considered from 2015 onwards in the region-wide impact scenarios. These estimates in this section presume a resumption of normal economic activities within six to nine months. The economic estimates that follow are not derived from infection or mortality rates but reflect both observed and posited individual, corporate, and government behavioral responses to the epidemic.

Liberia

Liberia is one of the poorest countries in Africa with a population of 4 million, per-capita income of US$410, and about 60 percent of the population below the poverty line. More than half of the population is urban, including in densely populated areas around the capital city of Monrovia. About three-quarters of the labor force is engaged in informal activities, mainly agriculture, itinerant mining, and commerce. Despite its post-conflict fragility and poor social conditions, Liberia had been growing steadily prior to the Ebola outbreak under a regime of stable economic management, efforts to improve public sector governance, and expansion of extractive industries.

Liberia is currently the country worst affected by the Ebola crisis, and the current trends in the rates of infection and death suggest that the crisis is deepening. Since the first case of the Ebola virus was reported in March 2014, the virus has spread quickly, particularly since July, to cover most of the country.

Impact on Economic Activities

Since the escalation of the Ebola outbreak in July 2014, there has been a sharp disruption of economic activities across sectors. The largest economic effects of the crisis are not the direct costs (mortality, morbidity, caregiving, and the associated losses to working days), but rather those resulting from changes in behavior – driven by fear – which have resulted in generally lower demands for goods and services and consequently lower domestic income and employment.

Despite early signs that the initial fear-based behavioral response is abating amongst Liberians, as evidenced by increased activities in local markets (about 80 percent of small and medium enterprises remain open), the initial estimate of a 3.5 percentage point reduction in GDP growth for 2014 (from 5.9 percent to 2.5 percent) remains optimistic. Table 1 shows revised estimates of GDP growth with the contribution of each sector. A deepening of the crisis over the remaining quarter of the year could diminish overall GDP growth still further.

Table 1: Liberia - Estimated GDP Impact of Ebola (2014)

	Contribution to Growth Shock (%)	Initial Projection (June 2014)	Revised Projection
Real Growth in GDP		*5.9*	*2.5*
Agriculture	18.0	3.5	1.3
Forestry	-0.1	2.0	2.0
Mining	27.3	4.4	-1.3
Manufacturing	4.6	9.6	5.0
Services	50.2	8.1	4.0

Source: World Bank/IMF Staff Estimates

Mining

The mining sector accounts for about 17 percent of GDP and 56 percent of the US$559 million worth of total exports in 2013. Production and exports are dominated by two large iron ore mining companies, ArcelorMittal and China Union. Production at the largest mining company (ArcelorMittal) is holding steady with production of approximately 3.3 million tons up to August—on track to achieve planned production of 5.2 million tons by the end of 2014. However, investments to expand capacity to 15 million tons per year have been put on hold. The second major mining company, China Union, which had projected production of approximately 2.4 million tons for 2014, has closed its operation since August. Furthermore, restrictions on the movement of people have severely curtailed artisanal mining including of gold and diamonds. Overall, the mining sector is expected to show a small contraction of 1.3 percent in 2013 compared with an initial projection for growth above 4 percent.

Agriculture

The agricultural sector accounts for about one-quarter of Liberia's GDP, but nearly half of the total employed workforce and three-quarters of the rural workforce is engaged in the sector. Both export and domestic agriculture have been severely affected by the crisis. The production and shipments of rubber – the single most important agricultural export for Liberia – have been disrupted by both the reduced mobility of the workforce and the difficulty in getting the products to the ports due to the quarantine zones. Rubber exports which were initially expected to be about US$148 million in 2014 are estimated to drop 20 percent.

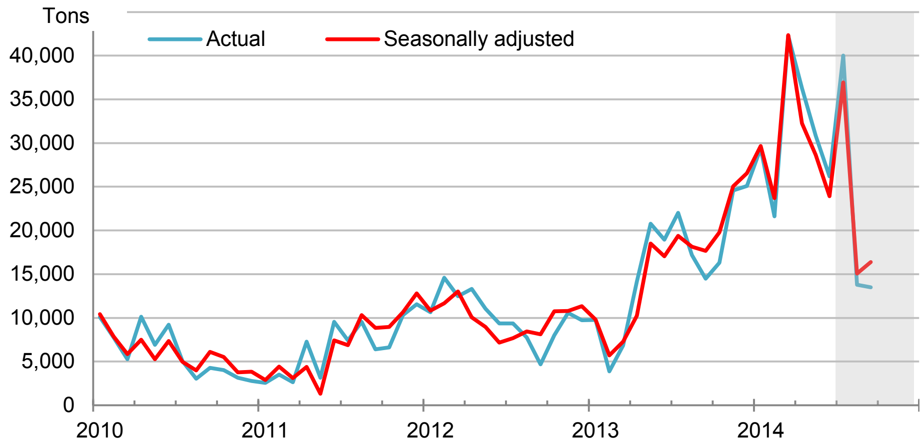
Large investments in palm oil planting, including by the world's largest producer of palm oil, Sime Darby, have slowed due to the evacuation of managerial and supervisory personnel, and the focus has shifted to maintenance. Sime Darby's planned construction of a US$10 million modern oil palm mill for which construction started in July 2014 and completion was expected in 2015, is also now on hold.

In domestic agriculture, the main food growing areas – in Lofa County in the North West part of the country – are also the areas most affected by the outbreak of Ebola and are quarantined. Farms have been abandoned. Even in the cases where farming operations are on-going, the shortage of labor as a result of the quarantine as well as the migration of a number of families from the areas at the onset of the outbreak has affected both harvesting and replanting of several crops, including rice, Liberia's key staple. In addition, quarantine zones and the restriction on movement of persons have adversely affected the transport and marketing of food, resulting in shortages and higher prices.

Manufacturing

Liberia's manufacturing sector, which accounts for only about 4 percent of GDP and is already hard-pressed by weak infrastructure, has been adversely affected by the reduced demand as a result of the crisis. Liberia's small manufacturing sector is dominated by the cement and beverage sub-sectors which together account for nearly 90 percent of manufacturing output. The production of paints, candles, bottled water and mattresses comprise the remaining output. The adverse shock to the construction sector as a result of the quarantines has resulted in substantially lower demands for cement, well beyond the normal seasonal drop related to the rainy season (Figure 2). Cement sales fell nearly 60 percent between July and September, well beyond normal seasonal effects. There is also reduced demand for beverages from the hotel and restaurant sector, as the disruption to commercial flights has resulted in fewer business and tourist arrivals. The Ebola crisis has exacerbated the situation for an already weak beverage sub-sector, which had seen a 30 percent reduction in beer production in the first quarter of 2014.

Figure 2: Liberia – Cement sales



Source: World Bank staff calculations based on data from the Liberia Cement Corporation.

Services

The services sector, which comprises approximately half of the Liberian economy and employs nearly 45 percent of the labor force, has been hardest hit by the Ebola crisis. Wholesale and retail traders have reported a 50-75 percent drop in turnover relative to the normal amount for the trading period. The reduction has been largest in markets serving expatriates. Both commercial and residential construction activities, which were booming before the crisis, appear to be on hold as reflected by the sharp fall-off in cement sales since June 2014 (Figure 2). Government construction activities in the energy and transport sectors have also come to a halt as contractors have declared *force majeure* and have evacuated key personnel.

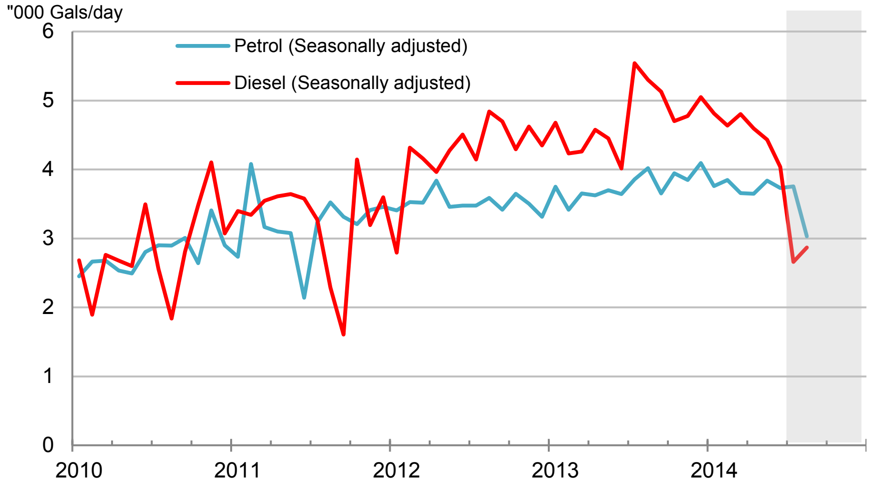
The domestic transport sector has also been severely affected by the crisis. One indicator of this has been the sharp drop in fuel sales, with petrol and diesel sales down by 21 and 35 percent (Figure 3). Emergency regulations limiting taxis to 4 passengers have raised the cost of domestic travel. The cost of transporting goods has also seen increases, in some cases by 50 percent.

The hotel and restaurants sub-sector has been adversely affected by the reduction of commercial flights to Liberia, from 27 weekly flights up to August to only 6 at the beginning of September. Average hotel occupancy has dropped from upwards of 70 before the crisis to about 30 percent now. Some hotels have reported occupancy as low as 10 percent as a result of the crisis. As a direct result, hotel workers have either been laid-off or had their working days reduced by half.

Food Prices and Inflation

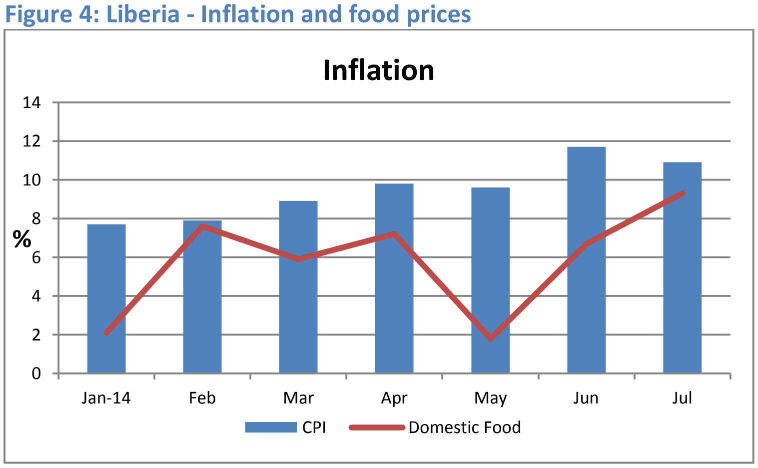
The disruption to harvesting and transport as well as the closing of the borders and the quarantine of areas including one of the primary agricultural production areas have led to rising prices, and domestic food prices in particular, which have accelerated since June. In addition, panic buying has increased the demand for food staples and has helped to push prices up (Figure 4). There are also concerns that increased shipping insurance for ships transporting goods to Liberia could further drive up the price of imported foods and fuel.

Figure 3: Liberia - Fuel sales



Source: World Bank staff calculations based on data from LPRC

Figure 4: Liberia - Inflation and food prices

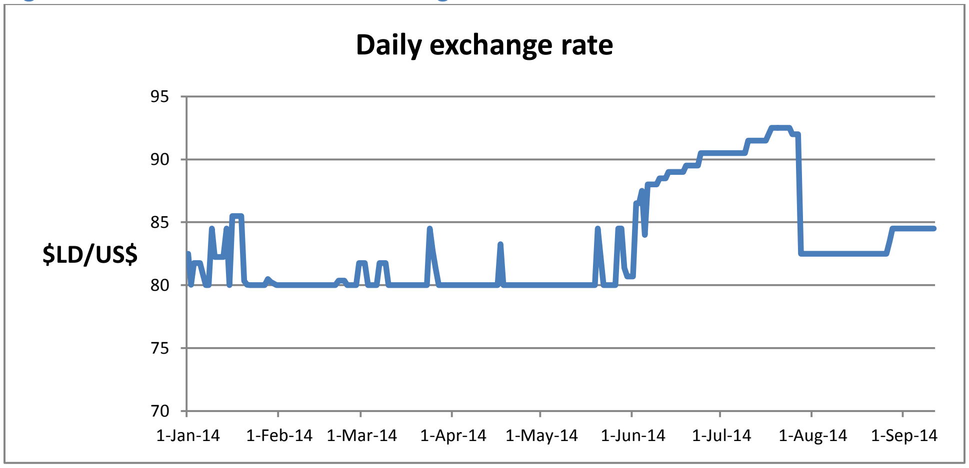


Source: World Bank staff calculations based on data from LISGIS

External Sector

The Ebola crisis has had a substantial impact on regional and international travel to Liberia, with direct effects on the hotel, transport and restaurant sub-sectors in particular. In the short-term, exports (mainly rubber and iron ore) have held, and the reductions in imports (including of capital goods owing to delayed investments) have resulted in an improvement in the balance of payments as reflected in the modest appreciation of the exchange rate in July (Figure 5). However, this position is unlikely to be sustained going forward with the expected increased demand for imported food, the fall-off in foreign direct investment, and adversely affected exports. For sea transport, the impact has been limited so far, largely due to pre-programmed scheduling contracts. However, there are indications that forward scheduling is weakening. Volumes of containers coming into Liberia are down 30 percent from normal August levels.

Figure 5: Liberia - Movement of exchange rate since the crisis



Source: Central Bank of Liberia.

Fiscal Impact

The fiscal impact of the Ebola crisis in Liberia has already been substantial, at nearly US$100 million, and the direct and contingent fiscal costs continue to rise (see Table 2 below). On the revenue side, government data up to the first week of September showed total revenue collection of US$80.4 million, representing a shortfall of about US$10 million relative to pre-Ebola forecasts. Furthermore, the government has revised its revenue target for September down from US$41.7 million to US$26.3 million—the lowest revenue collection since 2012. With the slowing of economic activity and weakness in tax administration (due to curfews and quarantines) total revenues for the year are likely to be about US$46 million below the initial forecast.

Table 2: Liberia - Estimated Fiscal Impact of Ebola (US$ millions)

	Initial Projection	*Revised Projection*	*Difference*
Total Revenues and grants	558.9	513.2	-45.7
Tax revenue	399.0	361.4	-37.6
Non-Tax	100.3	92.2	-8.1
Grants	59.6	59.6	0.0
Expenditure	717.6	764.7	47.1
Current Expenditure	441.9	509.1	67.2
Of which for health emergency	0.0	20.0	20.0
Capital Expenditure	275.6	255.6	-20.0
Overall Balance	-158.7	-251.5	92.8
Overall Balance (% of GDP)	-7.1	-11.8	4.7

Source: IMF/World Bank Staff

On the expenditure side, substantial demands for health and social protection spending have pushed up total spending by nearly US$50 million including US$20 million to address the health emergency. Of the total, current expenditure will increase by nearly US$70 million while the Government will reallocate US$20 million from capital to the current budget. The sharp reduction in fiscal revenues combined with the increased expenditure creates a *fiscal gap of about US$93 million to be financed***.** This is likely to be a lower bound.

Sierra Leone

Sierra Leone has made good economic and social progress over the past dozen years indicated by steady progress in per capita income, which was US$680 in 2013. Despite the significant improvement, poverty is widespread with 53 percent of the population below the poverty line as of 2011. In rural areas, where the bulk of the population lives, the poverty rate is 66 percent. Three-quarters of the population is under 35 years of age with the vast majority engaged in part-time agriculture related activities, as there is little formal employment.

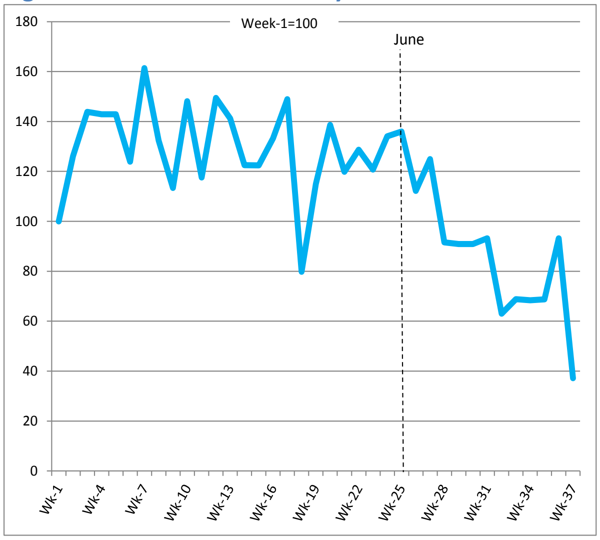
Ebola has now spread to all but one of the country's 13 districts, including the capital. The disease has taken a toll on the country's health system, with 4 doctors and more than 30 nurses among the dead. Most private hospitals have shut down, as have four public hospitals. The Government intends to shut down the entire country for three days, from September 18 to 21, and to deploy some 21,000 persons across the country to visit every household. Doctors without Borders (or MSF) has stated that the plan is unlikely to succeed in addressing the epidemic and expressed concern that it may further erode public trust in the health care system.

Impact on Economic Activities

The emergence of Ebola in rural Sierra Leone in May initially appeared to be an isolated event. By late-July, however, the spread of Ebola led to the quarantining of the most severely affected districts and to restrictions on internal travel, closure of markets and subsequently a number of other measures designed to reduce public gatherings. This has begun to have a marked effect on economic activity, one that is disproportionate to the human toll that Ebola has taken to date. The actions of economic agents are being driven by a high level of aversion behavior and this may be considered the root cause of the unfolding slow down. Leading indicators of the slowdown in economic activity and aversion by the external community are captured by sharp reductions in cement sales and visitor arrivals (Figure 6 and Figure 7), although the drop in cement sales coincided with the onset of the wet season in May when cement sales would naturally decline due to reduced road-building.

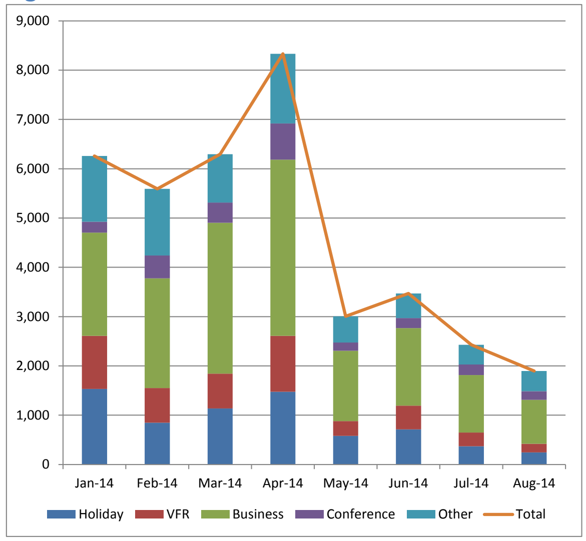
The effect of the severe disruption to economic activity in 2014 will be less than might be expected due to the broad based and robust growth achieved over the first 6 months of the year, which is not expected to be unwound despite the sharp slowdown. On the economic side, a sharper decline may be expected in 2015. Overall projected economic growth is expected to slow to 8 percent in 2014 bearing in mind that the risks are to the downside (Table 3).

Figure 6: Sierra Leone - Weekly cement sales



Source: World Bank staff calculations of cement factory sales.

Figure 7: Sierra Leone - Visitor arrivals



Source: Sierra Leone Immigration Department.

Table 3: Sierra Leone - Estimated GDP impact of Ebola (2014)

	Contribution to growth shock (%)	Initial Projection (June 2014)	Revised Projection
Real GDP Growth		*11.3*	*8.0*
Agriculture	27.8	4.8	2.6
Industry	54.5	24.9	18.4
of which Mining	(39.6)	(27.3)	(21.8)
Services	17.7	7.7	5.7

Source: World Bank/IMF Staff Estimates

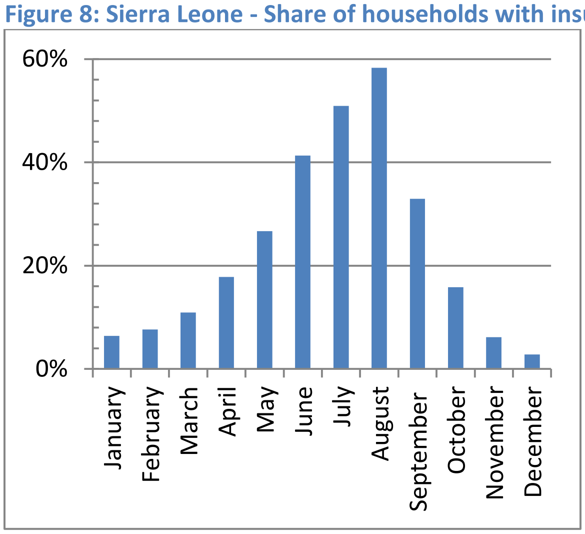
Agriculture

Agriculture is the mainstay of the vast majority of the population and accounted for 50 percent of the economy in 2013. The two eastern districts—Kailahun and Kenema—where Ebola first emerged are also the epicenter of the disease and home to one-fifth of the population of the country. They contain the most productive agricultural areas in Sierra Leone, producing both the staple food – rice – and cash crops – cocoa and palm oil. According to data from the Ministry of Agriculture, Forestry and Food Security, the two districts together produce about 18 percent of the total domestic rice output. With expected production disruptions due to the quarantine-induced restrictions on farmer movements, it is very likely that national rice production for the 2014/15 season will be significantly affected. Furthermore, the closure of markets, internal travel restrictions and the fear of infection has curtailed food trade and caused supply shortages. Although robust price data are not yet available, reports indicate rice price spikes of up to 30 percent in the Ebola affected areas. This is further exacerbated by the country's heavy dependence on imported rice, with import volumes likely to be reduced due to land border closures.

Reports indicate that farming activities are being disrupted with possible knock-on effects on the expected harvest for this season, particularly in the hardest hit areas. A Food and Agriculture Organization (FAO) rapid assessment in Kailahun indicates that at least 40 percent of farmers have either abandoned their farms and moved to new, safer locations or have died, leaving the farms unattended. In the most productive agro-ecological areas, about 90 percent of the plots have not been cultivated. Current restrictions on movement are preventing cultivation from taking place. Moreover, farmers have expressed fear of meeting together or even sharing working tools. As a result they have missed some critical land husbandry activities in the recent planting season, and it is likely that they will not have sufficient planting materials for the next planting season, as rice seeds have been consumed as a result of the shortage of food stuff.

Nationally, 62 percent of household consumption expenditures are for food and 59 percent of rice growers are net buyers of rice, an indication that food insecurity is an important issue. This increases sharply during the lean season – referred to locally as the hungry season – which is also the planting season, usually June to August. During this period about 45 percent of the population or 2.5 million people do not have access to sufficient food. In Kenema, Kailahun, and Bo districts, an estimated 30 percent of the population is considered food insecure and this will surely rise due to the spread of Ebola (Figure 8).

Figure 8: Sierra Leone - Share of households with insufficient food stocks (pre-Ebola)



The World Food Program (WFP) is leading the process of providing food to quarantined households, and their assessment indicates that over 1 million people are likely to be in dire need of food due to the direct and indirect impact of Ebola. FAO and WFP have made calls for an emergency operation amounting to 65,000 tons to provide food assistance to approximately 1.3 million most affected people in the three countries over a period of three months. Further support to WFP for provision of food rations to quarantined households has been provided by UNICEF and the World Bank.

The disruption to agriculture and food production in particular will have strong adverse effects on nutrition given the underlying situation with respect to chronic malnutrition. Chronic malnutrition is a serious problem in the country, with 35 percent of children aged 6-59 months stunted and 10 percent severely stunted. Comparable stunting rates for Kenema and Kailahun were 41 and 42 percent respectively, considered critical by the WHO. School feeding programs provide nourishment to many children, but with the government-ordered closure of all educational institutions in the country until

November, nearly 7,000 schools have been shut down, affecting close to 1.6 million children. WFP has made a request to use school feeding program resources for the immediate emergency response to quarantined households.

Mining

Mining accounts for 87 percent of industry in Sierra Leone. (Industry, altogether, makes up about 20 percent of the economy.) Mining is dominated by the iron ore sector which began production in late 2011 and already accounts for 16 percent of GDP. In addition, there are less significant operations in rutile, ilmenite, bauxite, and diamonds. To date there has been little effect of Ebola on mining production and the companies involved have indicated that they intend to maintain their originally planned production levels to the extent possible. Nonetheless, many are operating with reduced expatriate personnel and the risk of disruption remains. The maintenance of planned iron ore production in 2014 will in fact likely shield the overall economy from a sharper decline in growth due to Ebola. Notably, however, as iron ore prices have plummeted to 5-year lows in September 2014, this will have an adverse effect on exports and relatedly on government revenues through lower royalty receipts, which are based on the international price of the ore. Moreover, the larger of the two iron ore operations appears to be experiencing financial difficulties.

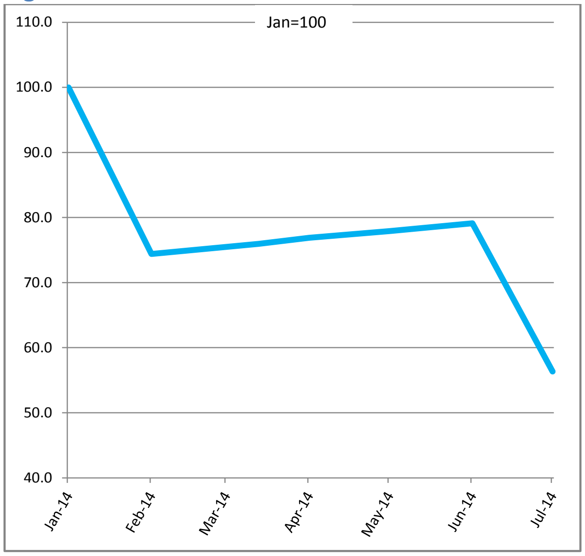
Manufacturing

The manufacturing sector is a mere 2 percent of the economy. Its importance is, however, disproportionate to this size as it is an important employer in a country with very little in the way of paid employment opportunities. Most manufacturing enterprises are small scale and well-suited to the economic landscape, being involved in the production of beer, soft drinks, paint, soap, cement, foam mattresses and the like. Present indications are that the sector is faltering due to the generally reduced demand in the economy. A case in point is the soft drinks sector which has experienced a recent decline in sales attributed to Ebola (Figure 9).

Construction

Like manufacturing, the construction industry is far more important to the economy than its 1 percent share would imply. This relates to its critical role in nearly all new investment and highlights its significance for future growth. Another key aspect of the sector relates to the fact that it is generally labor intensive and can utilize relatively unskilled labor, which is important for a labor surplus economy such as Sierra Leone. Thus a booming construction sector is usually a good leading indicator of a flourishing economy. With cement sales a good proxy for the state of the construction sector, it is evident as noted above that the construction sector has entered a downturn, due to the advent of Ebola.

Figure 9: Sierra Leone - Soft drink sales



Source: Bank of Sierra Leone.

Services

The service sector accounts for 30 percent of the Sierra Leonean economy, and this vibrant sector provides both formal and informal employment to large numbers of people. The recent Ebola-induced closures and restrictions on markets, restaurants, bars and nightclubs are having a severe dampening effect on the sector, as are the transportation restrictions. The nascent hospitality sector has been particularly hard hit by the cancelations of commercial flights to the country. The number of weekly flights serving Sierra Leone fell from 31 flights per week up to August, to only 6 flights a week, as of September 1, increasing the country's isolation from international markets. The effects of this dramatic reduction in flight service on the hospitality sub-sector are illustrated by the findings of a recent survey of six hotels in Freetown with a combined 490 rooms. These establishments directly employed a little over 500 persons. Two of the hotels had closed down and laid off their employees because of the fall in occupancy. Most of the remainder had arranged for half the work force to work for 15 days a month, on a rotating basis; some had shed workers. Occupancy rates had plunged to 13 percent after usually being in the range of 60 to 80 percent year-round. The knock-on effects on others in the labor force linked to the hospitality sector is likely to be large. Another illustration of these linkages relates to the local brewery, which has put planned investment on hold indefinitely and was considering closing its facility because of the fall in demand. Government estimates suggest that closure of the brewery would put up to 24,000 people out of work nationwide – mainly in the hospitality industry – and render another 2,000-2,500 persons in agriculture without a breadwinner.

In addition, cancelations of service by commercial airlines noted above has direct and indirect adverse consequences: apart from hotel occupancy, it has led to most airlines laying off staff and maintaining a skeleton crew of one or two employees. The water taxi and ferry sub-sectors are now idle, and the many young men previously employed are inactive.

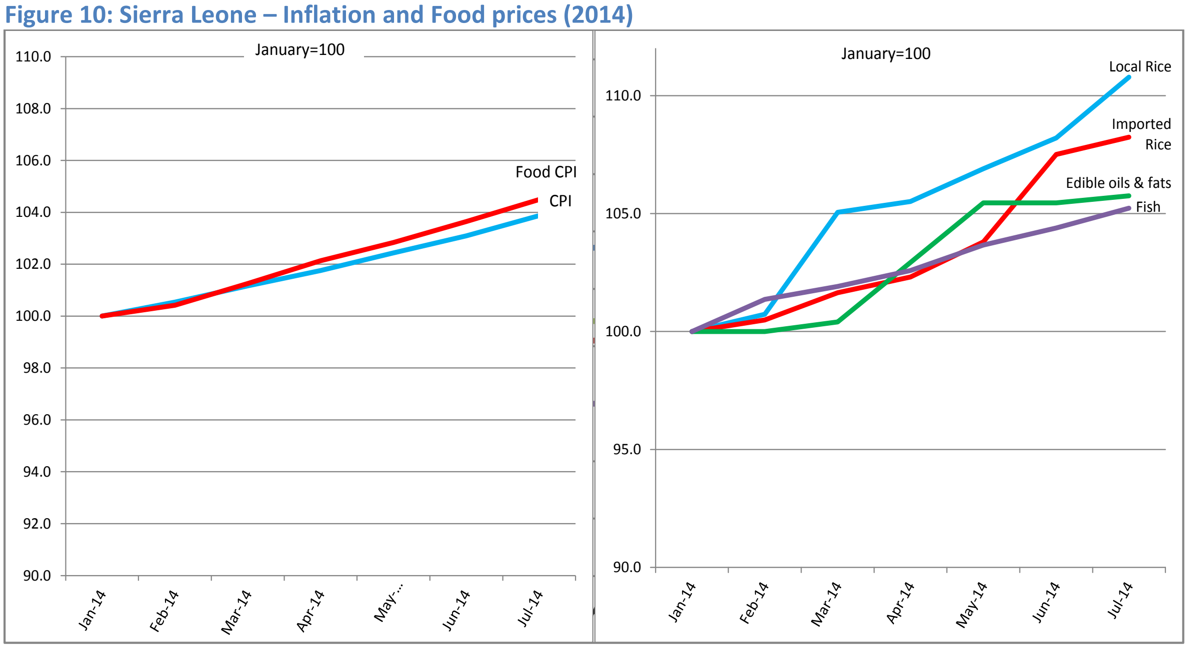
Food Prices and Inflation

The effect of the Ebola crisis on food prices remains ambiguous for the moment, though it appears certain that food prices will increase due to shortages caused by the crisis. Already there are reports of rice price increases of 30 percent in some markets in the afflicted areas. The consumer price index has recorded a slight uptick in food inflation in both June and July attributed in part to the Ebola-related market closures, and to the depreciation of the currency as well as seasonal effects (Figure 10).

External Sector

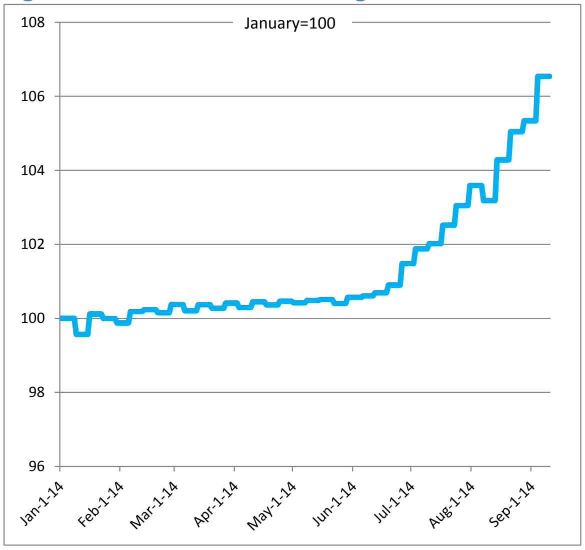
The balance of payments financing gap will increase as imports rise in relation to health sector needs of the emergency and food imports expand, both in the face of falling export earnings from both minerals and agriculture. The exchange rate of the Leone has been relatively stable this year until June, when it began to depreciate against the U.S. dollar, altogether by about 6 percent (Figure 11). The parallel market rate has seen a similar widening. This may relate to capital outflow in the face of the current uncertainty and the aversion that it is causing. Remittances have remained steady (Figure 12). International reserves have been stable during the year and were the equivalent of about 2.5 months of imports at the end of August 2014.

Figure 10: Sierra Leone – Inflation and Food prices (2014)



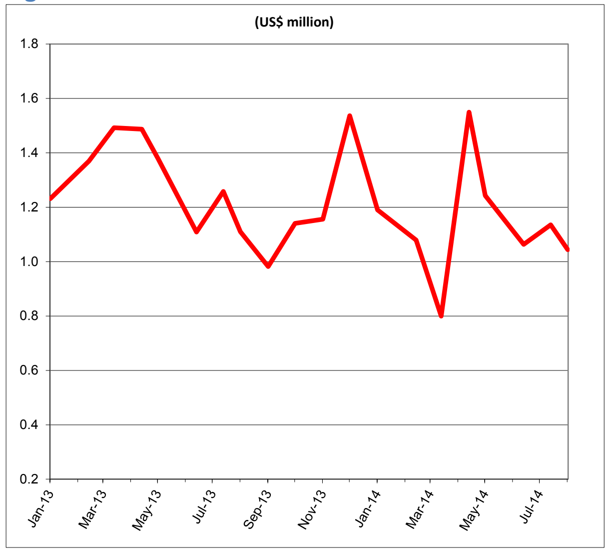
Source: Statistics Sierra Leone.

Figure 11: Sierra Leone - Exchange rate



Source: Bank of Sierra Leone.

Figure 12: Sierra Leone - Remittances



Source: Bank of Sierra Leone.

Fiscal Impact

The government is constantly revising its 2014 fiscal plan to take into account a rapidly changing and uncertain environment (Table 4). Revenues are expected to fall in the second half of the year due to the reduced economic activity and a probable reduction in compliance, all due to Ebola (about US$46 m). This compounds a preexisting challenge: The government also had to contend with revenue underperformance in the first half of the year that totaled some US$11 million. Additionally, the recent historically low international price for iron ore will further reduce expected second half of 2014 revenues. An emergency Ebola response plan will require increased recurrent spending (US$38 million), mostly for the health sector. Some of this is to be financed through a reallocation of capital spending which still leaves an unfinanced gap of US$79 million. This figure is likely to be a lower bound as the situation remains volatile.

Table 4: Sierra Leone – Estimated fiscal impact of Ebola (US$ millions)

	Original Projection	Revised Projection	Difference
Total Revenue and Grants	745	688	-57
Tax revenue	530	478	-53
Non-Tax revenue	50	44	-6
Grants	164	166	2
Expenditure	938	960	22
Current Expenditure	567	604	38
Of which for health emergency	0	26	26
Capital Expenditure	371	355	-16
Overall Balance	-193	-272	79
(% of GDP)	-4.2	-6.0	1.8

Source: World Bank and IMF Staff estimates.

Guinea

Guinea is among the poorest countries in West Africa with a population of 12 million and per capita income of US$460. It was the first country to be affected by the Ebola virus. When the epidemic hit, however, the Ministry of Health reacted swiftly, in partnership with MSF. Isolation wards were set up in Macenta and Gueckedou, the two most affected districts. Contact tracing and follow-up in these areas seem to have allowed the authorities to contain the epidemic, despite some recent cases of migration back from the border areas of Liberia and Sierra Leone.

The country is richly endowed with metals such as iron ore and bauxite, as well as strong hydro-power potential, but is returning to macroeconomic and political stability after years of conflict and poor leadership. Its economy is a mix of agriculture, services, and mining, and the poverty rate is high at more than 55 percent of the population and recent income growth has not matched that in neighboring countries.

Impact on Economic Activity

Projected GDP growth for 2014 has been revised from 4.5 percent to 2.4 percent (Table 5). The main economic impacts of Ebola in Guinea to date have been on agriculture and services. Projected agricultural growth for 2014 has been revised from 5.7 percent to 3.3 percent. Agriculture in Ebola-affected areas has been hit by an exodus of people from these zones, affecting key export commodities such as cocoa and palm oil. Coffee production has also fallen by half (from 5,736 tons to 2,671 tons between the first six months of 2013 and the first six months of 2014); cocoa production has declined by a third (from 3,511 tons to 2,296 tons for the same time period). Palm oil production has fallen by 75 percent. Local water production has fallen by 29 percent.

Services have also been hit. Growth in services is projected to fall from 6.7 to 3.8 percent, with the categories transport and commerce remaining stagnant. Services are in part tied to the mining sector, where major companies, including Vale and Rio Tinto, have evacuated many foreign workers. Airlines have reduced travel to Guinea, Senegal and Côte d'Ivoire have sealed their Guinean borders, and many expatriates in the mining sector have left. Hotel occupancy rates in Conakry have fallen by half, to less than 40 percent compared with an average of 80 percent occupancy before the crisis.

Table 5: Guinea - Estimated GDP impact of Ebola (2014)

	Contribution to growth shock (%)	Initial Projection (Jan. 2014)	Revised Projection
Real GDP Growth		*4.5*	*2.4*
Agriculture	20.3	5.7	3.3
Forestry	0.0	3.5	3.5
Mining	3.8	-3.0	-3.4
Manufacturing	2.5	6.5	5.6
Services	73.5	6.7	3.8

Source: World Bank and IMF Staff Estimates

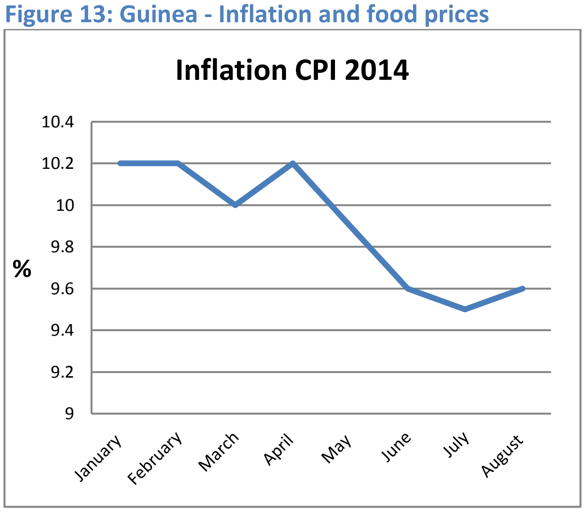
Still, mining output has not yet been severely affected by the Ebola outbreak, because the main mines are not located in the affected areas (with the exception of iron ore). For example, in the mining sector, where production was already forecast to contract by 3.0 percent before Ebola, projected output has been revised downward to only 3.4 percent.

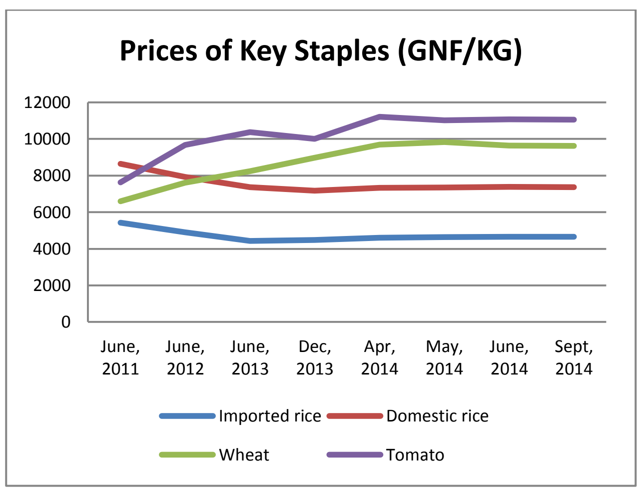
Manufacturing is a small sector in Guinea, accounting for less than 7 percent of GDP, mostly concentrated in Conakry, including agro-industry, paint, plastics, soft drinks, cement, and metals. The Ebola outbreak has made it more difficult for firms to obtain key imports due to port delays and logistics challenges. Cement imports have fallen by 50 percent year-to-date, relative to 2013.

Food prices and inflation

Price data to August suggest little effect to date of lower agricultural production on food prices in Guinea. Prices fell between April and June, with an uptick since July. Annual inflation for 2014 is still projected at 8.5 percent (Figure 13).

Figure 13: Guinea - Inflation and food prices



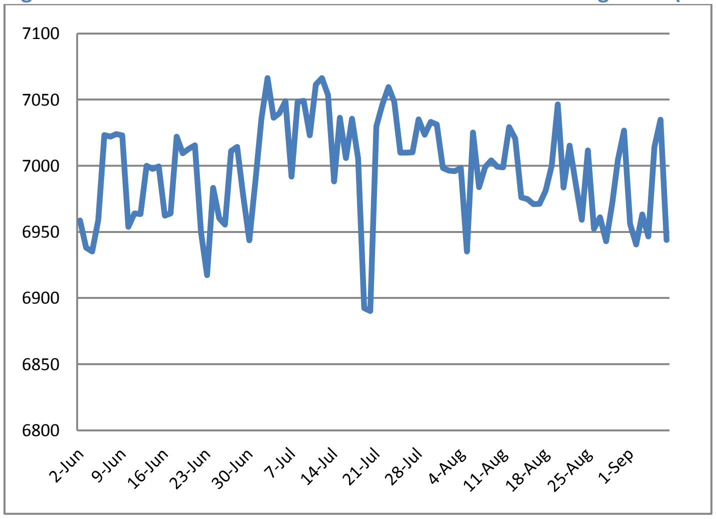


Source: World Bank staff calculation based on government data

External Sector

There has been an increase in exchange rate volatility and small trends in depreciation (Figure 14). According to the Central Bank, part of this is supply as artisanal gold production is down, mostly due to seasonality but potentially with some impact of Ebola. The other part is capital flight; many expatriates (and Guineans who can afford to) have left the country.

Figure 14: Guinea - US dollar-Guinean franc nominal exchange rate (2014)



Source: World Bank staff calculations

Fiscal Impact

The fiscal impact of the Ebola outbreak on Guinea is estimated at US$120 million, of which US$50 million are attributed to revenue shortfalls and US$70 million to increased spending on the Ebola response (Table 6). Lower revenues from mining sector royalties, taxes on international trade, and taxes on goods and services account for more than two-thirds of the revenue decline. The government has adopted a $70 million response plan to fund logistics, health centers, the purchase of food and equipment, and salaries.

Table 6: Guinea - Estimated Fiscal Impact of Ebola (US$ millions)

	Initial Projection	*Revised Projection*	*Difference*
Total Revenues and grants	1,701	1,650	-51
Tax revenue	1,306	1,255	-51
Non-Tax	1	1	0
Grants	394	394	0
Expenditure	2,046	3,080	70
Current Expenditure	1,976	2,116	70
Of which for health emergency	0	50	50
Capital Expenditure	964	964	0
Overall Balance	-1,309	-1,430	120
Overall Balance (% of GDP)	-4.0	-5.2	-1.2

Source: World Bank/IMF Staff Estimates

Neighboring Economies

The Ebola epidemic has so far not had a major effect on economic activity outside the three core affected countries, although there have been some ripple effects. The first effect has been the movement of Ebola-infected people from the core areas to Nigeria and to Senegal. The arrival of the first case in Nigeria and in Senegal created a strong reaction among local populations, and the authorities took immediate measures to contain the infection. The second effect has been on cross-border trade from the sealing of borders. Both Ivory Coast and Senegal have sealed their borders with Guinea, and other countries have made movement in the same direction. This affects the trade flows between these countries. Additional channels of economic transmission may yet appear, although countries in the region are making medical preparations to reduce that risk.

Nigeria

The emergence of Ebola in Nigeria is already having an economic impact. Preliminary reports from shopping centers and many commercial businesses in Lagos indicate significant recent declines in demand, sometimes in the range of 20 to 40 percent. The government is also spending significant resources on containment. However, if Nigeria succeeds in containing the virus, the economic impact is likely to be limited. The recent decline in commerce likely reflects initial shock, fear, and uncertainty following the appearance of Ebola in Lagos and Port Harcourt. If confidence builds around the containment effort, commerce should soon return to near-normal levels. While even a contained presence of Ebola in Nigeria will discourage foreign tourists from visiting the country, Nigeria has a limited foreign tourist industry to begin with, so this effect will be marginal. Nigeria's high oil dependency for exports and budgetary resources may ironically be an advantage in the face of Ebola, as the oil sector has a very high regional concentration, with much of it offshore, and should not face Ebola-related disruptions in the absence of a mass epidemic. Official trade flows with West Africa are relatively small. Informal trade flows are much larger, although it is not clear how these flows would be affected by any Ebola-related trade disruptions. We expect GDP growth in Nigeria to be close to 6 percent in 2014, and the general government budget to be close to balanced.

Côte d’Ivoire

So far, Côte d’Ivoire has been spared any Ebola outbreak, and the government has taken measures to limit contagion risks from neighboring Guinea, Liberia, and Sierra Leone. These measures include closing the borders with Liberia and Guinea and mandatory health-checks for all visitors, as well as an intensive sensitization campaign of the public. Notwithstanding these measures, concerns regarding Côte d’Ivoire’s exposure to Ebola remain owing to the porousness and the free circulation of the population across borders, including in areas affected by the Ebola outbreak in Liberia and Guinea.

Guinea-Bissau

No cases of Ebola have yet been reported in Guinea-Bissau. To protect its citizens from the spread of the disease, the government closed the border with Guinea in August. Guinea-Bissau is poorly integrated in regional trade networks so the economic effect is likely to be marginal. Health professionals have warned that the closing of the border might in fact be counter-productive, diverting travelers to unofficial crossings of the country's porous borders and thus reducing the authorities' ability to monitor cross-border traffic for potential Ebola victims. A weak Bissau-Guinean health sector reduces the authorities' ability to both identify and treat Ebola cases. The World Bank is thus restructuring an ongoing Community Driven Development project to make US$750,000 available to the WHO to enhance the country's preparedness. The project will also support a campaign to raise awareness of Ebola and prevention mechanisms. Assuming that Guinea-Bissau avoids Ebola, the estimate for 2014 growth remains unchanged at 3 percent, with an expected fiscal deficit of 1.7 percent of GDP.

Senegal and the Gambia

The one confirmed case of Ebola in Senegal has been cured, and the economic impact on Senegal so far is modest. Recent economic indicators are nearly in line with the pre-Ebola GDP growth projection of 4.9 percent for 2014. Based on the index of general activity (excluding agriculture), GDP growth is estimated at 4.7 percent for the first two quarters of 2014, driven mainly by services (up 6.6 percent) and public administration (up 7.3 percent). However, delay in the onset of the rainy season and the outbreak of Ebola could result in a slowing growth rate for the remainder of the year. Senegal had previously closed its border with Guinea in an attempt to halt the spread of Ebola, and had banned flights and ships from Guinea, Liberia and Sierra Leone. Exports to these countries only account for 2 percent of total Senegalese exports, so this effect will be small. The impact of Ebola on tourism will be more important. Tourism is the largest single foreign exchange earner, accounting for some 12 percent of total exports of goods and services. If tourism falls by half, this would lead to a 1 percent drop in GDP on an annual basis. Several conferences have already been cancelled and incoming flights have relatively few passengers. There is no available data on tourist flows in Senegal, but in neighboring Gambia it is estimated that 65 percent of hotel reservations have already been cancelled, which will have a serious impact for the country. The situation will be seriously aggravated if the disease spreads to Mali, since this is Senegal’s number one export destination as well as the most important client for transit trade. There are already additional public expenses related to the funding of emergency measures put in place, notably through the Ministry of Health, but donors appear ready to cover most of these costs.

Conclusion

Under current caseloads, the impact of the West African Ebola crisis has deepened, particularly in Liberia and Sierra Leone. Preliminary estimates for 2014 indicate that GDP growth could be halved in Guinea and Liberia with a loss of 3 percentage points for Sierra Leone. In terms of foregone output, this amounts to a total of US$359 million across the three countries, already a major loss.

The fiscal impact of the crisis has been enormous, emanating from the combination of revenue shortfalls from reduced economic activities and increased expenditures, particularly for health and social protection. 2014 financing gaps for the three core countries range from US$80 million to US$120 million, summing to over US$290 million. Slow containment scenarios will lead to even greater financing gaps in 2015.

Section 3: Medium Term Impacts

Even if the Ebola epidemic were contained over the course of 2014, economic impacts would be felt into the future: foreign and domestic investors are putting some investment decisions on hold which will have ripple effects into the future. Many epidemiological projections suggest that the epidemic will in fact continue into 2015. This section presents estimates for the medium-run, through the end of 2015, for the three core affected countries. To estimate medium term impacts on the individual countries, this document employs the same method as that for the short-term estimates, building up growth rates from sector components, based on the impact seen so far on economic activity and assumptions of the likely effects moving forward. Clearly there will be spillover impacts to the region as a whole, and future reporting will document those estimates. Because medium-run estimates involve both more uncertainty with regard to the path of the epidemic and stronger assumptions about the likely impacts on elements of the economy (e.g., labor supply and capital utilization in various sectors), this section employs and two scenarios.

Scenarios of the Ebola Epidemic

In late August 2014, the World Health Organization proposed that "the aggregate case load of EVD [Ebola Virus Disease] could exceed 20,000 over the course of this emergency."[6] Since then, other projections have suggested a much larger potential caseload and – importantly – a *longer* epidemic.[7] As such, this note examines two scenarios. First, a rapid containment scenario (called Low Ebola) is considered, which assumes that containment of the disease by roughly the end of 2014 leads to a resumption of economic activity in 2015. Second, a slow containment scenario (High Ebola) assumes that the outbreak worsens significantly into 2015.

Estimates

Liberia

If Ebola is contained within the next six to nine months and activities gradually increase across most sectors (Low Ebola), the Liberian economy could post a modest rebound in 2015, with GDP growth of about 2.6 percent; that would amount to roughly US$82 million in lost GDP. Such growth is expected to be driven mainly by the more resilient iron ore mining sector, agriculture, and services including construction (particularly residential construction which may be more easily mobilized). Even with the rebound, prices (food prices in particular) may remain sticky and exchange rate volatility may persist into 2015.

If the epidemic is not so rapidly contained, economic reactions driven by fear may be heightened, precipitating further economic shocks that could shut down production in large-scale mines and further delay investments in capacity expansion. Other likely effects are further disruption to regional and international flights; interruption of the 2015 planting seasons for the two main staples—rice and cassava; and the shut-down of borders and markets. Financial markets and international trade would be

[6] World Health Organization, "Ebola Response Roadmap," 28 August 2014.

[7] See Grady, Denise, "U.S. Scientists See Long Fight Against Ebola," New York Times, September 12, 2014. Grady reports projections of more than 50,000 cases just by October 12.

affected. Under this slow containment scenario, the sharp contraction in agriculture, manufacturing and services as well as the cessation of mining would lead to an overall GDP contraction of nearly 5 percent (Table 7), and a loss of US$228 million in output. Under this scenario, the sharp reduction in economic activities would result in substantial fall-out in fiscal revenues, pushing the fiscal gap well beyond the current estimate of nearly US$100 million.

Table 7: Liberia – Estimated GDP Impact of Ebola (2015)

	2012	2013	2014	2015
		Annual growth rates		
Pre-crisis baseline GDP	8.30	8.70	5.90	6.80
Low Ebola	..	..	2.49	2.62
High Ebola	..	..	2.59	-4.91

Sierra Leone

Sierra Leone's overall growth prospects are dominated by the iron-ore subsector, the mainstay of its mining sector. A positive aspect of this is that as the still fledgling iron-ore industry expands, it increases overall GDP significantly. However, such an enclave sector, which has few linkages to the rest of the economy, can mask the performance of other sectors in the economy, thus GDP numbers for Sierra Leone are broken out for non-iron ore GDP (Table 8). Under the assumption that the Ebola outbreak is contained relatively quickly (Low Ebola), an economic recovery emerges over the course of 2015, anchored by government spending and iron ore, which increases production rapidly after the end of the crisis. Agricultural growth falls to just over 2 percent as the effects of missing the planting season in 2014 appear through a weak harvest. The service sector rebounds, led by manufacturing and the return of tourism and foreign visitors. Under this scenario, non-iron ore GDP rises by 4.5 percent in 2015. Overall GDP rises by 7.7 percent relative to 8.9 percent in the pre-crisis projections, representing a loss of approximately US$59 million.

A more pessimistic, slow-containment scenario is also simulated (High Ebola), built on the assumption that efforts to end the crisis will not bear fruit until well into 2015. Under this assumption, agricultural output falls dramatically due to large scale abandonment by farmers and rural deaths. Food crop and cash crop production fall, necessitating increased imports which – coupled with widespread shortages – places pressure on inflation and the exchange rate. Services also contract, especially the hospitality sector. Only government spending buoys the economy. The major mines are assumed to be shut for at least half the year. Under these assumptions overall economic growth is zero in 2015 and the non-iron ore economy shrinks by 3 percent. The ensuing post-crisis recovery would be expected to be slow, with growth shrinking to zero in 2015; this is associated with US$439 million in lost GDP, more than seven times the loss in the Low Ebola scenario.

Table 8: Sierra Leone - Estimated GDP Impact of Ebola (2015)

	2012	2013	2014	2015
	Annual growth rates			
Pre-crisis baseline GDP	15.2	20.1	11.3	8.9
- Non iron ore GDP	5.3	5.5	6.0	6.3
Low Ebola	..	..	8.0	7.7
- Non iron ore GDP	..	..	4.0	4.5
High Ebola	..	..	8.0	0.0
- Non iron ore GDP	..	..	4.0	-3.0

Source: Bank staff estimates.

Guinea

Absent any further outbreak of disease in Guinea, the economy is projected to remain resilient in the medium-term, propelled by a rebound in services and stronger performance of mining. The impact of Ebola will still be felt in 2015, even assuming an optimistic six-to-nine month crisis response operation. But estimates of Guinea's projected GDP growth in 2015 span a much narrower range than those described above for Liberia and Sierra Leone, from 2.0 percent to 5.0 percent, given the containment of the outbreak in Guinea (Table 9). The Low Ebola scenario actually represents an increase relative to the pre-crisis projections, but the High Ebola scenario results in a loss of US$142 million in output. There nonetheless remains the risk of Ebola affecting Guinea's mining sector, which would lead to a dramatic departure of business and foreign direct investment at a time when the country needs international support. An additional danger is that negative perceptions associated with Ebola linger even after the situation on the ground has improved.

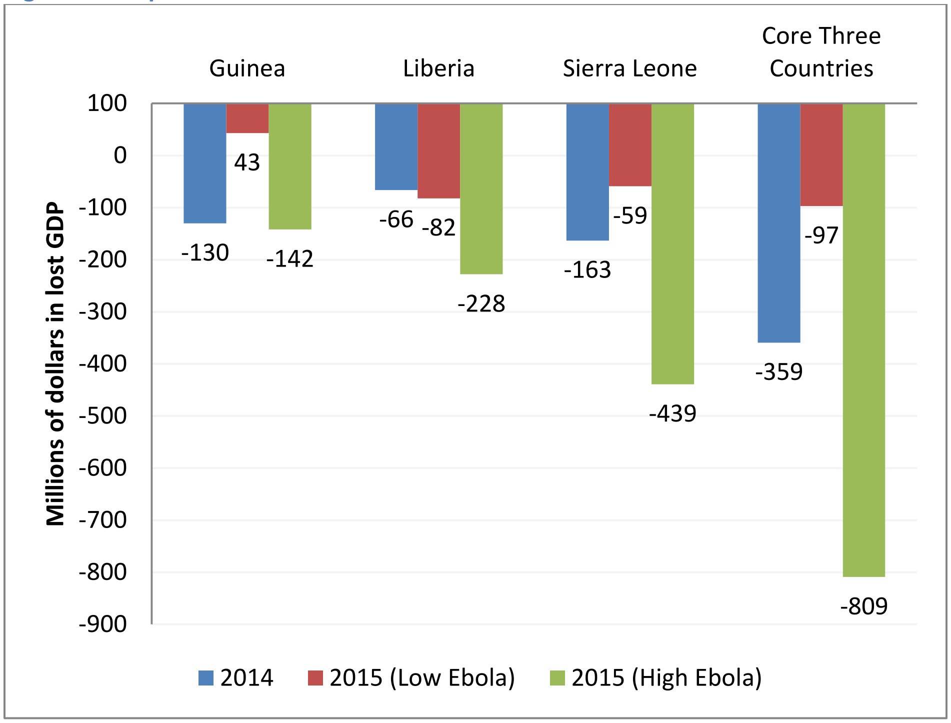
Table 9: Guinea - Estimated GDP Impact of Ebola (2015)

	2012	2013	2014	2015
	Annual growth rates			
Pre-crisis baseline GDP	3.8	2.3	2.4	4.3
Low Ebola	..	..	2.4	5.0
High Ebola	..	..	2.5	2.0

Source: Bank staff estimates.

For the three core countries, the forfeited GDP in 2015 sums to US$97 million in the Low Ebola case and a striking US$809 million in the High Ebola case. As Figure 15 demonstrates, the likely economic impact of the Ebola epidemic will be significant for the affected countries in any plausible scenario. However, the scenario in which the epidemic is not swiftly contained promises to leave a much deeper economic scar.

Figure 15: Impact of Ebola over the short- and medium-run



Section 4: Conclusions and Policy Recommendations

Diseases and the pain and suffering they cause engender treatment costs and also the costs of reduced productivity. At the time of writing, at least 2,200 people have died in Liberia, Sierra Leone and Guinea, with some experts placing the number two or three times higher. Cases continue to accumulate, with Liberia adding more cases in the last week than in the previous one. No one knows how high the human toll may rise.

But in the case of an outbreak like those of SARS and H1N1 influenza, and now Ebola in West Africa, most of the economic impact is due to the aversion behavior of economic agents. The present note estimates the size of the economic impact on the three countries of Liberia, Sierra Leone and Guinea, taking into account not only the health care and productivity costs but also the effects of aversion behavior. We consider two scenarios, one in which the epidemic is contained relatively rapidly, near the end of 2014, and one in which the epidemic continues well into 2015.

Liberia has taken the biggest economic hit, due both to the reach of the Ebola virus into the densely populated zones of Monrovia and to the weakness of its health system and overall economy. Although growing briskly at 6 percent in January of this year, its GDP is declining in the second semester, leaving it with a net growth of only about 2.5 percent. The fiscal cost this year alone is nearly US$100 million. And of the affected countries, Liberia faces the greatest downside economic risk, with a GDP contraction in 2015 of up to 5 percent, which would amount to an economic crisis.

Sierra Leone faces similar – yet slightly lower – costs and risks. A high prior growth forecast of 11 percent for 2014 will be reined in to perhaps 8 percent, with most of the progress recorded in the first half of the year. The fiscal deficit will worsen by about US$80 million. Although Guinea was the origin of this Ebola outbreak, it has escaped the worst of the caseload probably because it has so far avoided a major urban epidemic. Still, the country – which was not growing well before – faces a halving of growth this year and huge financial needs, of US$120 million or more, as a result of the crisis.

Fortunately, there is limited evidence of economic effects so far on neighboring regional economies, even in Nigeria and Senegal where related Ebola cases have been recorded and treated. This is in part because these countries' stronger health systems seem to have succeeded in containing these events and partly because their larger economies can better withstand shocks than can Liberia, Sierra Leone or Guinea.

However, at this writing, the total number of cases of Ebola continues to rise, with no sign of an inflection point in Liberia or Sierra Leone, so seeding of the epidemic into neighboring countries is a continuing possibility. Projections for 2015 depend on how many surrounding countries are likely to experience a belatedly detected secondary outbreak, how successful they are at containing it, how robust their health systems and economies are to the resulting epidemic shock and how trade diverts from the worst-affected countries to their neighbors. All four of these factors vary widely within West Africa. Preliminary estimates suggest that the cost of Ebola to the West Africa region could attain several billions of dollars by the end of 2015.

These findings underline the need for a concerted international response. External financing is urgently needed in the three core countries, but this is clearly not enough. These impact estimates suggest that containment and mitigation expenditures in excess of a billion dollars would be cost-effective, if they successfully avert more pessimistic scenarios. Such a response should include four related sets of activities.

Humanitarian response

The World Health Organization has provided a "roadmap" estimating the immediate humanitarian costs to exceed $495 million. The United Nations has increased this estimate to $600 million.[8] These amounts will finance desperately needed personal protective equipment for health workers, emergency treatment units, personnel salaries, etc., and are required just to shore up the ongoing efforts to contain the epidemic, in order to reduce the direct and indirect cost from sickness and mortality in the three core countries, including aid to the health sector. The World Bank is working with affected countries and other donors to re-program existing money and channel new grant funding in order to procure the needed supplies as quickly as possible.

Fiscal support

The robust economic growth anticipated for the three core countries for 2014 and 2015 is rapidly becoming elusive even for later years, such as 2016. Increased injections of external support can

[8] See Clarke & Samb, "UN says $600 million needed to tackle Ebola as deaths top 1,900," Reuters, September 3, 2014.

strengthen growth in these fragile economies. The fiscal gap, just for 2014, is estimated at around 290 million dollars. In either scenario, but especially in the more pessimistic scenario, that is likely to be much, much higher. This goes far beyond the humanitarian response, but rather involves helping to mitigate the potentially debilitating drop in economic growth occasioned by the Ebola outbreak.

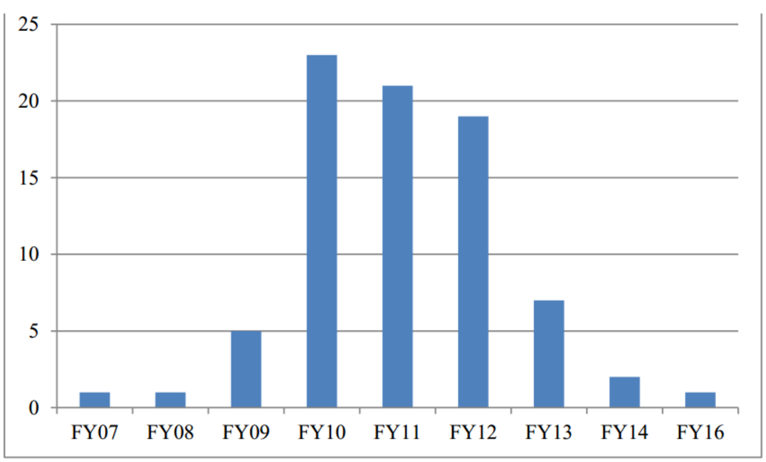
Infrastructure support to international transport links

This past week the President of Sierra Leone called out for help with the Ebola epidemic, saying that at the very time his country most needs outside help, it is suffering from a virtual "economic blockade." Quarantine procedures are essential public health tools for containing infection from a known Ebola case. But when applied to a country, a quarantine policy will prevent that entire country from receiving the help it needs to fight the epidemic and, by alarming trade, business and tourism partners, will exacerbate aversion behavior and the resulting short and medium term economic impact of the disease. Policies are required which will both enable the flow of relief and encourage commercial exchange with the affected countries. To this end, we recommend exploring options for financing improvements to the safety of those who travel in the region, whether for humanitarian, business or tourism reasons.

Strengthening the surveillance, detection and treatment capacity of African health systems

After the SARS and H1N1 epidemics, donors resolved to strengthen the epidemiologic surveillance systems in poor countries by investing in primary care systems, referral networks and diagnostic reporting from the periphery to the center, with links to WHO in Geneva. Beginning shortly after the H1N1 outbreak in 2007, donors established the Global Program on Avian Influenza Control and Human Pandemic Preparedness and Response (GIAP), which was implemented by the World Bank and funded a total of 83 operations across 63 countries. But according to the World Bank's Independent Evaluation Group, initial GAIP projects rarely created permanent capacity and donor attention waned, to the point that the last such projects are due to end over the next two years (see Figure 16).

Figure 16: Number of Global Program on Avian influenza operations closing by fiscal year



Source: Independent Evaluation Group, "Responding to global public bads: Learning from the World Bank's experience with avian influenza, 2006-2013," 2014.

Today we fight to control the Ebola outbreak. But In the medium to long run, the international community must learn that weak health sectors in Africa are a threat not only to their own citizens but also to their trading partners and the world at large. The enormous economic cost of the current outbreak to the affected countries and the world at large could likely have been avoided by prudent ongoing investment in such health system strengthening. The World Bank has approved an emergency project that not only strengthens curative health services in each of the three most affected countries, Liberia, Sierra Leone and Guinea, but also includes $75 million to fund a new Regional Multi-country Disease Surveillance and Public Health and Veterinary Labs Project to do just what the name describes. But effort and memory will be required to sustain and continue strengthening this early warning network after the Ebola outbreak has been contained.

Taken together, the humanitarian response, the fiscal support, the investment secure transportation links and the expanded disease surveillance and treatment capacity will not only stem the Ebola epidemic, but help to reverse as quickly as possible the aversion behavior that is causing so much economic damage.