Drought and Sub-Saharan African Economies

Background

Droughts are frequent and severe in many countries of Sub-Saharan Africa (SSA) and have a devastating impact on their peoples and economies. The extreme vulnerability to rainfall in the arid and semiarid areas of the continent and the poor capacity of most African soils to retain moisture result in almost 60 percent of SSA being vulnerable to drought and 30 percent being extremely vulnerable. Since the 1960s, rainfall in parts of the Sahel and Southern Africa has also been significantly below the norms of the previous 30 years. Moreover, the prospects of an El Niño effect has led to more focus on the impact of drought in SSA.

Against the background of a dearth of investigative studies on drought’s economic impact, a recent report, The Impact of Drought on Sub-Saharan African Economies: A Preliminary Examination examines this phenomenon more closely. Drought has typically been perceived as a problem principally of agriculture and, in particular, food supply. As such, it is seen as posing problems for effective relief but there is less evidence on whether or not it justifies economic responses or modifications in policy.

This report presents the findings of an exploratory study which was intended as a contribution to filling that gap. Analysis of a number of issues pulls together lessons learned from six country cases (Burkina Faso, Ethiopia, Kenya, Senegal, Zambia and Zimbabwe) to develop strategies to reduce the economy-wide impacts of drought. The paper examines the economic impacts of drought in detail by:

- Examining drought experiences and assessing factors determining the scale and nature of the vulnerability to drought of various types of African economies.
- Providing a preliminary assessment of the impact of drought on both productive sectors
and policy targets.
• Identifying appropriate broad drought management strategies that reflect differences in the impact of drought in various types of economies.

An Economic Definition of Drought

The authors employ a probabilistic conceptualization of drought, using concepts of meteorological, hydrological, agricultural, and social drought to arrive at an economic definition. A highly empirical, inductive approach is adopted to establish whether drought could be regarded as a phenomenon of economic significance, and, if so, the likely probabilistic nature of the impacts and the implied relationships.

On this basis, economic drought is defined as concerning the impact of abnormally low rainfall, outside the normal expected parameters with which an economy is equipped to cope, on productive activities. As such, its impact is contingent on the interaction of a meteorological event or anomaly with the changing dynamic structure and health of an economy. It also depends on the expectations about the probability of drought and any subsequent changes in behavior by various economic enterprises.

According to this definition, drought is therefore a form of internal supply-side shock—that is, a severe disturbance caused by events outside a country’s control that has important impacts on domestic economic variables.

Main Findings

Conventional wisdom suggests that poorer, low-income countries in SSA are likely to be the most severely affected by drought. However, an initial examination of Gross Domestic product (GDP) aggregates for countries that have suffered intense drought, and a review of responses by international and bilateral agencies to the 1991-92 Southern African drought, suggested a more complex relationship between the effects of drought and the structure of a country’s economy.

Although the economic implications of a drought depend on a complex set of environmental and economy-specific factors, the available evidence also suggested that certain features of the economic structure, in particular the level of economic complexity, are overwhelmingly important in determining drought vulnerability.

To focus more clearly on the structural features of an economy that mediate the effects of drought as a climatic and hydrological event, a typology is developed to distinguish four country situations in terms of impact of drought. They are: simple, intermediate, complex and dualistic economies.

Simple economies are predominantly rain-fed agricultural and livestock semi-subsistence economies, with limited infrastructure, low levels of per capita income and high levels of self-provisioning in the rural population. The overall impact of drought may be particularly great because of the relative importance of the agricultural sector. However, reflecting weak intersectoral linkages, high levels of self-provisioning and relatively small non-agricultural
sectors, the multiplier effects of a drought shock through the rest of the economy are fairly limited. Recovery is also relatively fast, with the return of good rains restoring levels of GDP to pre-drought levels almost immediately, assuming the timely availability of agricultural inputs.

In intermediate economies, the effects of drought are diffused more widely through the economy, reflecting greater overall integration and stronger intersectoral linkages between the agricultural and burgeoning manufacturing sectors. Intermediate goods are also likely to form a larger share of imports, implying that a drought-related import squeeze will have additional, multiplier implications for domestic production. Meanwhile, recovery from drought may be more delayed as the manufacturing sector continues to face input shortages and there is a slow pick-up in demand. Public finance implications may also be more severe as the government is likely to meet a larger share of the costs of the relief efforts itself, rather than relying almost entirely on international assistance. In addition, intermediate economies typically have more developed economy-wide financial systems for flow of funds, including small-scale private savings and transfers, again diffusing the impact of drought more widely, including into urban areas.

In complex economies, the impacts of drought are relatively easily absorbed, partly because agriculture contributes a smaller percentage to total GDP, exports and employment while food expenditure forms a smaller percentage share of total household expenditure. Finally, in dualistic economies, with large extractive, mineral sectors, unless the extractive sector is water-intensive, the economic impact of drought is limited to variability in the agricultural sector with a small multiplier effect. Thus, the macroeconomic impact of drought again appears small, although it may have profound effects on the agricultural sector, on which the majority of the population depends.

Contrary to expectations, the explorations suggest a counterintuitive relationship: an economy in the early stages of development may become more vulnerable to drought and more severely impacted by drought shocks than a less-developed economy because the effects of drought are more diffused in the former, reflecting stronger intersectoral linkages. Therefore, the authors contend that relatively developed countries in SSA may be more drought-vulnerable than less-developed or arid countries, in terms of macroeconomic aggregates and rates of recovery.

**Policy Implications**

The findings from this report imply the need for differential policies and mechanisms, both in mitigating the impact of drought and dealing with its consequences, ex-post. For example, financial aid for balance-of-payments and budgetary support for economies affected by a drought shock should have the highest priority in relatively developed economies in SSA. On the other hand, targeted food interventions are likely to be the more appropriate form of response in simple economies, where the impact of drought is largely felt through its direct effects on self-provisioning households in the agricultural sector.

Drought risks also need to be taken into account in the design and implementation of economic reform and more general development policies and programs. By ignoring the possibility of drought, over-optimistic growth rates and budgetary and investment goals may not be subsequently met, with droughts both disrupting careful economic management and potentially...
threatening conditional external assistance.

**Conclusions**

Drought shocks have large, but highly differentiated, economy-wide impacts. The likely frequency, scale and character of these impacts depend on the interaction of the economic structure and resource endowments, as well as on more immediate short-term economic factors. Counter-intuitively, some of the relatively more developed or "complex" SSA economies, such as Senegal, Zambia and Zimbabwe, are more vulnerable economically to drought shocks than less developed and more arid countries, such as Burkina Faso, or countries undergoing conflict emergencies, such as Somalia. By implication, a less developed country such as Ethiopia might initially become more sensitive to drought as its economy develops. Then, as economies become yet more complex and diversified, they eventually become less vulnerable to drought.

This typology suggests a challenging hypothesis, that there is an underlying "inverted U"-shaped relationship between the macroeconomic impact of drought and the overall stage of economic development of a country, with important implications in preparing for and responding appropriately to drought in different types of economies.


For further information on the implications of drought in Sub-Saharan African countries, please contact Charlotte Benson and Edward Clay, Overseas Development Institute, London, U.K. email: e.j.clay@odi.org.uk

World Bank contact: Lionel Demery, Room J2-131, World Bank 1818 H Street NW, Washington, D.C. 20433. Tel. no.: (202) 473-4800; e-mail address ldemery@worldbank.org