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Risk and Vulnerability in Development Economics [1]

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1. Introduction

Growth and development are often analyzed as if they occur in a world without risk. This must strike any entrepreneur as absurd: whether his enterprise succeeds, indeed whether it survives, depends in no small measure on his ability to recognize and cope with risks. That standard textbooks on growth theory describe his world as a sterile environment without shocks he would find hard to believe.

The neglect of risk in many textbooks is particularly serious for Africa where development takes place in a relatively risky environment with poor risk coping mechanisms a dangerous combination which makes risk a central issue.

This note considers how development economists have analyzed three issues related to growth: the effect of risk on growth (section 2), the way governments should respond to trade shocks (section 3), and the introduction of insurance in areas with poorly developed financial markets (section 4). The emphasis is in on how views have changed over the last three decades, on where there has been progress and where the field has not yet reached satisfactory answers. Section 5 concludes.

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1. This note draws on Gunning (2013) and on my presentation at the conference celebrating the 10th anniversary of FERDI, Clermont-Ferrand, January 9-10, 2014.

2. Risk and Growth

While the importance of risk in African economies has been recognized for a very long time, notably as a result of numerous careful anthropological studies of risk management in village economies, growth in Africa is often analyzed by economists as if it occurs in a risk-free environment. This is, of course, convenient but grossly misleading.

A possible reason for this state of affairs is the folk theorem that risk has no ex post effect: positive and negative effects average out. According to this theorem an individual shock (positive or negative) obviously matters, but an increase in risk, in the technical sense of a mean preserving spread in the distribution of incomes or assets does not affect outcomes in expectation. This folk theorem is incorrect, the effect is negative and may well be large.[2]

Concerning the ex ante effect, the change in growth as a result of a risk-induced change in economic behavior there is a presumption that it must be positive. In that case risk reduces welfare but has at least a positive effect on growth. This is correct in the canonical model for savings in developing countries (Deaton's 1991 *Econometrica* paper) in which risk affects only income, not assets so that there is an incentive for precautionary saving. This conclusion can be reversed if risk also affects agents (e.g. the livestock which in many African rural economies is the key asset) and there now is some evidence that this matters in practice.[3] In this case risk makes it more difficult to escape from growth. It should therefore have a central, rather than its current peripheral role in the literature.

The empirical literature on risk and growth offers little guidance to policy makers on the size and nature of the problem. The micro literature by and large focuses on ex post effects. This is very useful but may well miss a large part of the problem.[4] Conversely, in the modern growth regressions literature, the approach Ramey and Ramey (1995) does account for both *ex ante* and *ex post* effects of risk consider risk but in such a way that two cases of high macro-economic volatility: either as a result of exposure to high risk or due to poor risk coping in the face of moderate exposure cannot be distinguished: they are observationally equivalent.

Both the micro and the macro literature have (with a few exceptions) not yet dealt satisfactorily with one of the key issues in development: the effect of risk on growth. This is not entirely surprising since to answer the question adequately one either needs a long running experimental setup (if behavioral changes in a treatment group offered insurance are expected to take a long time) or a structural model (which is difficult to estimate and possibly not entirely convincing if used for out of sample predictions of behavioural changes in reponse to policy changes such as the introduction of insurance). Researchers are well aware of this. Current practice may, perhaps unkindly, be characterized as muddling through.

3. Trade Shocks

It has long been recognized that the volatility of the world prices exposes developing countries with poorly diversified exports to substantial external risk. However, for a very long time both the academic discussion of this topic and the policy debate were misguided.

In the policy debate international price stabilization was long seen as the obvious remedy to price volatility. This reached a high point in the early 1970s with the enthusiasm for international buffer stocks as a cornerstone for a "New International Economic Order". The consensus on the desirability of buffer stocks crumbled only

2. Gunning (2007, 2013), Elbers *et al.* (2007).
3. Gunning (2010), Dercon (2005), Elbers *et al.* (2007), Pan (2009).
4. Elbers et al. (2007) conclude that the ex ante effect accounts for two-thirds of the effect of risk on growth in rural Zimbabwe. This need not generalize, of course, but Pan (2009) also find a very large effect for Ethiopia.

after a very long time, when it became clear that such price stabilization was costly, inefficient and vulnerable to speculative attacks.[5]

The policy debate then focused on domestic price stabilization using stabilizing export taxes. The idea was that domestic producers should not be exposed to price shocks: governments should use taxes and subsidies to keep producer prices stable. (In Africa this amounted to a revival of the policies instituted by colonial governments in the 1930s.) Trade shocks would thus be transferred to the government. The rationale was that governments would respond appropriately to temporary shocks through saving or dissaving to smooth expenditures. By contrast private producers would fail to recognize the need for such intertemporal adjustment.

The academic literature at that time used the Dutch Disease model for analyzing trade shocks. Since the standard version of that model was static it assumed all intertemporal issues away, a sobering example of a model totally inappropriate for the issue at hand.

The situation changed dramatically in the 1980s and 1990s. Empirical research on the response of private producers to shocks showed that the conventional wisdom that they would not recognize the temporary nature of a trade shock was wrong: the stylized "fact" of the illiterate peasant producer wasting a windfall turned out to be fiction.[6] As a result of this new evidence the policy consensus favoring stabilizing export taxes gradually eroded.

By then analytical work on trade shocks had begun to focus on dynamic issues: on consumption smoothing, saving and dissaving in response to trade shocks. A key policy question for governments of shock-prone economies was what assets they should use for smoothing. The oil producers had used windfalls in the 1970s for enormous programs of domestic investment with a high non-tradable component resulting in massive construction booms. This had clearly been very wasteful. The new trade shocks literature in development economics suggested that the optimal response to a positive shock would involve keeping windfall savings initially in the form of liquid foreign financial assets and repatriating these slowly to finance domestic investment in real assets.

In this area there has been enormous progress, but this has largely gone unnoticed. The importance of using external assets in managing booms (one of the key messages of the trade shocks research) is now well understood. Indeed, recently many developing countries, notably oil producers, have used this strategy very successfully, by saving during positive shocks. As a result, economic mismanagement in response to trade shocks has now become a relative rare phenomenon.[7] Development economists can take credit for this surprising and very encouraging development.

However, all is not well. Countries with imperfect access to international capital markets cannot easily adjust to *negative* shocks. This asymmetry still presents a formidable problem for some of the poorest, shock-prone economies. Guillaumont and Chauvet (2001) showed that aid can be very effective in this context, an important result that has not received the attention it deserves. It is shocking to reflect that the international community already recognized trade shocks as a policy problem for the poorest countries many decades ago, but that it still does not have adequate institutional machinery in place. Indeed, some very useful instruments, such as the European Stabex scheme, have been abandoned (Collier et al., 1998).

A perennial problem is that it is extraordinary difficult to estimate the likely persistence of shocks.[8] This makes it difficult to decide on appropriate policy responses. The conservative policy rule which served Botswana well ("Treat positive shocks as temporary and negative

5. The seminal work of Newbery and Stiglitz (1981) did much to undermine the consensus.
6. Bevan *et al.* (1989), Collier and Gunning (1999).
7. Ndulu *et al.* (eds.), 2007.
8. Cashin *et al.*, 2001.

shocks as permanent until you have clear evidence to the contrary.") may still be the best we have got.

4. Insurance

We have seen that both the academic literature and the policy discussion on macro responses to shocks were for a long time misguided. This also applies to micro responses, where we have already noted the entrenched belief that shock-prone private agents would fail to smooth consumption. In addition, for a long time there was little discussion of the efficiency of alternative risk coping mechanisms.

In this context three recent changes in the field of development economics are noteworthy. First, it became clear that many existing, usually informal institutions were effective for idiosyncratic, but not for covariant shocks. This raised the question whether private agents, particularly in rural areas, could be given access to higher level risk pooling through formal insurance. Secondly, development economists pointed out that many conventional policies, such as price stabilization, are inefficient, either because they are symmetric (while obviously negative shocks are much more problematic for private agents than positive shocks) or because they impose the same cover to all (while some agents may already have other risk coping mechanisms in place) or both. Thirdly, it became clear that insurance does not only reduce volatility around an unchanged level or trend (the ex post effect) but that it also affects the trend itself by giving agents an incentive to save more or less (the ex ante effect). There now is evidence that this dynamic effect is often positive (insurance leads to higher investment) and large in situations where there are no well-developed financial markets.[9] This suggests that insurance can do much more than helping people to deal with volatility in a static sense: it may also help them to grow out of poverty. This new perspective suggests a much more important role for insurance and partly explains the recent enthusiasm for offering insurance to poor people, typically in rural areas.

This enthusiasm quickly ran into puzzling evidence that poor people often do not accept or renew an insurance contract, even when it is heavily subsidized. There now are at least four competing explanations for low insurance uptake and renewal.[10]

First, agents may simply not understand the contract. The force of this argument is not yet clear since there is some evidence from randomized controlled trials that financial literacy training has little effect on uptake and renewal decisions.[11]

Secondly, the expected utility framework may not be appropriate for characterizing choices under risk. There is, of course, considerable experimental evidence in support of alternatives such as prospect theory. However, it is not yet clear whether these results are externally valid. Clearly, work on this question is important.

Thirdly, if one does accept the expected utility framework then the explanation must be that – contrary to what is assumed in insurance theory – actual contracts do not imply a mean preserving contraction. In the case of index insurance (with a weak correlation between individual outcomes and the index) this is clearly possible. The worst outcome (say a harvest failure for an individual farmer) may then become worse: the agent receives no payout in spite of having suffered a loss (and having paid a premium).

Finally, a private agent may refuse a contract because he is not convinced that it will work in practice as intended. Suppose a micro-insurance program covers the cost of hospitalization in principle but the agent is not sure whether in

9. Dercon (2005), Elbers *et al.* (2007), Pan (2009). The sign of this effect is an empirical issue: theory offers very little guidance (Gunning, 2010).

10. See also my note 'Why Don't They Take It?', FERDI *Note Brève* 42, Clermont-Ferrand, August 2011.
11. Dercon *et al.* (2011).

a specific instance of hospitalization he will indeed not have to pay. This amounts to a compound lottery: hospitalization occurs with a certain probability and when it does there is a positive probability that the agent will have to pay the hospital costs in spite of being insured.[12] Just as in the case of index insurance, the contract may then be refused because the agent's perception that it will make him worse off in the worst case. This is plausible under imperfect contract enforcement resulting from poor legal and regulatory institutions. For example, a hospital may insist on cash payment by an insured patient because of doubts whether the costs will be covered by the insurer. This has an important policy implication: introducing insurance schemes without prior institutional reforms may well be counterproductive. This suggests a fundamental problem: when insurance is most needed it may fail without complementary actions.

Resolving these competing explanations for disappointing uptake is a matter of some urgency: there now is a danger that insurance programs will be scaled down or abandoned in frustration because of low uptake and renewal rates.

5. Conclusion

Risk is not an issue when financial markets are perfect: private agents and governments can then pool risk through insurance or smooth consumption through lending and borrowing. However, in many developing countries the scope for risk pooling is in fact quite limited and access to credit imperfect. Risk then presents a formidable problem.

Remarkably, the macro literature does not provide much guidance regarding the size of the problem. While growth regressions can estimate the ex post effects of particular shocks, e.g. trade shocks or assassinations of political leaders, estimates of the ex ante effect - which is probably much more important - are as yet unconvincing.

Government policies in response to trade shocks such as changes in commodity prices have improved beyond recognition. Private agents are no longer shielded from booms through stabilizing export taxes and many governments, notably those of oil producing countries, have learned to avoiding wasteful construction booms by holding windfalls savings temporarily in the form of foreign assets. Policies for dealing with negative shocks, however, lag behind. Sovereign borrowing is an important tool for shock-prone economies but the number of countries with capital market access is still limited, notably in Africa.

Micro-insurance programs have been pushed enthusiastically in Africa, in part because of important new micro evidence that risk reduces growth: insurance would therefore not only stabilize consumption but it would also help agents to grow out of poverty more quickly. The reception of even heavily subsidized insurance programs has, however, often been lukewarm and the reasons for this are not yet well understood. One explanation is that under weak legal systems insurers lack credibility. This suggests that insurance requires a prior investment in institutions to ensure credible contract enforcement.

12. Dercon *et al.* (2011). The compound lottery model goes back to Doherty and Schlesinger (1990).

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