

THE ECONOMIC IMPACT OF AIDS: AN 'ORGANIC, DYNAMIC, CREEPING' DISASTER

A paper to be presented at

VIIIth International Conference of AIDS in Africa
Yaounde, Cameroon
December 1992

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Introduction

I have been asked to write about the economic impact of AIDS in Africa. I approach this subject from a background which combines a long-standing interest in the process of development with the needs of international business to understand the countries and societies where they operate. That has brought me into corporate planning and the use of scenario analysis to anticipate the nature of the business environment so that a company can respond to it effectively. It is an approach I will be using here to examine the possible economic impact of AIDS in Africa.

One of the principle reasons for using scenario techniques is that any attempt to consider the consequences of AIDS is, inevitably at this point, an exercise in hypothesis and speculation. This is true first because of the major uncertainties about how far, where, and when the AIDS epidemic will spread, and secondly because 'economic impact' is a relatively new subject for thought and study. I will, therefore, first make a few general points about the nature of the development process, stressing in particular the social foundations of economic growth. Second, I will look at the AIDS epidemic in the context of the development process. Third, I will then consider two particular examples of economic activity: a notional family farm in Uganda and a notional West African banana industry. Here I will postulate what kinds of interaction may occur between the specific economic activity, the spread of the epidemic, and the development process itself. I will conclude with three scenarios of how the epidemic might affect an African country's economy and general development over the course of ten-twenty years.

Social Foundations of Economic Development

There is a widespread perception that development has failed in many parts of Africa. Yet this is only partially true, since development is a complex phenomenon involving both social and economic change. In fact, in spite of the economic stagnation witnessed in Africa, society has moved on in several important ways since Independence. If we look at Figure 1, we see that even though Africa is less developed than other regions of the world, and even though GDP per capita has actually declined since 1970, more and more people can now read, more men have left agriculture to work in other areas, and more people are living longer lives. Literacy, the percentage of men in agriculture, and life expectancy are three important indicators of development and the statistics in Figure 1 give evidence of African societies which are more dynamic and successful than the economic figures alone would suggest.

Of even more importance is the overall relationship between social and economic change. The graphs in Figure 1 show that improvements on various measures of social development occur gradually and roughly in parallel. As a result, when social indicators are plotted against life expectancy we see school enrolments rising, infant mortality falling, and literacy increasing throughout the population in a steady measured way as life expectancy also improves. However, economic indicators (like GDP per capita) show little change in their performance until a fairly high level of life expectancy has been reached, somewhere around 68 years, after which they improve rapidly. These two processes can be summarized in a Double-S Curve of development, where social change proceeds gradually, while rapid economic growth only occurs once a given level of social development has taken place (Figure 2). In this conception, the most rapid economic growth occurs when the social foundations are considerably more advanced than the GDP. We tested this idea in 1984 by

sorting countries into groups according to their 1970 levels of health and education compared to their 1970 level of GDP per capita. Where health and education were considerably more advanced than GDP per capita, the growth in the following decade was very high, as shown in Figure 3. This allowed us to conclude that health and education are "pull factors", facilitating rapid economic growth.

However, as anyone living or working in Africa can tell you, it is not enough to have stronger social foundations without sound economic policies. In the first instance, such policies need to make life in rural areas attractive enough to people who are better educated. Secondly, where people are leaving the land, policies need to encourage the development of labour-intensive industries which can absorb the new work force. Third, wise macro-economic management of exchange rates, the value of money and government spending needs to be ensured for any programme to succeed on a durable basis.

So far, many African countries have failed to achieve this 'development ideal' of sound economic policies and strong social foundations. Here, however, I would stress another important aspect of the process: sensible political development. It is my own feeling that for effective change to take place, a nation needs three important political skills, which are difficult to find any society: 1) the capacity for political agreement, even when opinions differ; 2) the ability to think in terms of the whole population, rather than one's own interest group; 3) the ability to think long term, rather than simply about the rewards for today. Much of the troubled history of African countries since Independence can, I believe, be seen as a search for the political skills required for new nations to grow. As these political skills increase, the capacity to make sound policy is also likely to improve.

It is important to remember, however, that even when the best policies are in place and there is a wide popular support and political ability, development is still a chaotic, disruptive and confusing transition from one kind of social and economic organisation to another. As such, many of the characteristics of development in general and of Africa's history in particular are likely to encourage the spread of AIDS. By the same token, we must remember that within this chaotic transition, one can also find the strengthening foundations of a different social and economic organisation. Many of these - like better health and education - will help us to slow the spread of the AIDS epidemic and will help African societies as a whole to learn quickly how to manage the disease and its consequences effectively. So what I would like to look at next are some of the specific driving forces acting to influence the course of the epidemic.

Development and the AIDS Epidemic

It is self-evident that in order to understand what the impact of the AIDS epidemic might be on African economies, we need to estimate first how far the disease will spread. At its simplest, we know that the virus enters a population unseen and can multiply invisibly for a number of years. We also know that it does not hit the whole population evenly at one time, but first targets high risk individuals who then 'seed' the virus into the rest of the nation. There are several major uncertainties, however. First, we do not know how large the high risk group is. Second we do not know how much interaction there is between the general population and those who are at high risk of infection. Third, since the spread of the disease in the heterosexual population is largely determined by individual behaviour, there is the possibility that the epidemic can be controlled by altering that behaviour. But there is considerable uncertainty here whether we can learn quickly what should be done, and then act on what we know.

Driving Forces: Spreading AIDS

In writing this paper, I found myself trying to imagine all the factors that encourage high risk behaviour amongst men and all the factors which encourage high risk behaviour amongst women. I have summarised these in Figure 4, but there are no doubt many other factors which each of us could name. First, we are all of us, in all societies, subject to impulse. There are inevitably times when we respond to the 'Heat of the Moment',

allowing common sense and prudence to be overridden by more complicated instincts. But in Africa there are also a number of additional 'development' factors which facilitate the spread of the disease. If we consider the 'Surrounding Social Framework' there is the fact that the traditional social structures supporting an individual weaken under pressure from development changes, even though traditions of exchange in sexual behaviour may survive. Many of these same changes mean that groups are not as isolated from each other, village from village, city from countryside, etc. As a result, sexual relationships occur in a wider network than would have been the case in more stable societies. There is also the fact that in many African countries in recent decades it has been difficult to hold open political discussions about the issues of the day for fear of political persecution. This lack of openness makes it hard to talk about HIV and AIDS, a discussion which is further stifled by our normal, understandable reticence concerning such a personal matter as sexual behaviour.

In addition, we know that many government budgets for primary health care have been meagre and even reduced in recent years. As a result 'Poor Health Care and Health Education', not only allow endemic diseases to continue to spread, but these in turn may lower the resistance of people to HIV and certainly can accelerate their progression to AIDS. The lack of good public health education, also makes it difficult for those who are at risk from the HIV virus to appreciate fully the medical consequences of their action, or to know what safe and affordable alternatives exist. 'Economic Factors' are also important. As people become better educated, they also tend to become more mobile in search of the best use of their new skills. Bad rural policies, as noted earlier, further drive people off the land and into towns where they may not actually be better off. More basically, a weak economic infrastructure means that condoms are poorly distributed and badly stored. They can also be extremely expensive; one figure I read said that in Africa the price could be equal to 30-40% of annual earnings, effectively putting this form of protection out of reach of many people. Finally, there are a number of 'Economic Factors Affecting Women', in particular, leading to a situation in which sex and/or unprotected sex may be the best way of ensuring immediate material survival. This is particularly true of women who lack education and skills and are trying to survive in a society where there are very few occupations available or open to them. As a result, they will need to secure a man's affection and support, but will lack the negotiating strength of an independent income to argue for protected sexual relations. Where AIDS has hit a woman's family, the need for income will be that much greater and the woman therefore that much more at risk of spreading or contracting the disease.

All of these fairly specific factors encouraging high risk behaviour and the spread of AIDS are nearly all exacerbated by a variety of high risk conditions: drought and natural disasters, war and civil unrest, economic stagnation, and (ironically) improved transport, among others.

Driving Forces Slowing AIDS

If these are all forces which are likely to encourage the spread of AIDS, there are an equal number of factors which can slow it down. The growth of civil society, including open political discussions, better newspapers and radios, the growth of churches and supportive religious communities, can all help reduce the epidemic. So will better education for men, women and children, and better primary health care, family planning, and the treatment of both endemic and sexually-transmitted diseases. To the extent that a large portion of the population is able to participate in and benefit from strong economic growth, then the pressure on women to engage in high risk sexual behaviour will be reduced. Finally, it will be easier for these factors to develop and function where a country has enjoyed good weather and harvests, and has developed a capacity for political agreements. This in turn will encourage peace and stability and make it possible for sound economic policies to be implemented and sustained. Therefore, even though much of the recent history of African states causes us to despair that times and conditions will ever improve, progress, good luck and good policy are still possible. Therefore, the general spread of AIDS is not an inevitable and forgone conclusion, as there are both kinds of factors at work: those which spread the disease and those which

slow it down.

What Sectors? How? In What Order? With What Reaction?

In addition to these contradictory driving forces affecting the spread of HIV/AIDS, it is not at all clear what sectors of society and the economy will be hit first by the disease or how serious will be the loss of people, skills or scarce financial resources in any sector. Nor can we assume how individuals, groups or organisations will react to AIDS or the threat of AIDS. For example: if, as seems likely, the disease spreads first in the army and police force, what will be the consequences? Will governments double their investments in security forces to cover the predations of illness and death? Or will they reduce their investments in the armed forces leading either to a breakdown of public order or an increase in social cohesion and self-disciplining structures? Might we even see a transfer of money to social investments? And who will be affected in the forces? The officers with their expensive education and skills? Or the foot soldiers who are more easily trained and replaced? Or both? If we look at economic activities, will mines and plantations with their migrant labour be hit by the epidemic sooner than small farms and businesses? Or will the management of the larger operations recognise the dangers of AIDS and act early to control the spread of the disease? The fact is, we do not know how governments, managements and individuals will react to greater knowledge and understanding of HIV and AIDS. What can safely be said, however, is that because the HIV infection creeps through a population slowly from high risk to lower risk groups, and because the disease itself takes at least seven years to manifest itself, the nature of a country's reactions throughout this period will shape the influence of the disease on the wider economy and social structure.

First Example of Economic Activity: A Notional Family Farm

With these general considerations in mind, I would now like to turn to the first example of economic activity: a notional family farm in the Rakai district of Uganda. This example is taken from the book published earlier this year by Tony Barnett and Piers Blaikie *AIDS in Africa: Its present and future impact*. During fieldwork in Rakai in early 1989, the authors interviewed people from about seventy families. Twenty percent of these families had been affected by AIDS, either directly through the death of a family member, or indirectly in some fashion. Based on these interviews, the authors developed a composite description of what happens in a household as the disease infects various family members. This composite history, "Incremental AIDS deaths within a household", is visualized in an illustration taken from their book (Figure 6), and traces events from 1980 to 1989.

The Story of a Notional Household

The household in 1980 had nine members: mother and father, five younger children living at home, and two older sons working elsewhere and sending back occasional remittances. The crops were quite diversified and include annual food crops, bananas, and coffee. The farmer was also able to employ two casual labourers to help with the weeding and to use pesticides and herbicides to increase yields.

The young men working away from home were the first to fall ill and die from AIDS. With the loss of their remittances, the farmer was no longer able to afford the casual labourers or to take advantage of chemical treatments for his crops. The younger children took up the workload, but the annual crops were replaced by cassava which is less nutritious, but requires less labour. When the father became sick, the oldest daughter was taken out of school to help at home and household expenses rose as the family looked for a cure to the disease. With the shortage of labour, the banana crop was neglected and the coffee, with its cash earnings, was abandoned. The cultivation of cassava increased.

When the father died, further expense went on his funeral, more children were taken out of school and the youngest child went to live with his grandparents. By this time, the mother was also ill and died two years later, leaving the four children remaining at home

to cultivate what they could or to earn spare cash by working as labourers for other households. As the authors cryptically put it, "Clothing and food for survival becomes a problem." In nine years, four out of nine people in the household had died of AIDS, a 44% infection rate, and a devastating personal catastrophe.

National, Long Term Consequences

As a story, this is an almost unimaginable tragedy, none of us would want to experience. But there are also wider, long term consequences which could, if this history were repeated in a large number of families, have a serious impact on the nation as a whole. There is first the fact that as families become less self-sufficient, the need for public support becomes greater, even though the government may not be able to provide such succour. Second, as the coffee crop is abandoned, the cash income is not only lost to the family, but the foreign exchange earnings are lost to the national accounts. Third, there is a substantial lost "development investment" as children, whose education had been privately financed by their families, are taken out of school and never find a way to go back again. There is another lost 'development investment' in the increased malnutrition of all family members who are thereafter more susceptible both to the traditional endemic diseases like malaria, TB and diarrhoea, but also possibly to HIV infection and the earlier onset of AIDS. This nutritional loss could further extend to the cities if the diversified food crops were no longer being sold to the urban areas in large quantities. Finally, as land is taken out of production, it will either be abandoned and return to bush, or it may be redistributed to the wealthier families in the district who have been less affected by the AIDS epidemic, causing a change in land tenure patterns and rights. With a simultaneous shortage of labour, we might further see an increase in mechanised agriculture.

There was, however, another interesting development in the district which Barnett and Blaikie reported; namely, the growth of more supportive relationships among men and women as they struggled to understand the disease and its impact on their lives. This was often expressed in groups gathering together for comfort and support, or the unannounced visits of neighbours to help with household chores. In addition, there was a growth of local non-government organisations acting to ameliorate the consequences of the disease. These two developments of mutual support and local organisation suggest that one result of the epidemic may be to change local political and social organisation leading in some cases to greater strength as village institutions learn to manage collectively a major creeping disaster.

A Bit of Perspective

All that being said, however, we need to recognise that this notional family does not represent the whole of Uganda's society and economy. Rather, it represents less than a fourth of 70 households from a district which has been among the first to suffer the ravages of a previously unknown disease. More broadly, the authors surveyed 129 families in the area and compared the behaviour of those households which had been affected by AIDS to those which so far were untouched. They concluded that

"... by 1989/90, AIDS had not yet ... dwarfed the many other adaptations households make all the time ... to other rapid processes of socioeconomic change." but then added "... we believe that in certain localized areas, AIDS is beginning to be the major determinant of socioeconomic change and ... may be expected to spread to other areas in the region within five years."(p. 102)

Second Example: A West African Banana Industry

The work by Barnett and Blaikie considers the local impact of AIDS in a district where the disease has been able to spread widely before people knew what it was or what it would do. This second example assumes a situation where HIV is not yet well advanced. It also represents a larger, more complex economic organisation. It is based on my 1982 PhD fieldwork when I was studying the role of a multinational company in agricultural

development and did a case study of the banana industry in a West African Country. The industry since then has no doubt evolved in new directions, so I offer this as 'notional banana industry' rather like our 'notional Rakai family', not representing any particular experience, but simply sketching the major elements involved in this kind of agricultural industry.

A Description of the Industry: Sequence of Tasks

Figure 7 shows the sequence of tasks from field to final sale. Because bananas are a relatively tender fruit which are sold fresh in European markets, they require considerable care and attention. Much of this is fairly labour-intensive as the fruit needs to be fertilized and sprayed against disease on a regular basis so that quality and quantity are maintained. Furthermore, the fruit needs to be harvested, packed and transported to refrigerated ships in the shortest possible time - 24 to 36 hours as a rule - so that it is not overripe by the time it reaches the stores in Europe. Overall, these characteristics of the crop and its market mean that a fair degree of military discipline and timing is needed to ensure a competitive, economic return on the crop. It is therefore a business that requires both an unskilled, but trained labour force and a group of people with more specialist skills: pilots for any aerial spraying, an agricultural research station to develop new methods and treatments, and a coordinated management which can achieve the timely execution of all vital tasks.

Finally, an interesting feature in this case, is that the fruit produced is included in a quota system of franc zone producers from other West African countries and the West Indies. In 1982, the country's quota was for 13% of the market in Europe. If not enough fruit was produced to fill that quota, the other franc-zone producers would try to make up the difference. If they failed, bananas produced in 'dollar zone' countries like Honduras and Costa Rica could enter the European market. As a rule, when I was studying this industry, dollar zone fruit was of a consistently higher quality and sold at a lower price. In a free market, therefore, the franc zone bananas were unlikely to compete with the dollar zone fruit and there was considerable pressure on all franc zone producers to maintain their quotas to keep the dollar zone fruit out.

Another aspect of this industry, which becomes important later in our discussion of AIDS, is that in 1982 it was not owned and managed by a single corporation. Instead there were a number of different owners and producers and a government banana bureau which had a large measure of overall responsibility for the trade and its management. Unfortunately, the government bureau was not effective at meeting these responsibilities, partly because many of those in the banana bureau were political appointees who tended to refer decisions to the capital city, rather than responding to the needs of the trade. As one person put it to me, "The banana has no time for politics." With this lack of timely managerial direction, there was little long term investment in the industry and the quality of fruit was often very poor while the quantity produced was unreliable.

Possible Impacts of AIDS

In considering ways that AIDS might affect this industry, I realised that if management or individuals adopted defensive behaviour before the virus had spread -- so that for example, lorry drivers moving the fruit to port learned to use condoms routinely and did not become carriers of the disease, or an early programme of education and awareness was undertaken among staff in the fields and packing stations -- then much of the possible damage of the epidemic could be managed and contained. However, if the disease did spread into the wider labour force, then there was likely to be increased illness, absenteeism and death, leading to a higher labour turnover, less reliable skills, a less productive workforce generally, and reduced yields and quality of fruit.

Similarly, if skilled staff -- such as pilots, aircraft maintenance staff, the government officer purchasing pesticides and fertilizers, research station staff and the government officer responsible for coordinating the cutting and shipping of fruit -- learned to protect themselves against AIDS at an early stage, then here again, damage caused by the

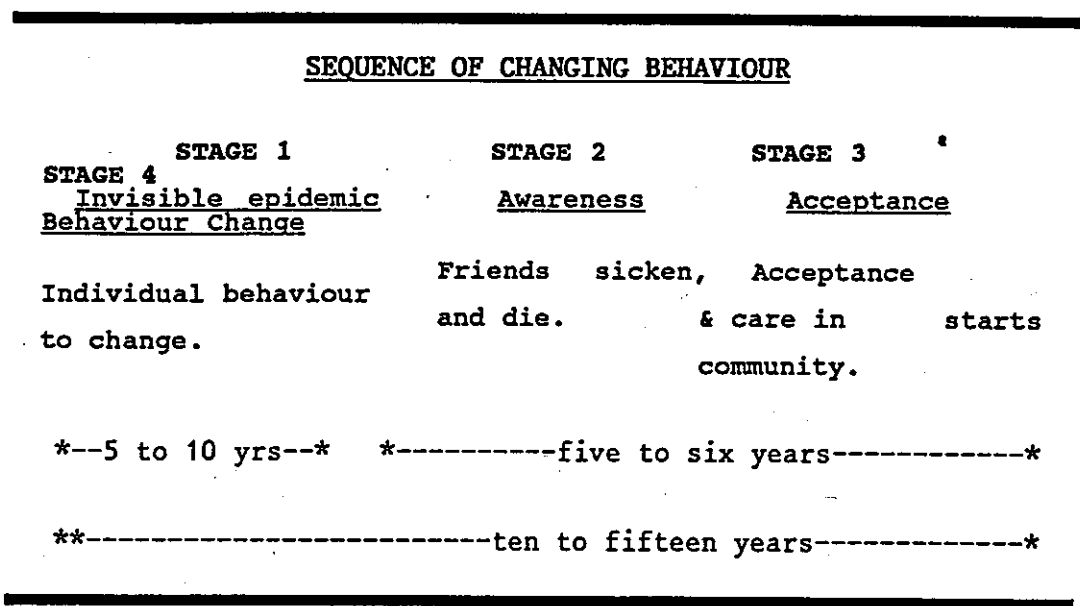
disease would be limited. However, if one of the pilots, for example, missed a spraying because he was ill, then production would decline a predictable number of months later. Or if fertilizer supplies were not made available at the point in the growing season when they would have the strongest effect, then production and quality would suffer. If the research staff began to lose work because of illness, there would be less time to look for new ways of improving quality, production and reducing the environmental damage of plantation agriculture. It is also possible to imagine the person in charge of shipping, falling ill after having issued an order to cut the fruit, but before ensuring that a ship would be available to take it on. That could result in a crop being harvested, but not shipped or sold. It should be noted, that many such problems were occurring when I did my fieldwork ten years ago, but AIDS would make it more likely that such mistakes would occur more often. Such a situation would therefore only exacerbate the difficulties of an already troubled industry.

If we consider the situation more broadly, a high rate of infection in society generally could well mean that both public and private funds that might have been invested in improving the business, would go to the increased costs of health care or training replacement staff. As a result, there would be less money for research and field trials, less money to offer loans to producers wishing to install irrigation systems, less money to improve roads, railways and port facilities. In the absence of such investments, the bananas from this country would become less and less competitive with fruit produced both in the franc and dollar zones.

Possible Responses and Perceptions of Self Interest

Experience so far shows that ten to fifteen years might pass between the time the virus enters a population and people's behaviour begins to change. Figure 8 shows that this process goes through four distinct stages before individual behaviour begins to change. Only once people have accepted that the disease exists and that its victims need care and acceptance in the community do individuals begin to modify their own habits. The challenge facing all of us is to accelerate this process, so that individual behaviour changes before the disease is able to spread.

Figure 8:



In considering this problem I tried to imagine how the leading players of our notional West African banana industry might react, and divided them into the following groups, largely based on the acreage they manage or own.

<u>Ownership</u>	<u>% of Banana Acreage</u>
Private European planters	56%
Government banana bureau	22%
Government/multinational co. joint venture	15%
African businessmen	6%
Agricultural research station	1%

I thought it was unlikely that the Private European Planters would do anything, since nearly all of them expected to retire in Europe. Because they had no long term interest in the country, I imagined that they would either wait for the government to take the lead in combatting AIDS, or they might decide to sell out to the highest bidder, e.g. a major multinational not yet working in the country, or one of the other players in the local banana business. The Government Banana Bureau, which had responsibility for managing the trade and for managing 22% of the land which had previously belonged to small holders, had a clear responsibility for taking up the issue of AIDS. Yet, the office had few resources of management or finance and was often more driven by political objectives than managerial ones. However, a minimum of inspired leadership from the bureau could be crucial in mobilising the other players in the business, and it is possible to imagine a single strong individual shifting both the trade and its response to AIDS in a creative, proactive direction.

Another potential source of leadership was the Government/Multinational Joint Venture. It had the best managerial record in the local banana business and its articles of association included a large measure of social responsibility. Furthermore, if the head

office of the multinational partner were to encourage the development of farsighted AIDS policies (as some companies are doing), then its influence in the banana industry could be considerable. My imagination did not, unfortunately, see any of the African Businessmen taking the lead, although some of them may see the wisdom in following the lead of others. They may also, more acquisitively, see the epidemic as an opportunity to increase their own holdings as other players pull out of the trade. Finally, the Agricultural Research Station was already involved in the management of the land controlled by the government banana bureau and in spite of its tiny acreage could act as an effective lobby for more enlightened policies in government and in the trade. I also thought it would support any coordinated efforts to slow the spread of the epidemic and, as it worked under African management, could act as an effective political link between the African and expatriate players in the business.

Post-Epidemic Consequences for the Banana Industry

The variety of interests in the banana trade argues that there is a strong possibility that there will be no effective response from the industry to the threat of AIDS and that the epidemic will therefore spread unchecked. However, there are forces in the trade who might decide to develop a strong, coordinated response to the disease. If that happens, the industry could survive relatively unchanged or, most optimistically, it might even survive with improved management and a stronger business generally.

If, however, the epidemic is allowed to spread, then it is very likely that some of the major players will sell out. This will lead to a more concentrated ownership of land and management (possibly in a multinational company which would, however, be wary of such difficult conditions) and it would very likely mean a change of crops from the relatively labour-intensive cultivation of the banana to something simpler. This process of selling out will no doubt take place as the industry as a whole declines, resulting in an increasingly frequent failure to meet the production quota and eventually a withdrawal from the franc zone banana trade. As the banana industry fails in this country, the other franc zone producers will need to increase their own production. If they are unable to do so, then the franc zone quota system will collapse, leading to increased competition from dollar zone fruit and considerable short term economic stress for the other protected producers of the system living elsewhere in West Africa or in the West Indies.

A Bit of Perspective

So far as I know, all these possibilities are still only hypothetical. HIV infection has not reached the levels seen in the Rakai District of Uganda and there is still time for an effective coordinated response from the players in this particular trade. What this example also shows us, however, is the range of possible responses that could be made to the epidemic or the threat of an epidemic. Some of these responses are clearly required from government and public bodies (as shown in Figure 5). However, it is clear from the example of our notional banana industry, that businesses and other organisations can also influence the course of the disease.

In Conclusion: Three Scenarios of the Economic Impact of AIDS

By way of summary and conclusion, I see three simple scenarios of how AIDS might affect a national economy. In the First Scenario, there is an early effective response from both the public and private sectors to the threats of the disease. As a result the incidence of HIV/AIDS is isolated and absorbable. There will, in that case, be minimal disruption to the economy and continued development. There might even be a stronger development base than existed before the threat of the disease was tackled, as the political and social skills required to combat AIDS are the same skills required for sound development.

In the Second Scenario, the virus enters the population, but hits some sectors harder than others. This selective epidemic raises the alarm and forces groups which had earlier ignored the disease to react and begin effective containment policies. In this scenario, there is a forced pace of rapid learning and the reorganisation of institutions and

enterprises. Development is disrupted, but the nation is able to pick up the pieces and recover.

The Third Scenario assumes an epidemic that is allowed to spread unchecked. Conditions of war, famine, drought, etc, could bring on this scenario. When AIDS appears after an earlier spread of the invisible HIV epidemic, its appearance will seem massive, sudden and traumatic. It is entirely possible that societies suffering this fate will find it extremely difficult to recover and reorganise. A continued period of decline, disorder and retreat could follow.

There is among planning and policy professionals an argument about the value of scenarios. Some say that they are a useless exercise because managers need to know what is going to happen so that they can plot their course accordingly. At the very least, these alternative futures should appear with probability numbers next to them. But the fact is, we cannot accurately predict the future, especially in an area like this which is incredibly complicated and full of unknowns and great uncertainties. However, by telling ourselves different stories of what the world might do, we can begin to imagine what our response might be. As that happens, there is less likelihood of being taken by surprise, since our 'learning' has already begun.

So, in my view, any of these scenarios (as well as others we could build) is possible and as countries react differently to the threat of AIDS they will probably experience very different levels of economic disruption from the disease. But this exercise should have brought home to us, even though we knew it already, how important it is to learn as quickly as we can what it takes to confront this epidemic and slow it down.

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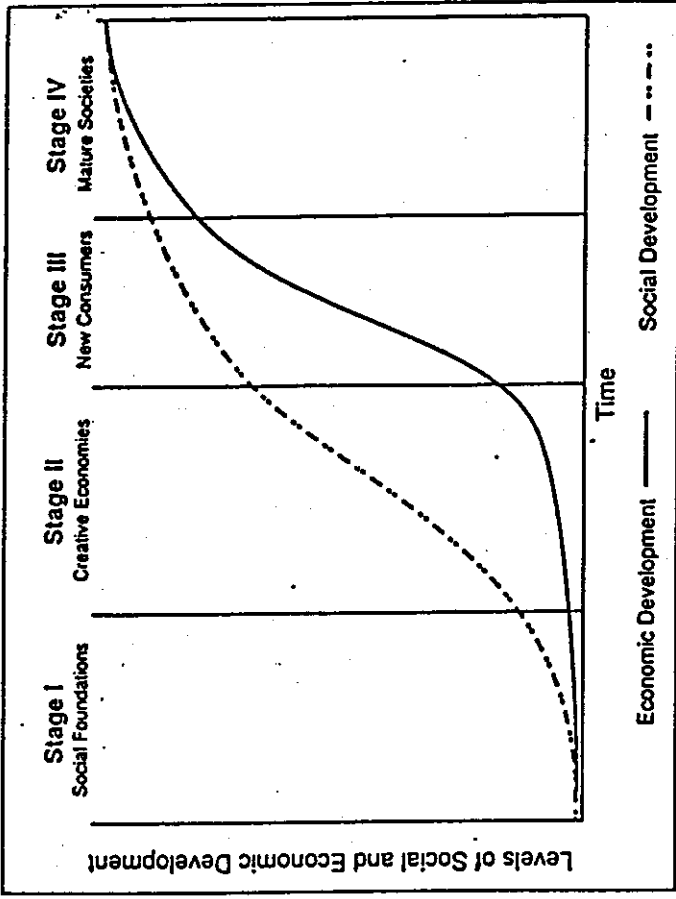
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Figure 2



Double-S Curve

Figure 1: Indicators of Development vs. Life Expectancy

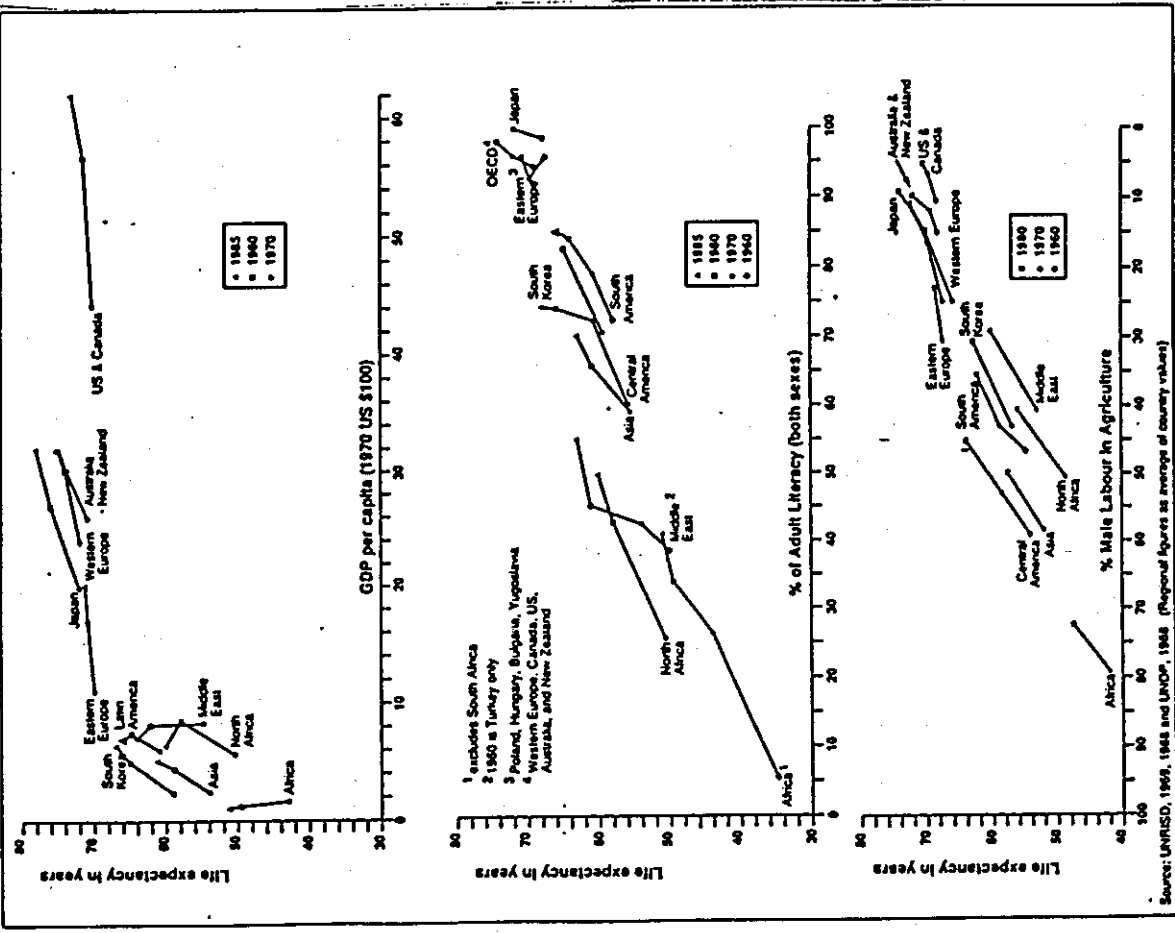
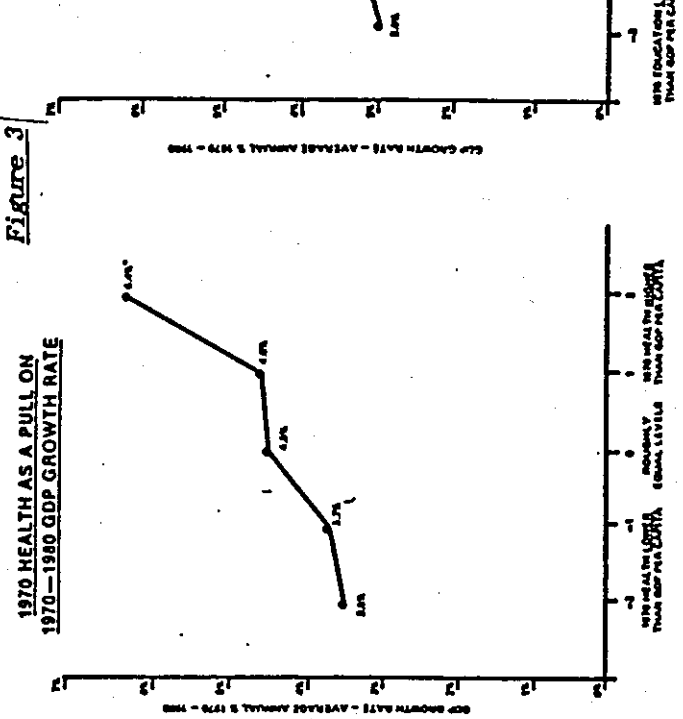
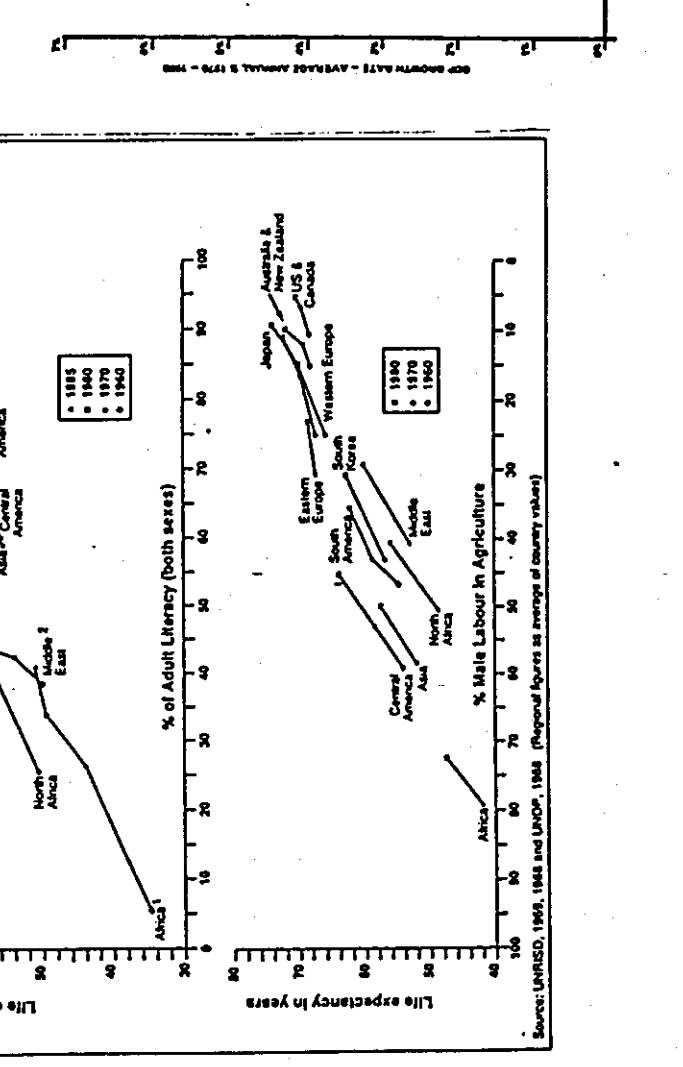


Figure 3
 1970 HEALTH AS A PULL ON
 1970-1980 GDP GROWTH RATE



1970 EDUCATION AS A PULL ON
 1970-1980 GDP GROWTH RATE



* EACH POINT REPRESENTS THE AVERAGE FOR A GROUP OF COUNTRIES, WITH AROUND 10 COUNTRIES IN EACH GROUP.

Figure 4: FACTORS ENCOURAGING HIGH RISK BEHAVIOUR

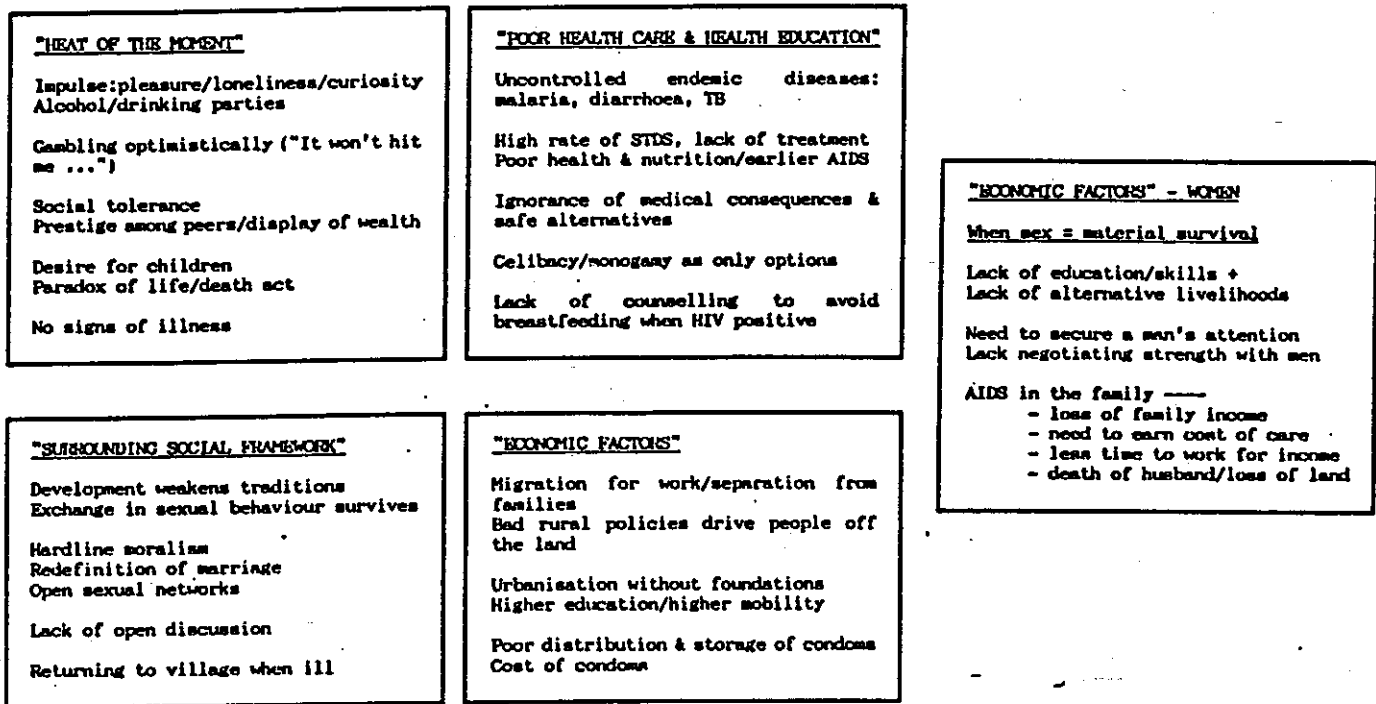


Figure 5: DRIVING FORCES of THE EPIDEMIC IN AFRICA

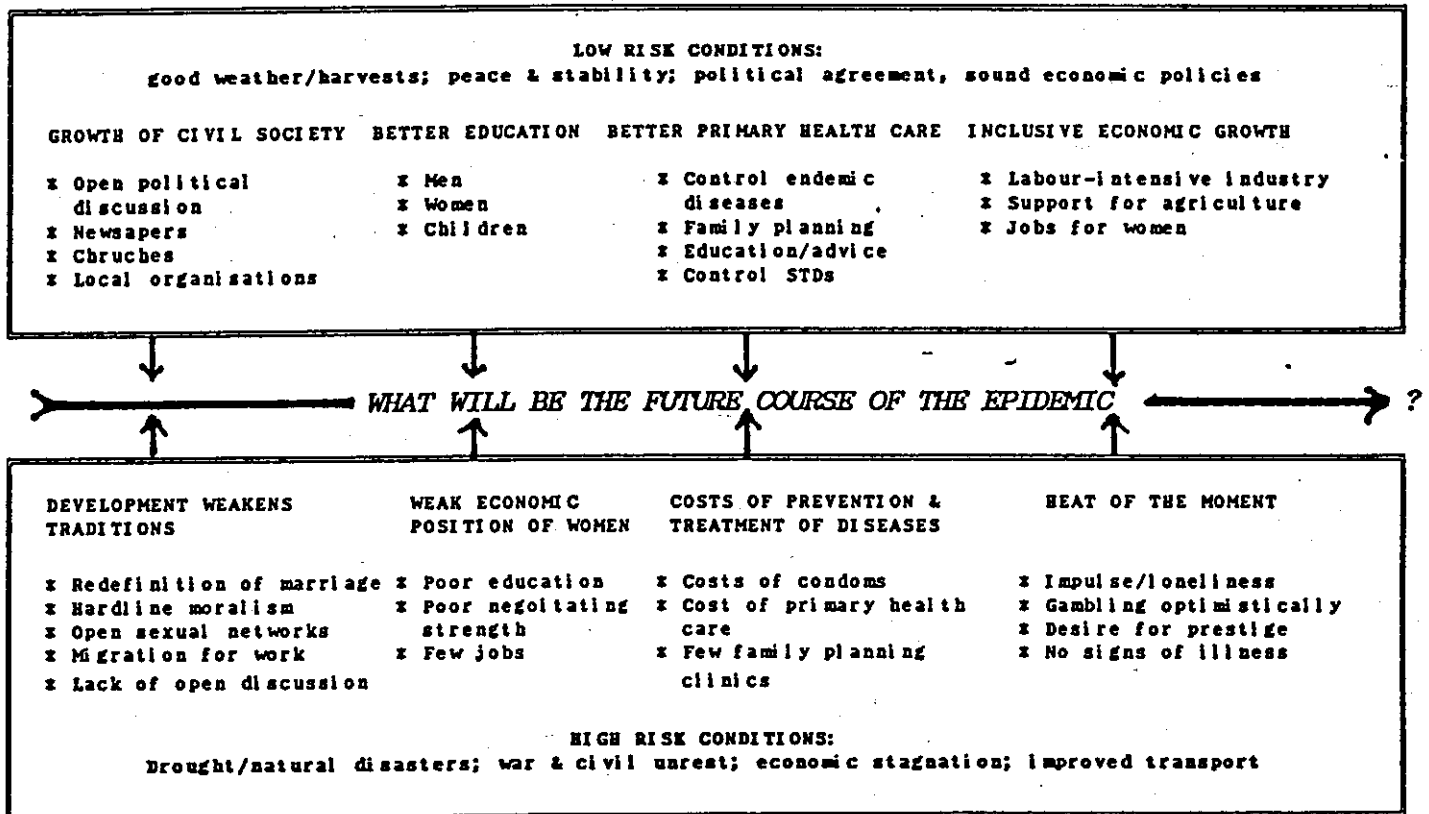
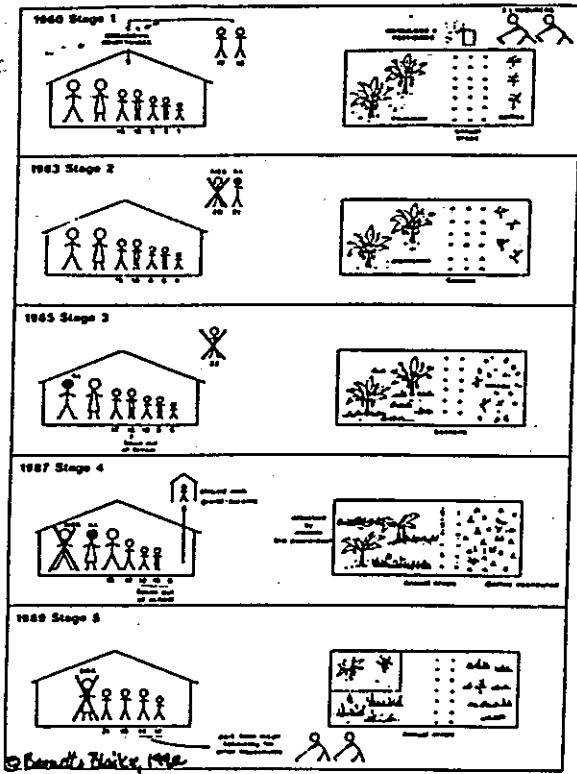


Figure 6: FAMILY COPING IN RAKAI, UGANDA, 1980-89



National family, based on survey of 69 households in 1989, of which 20% affected by AIDS

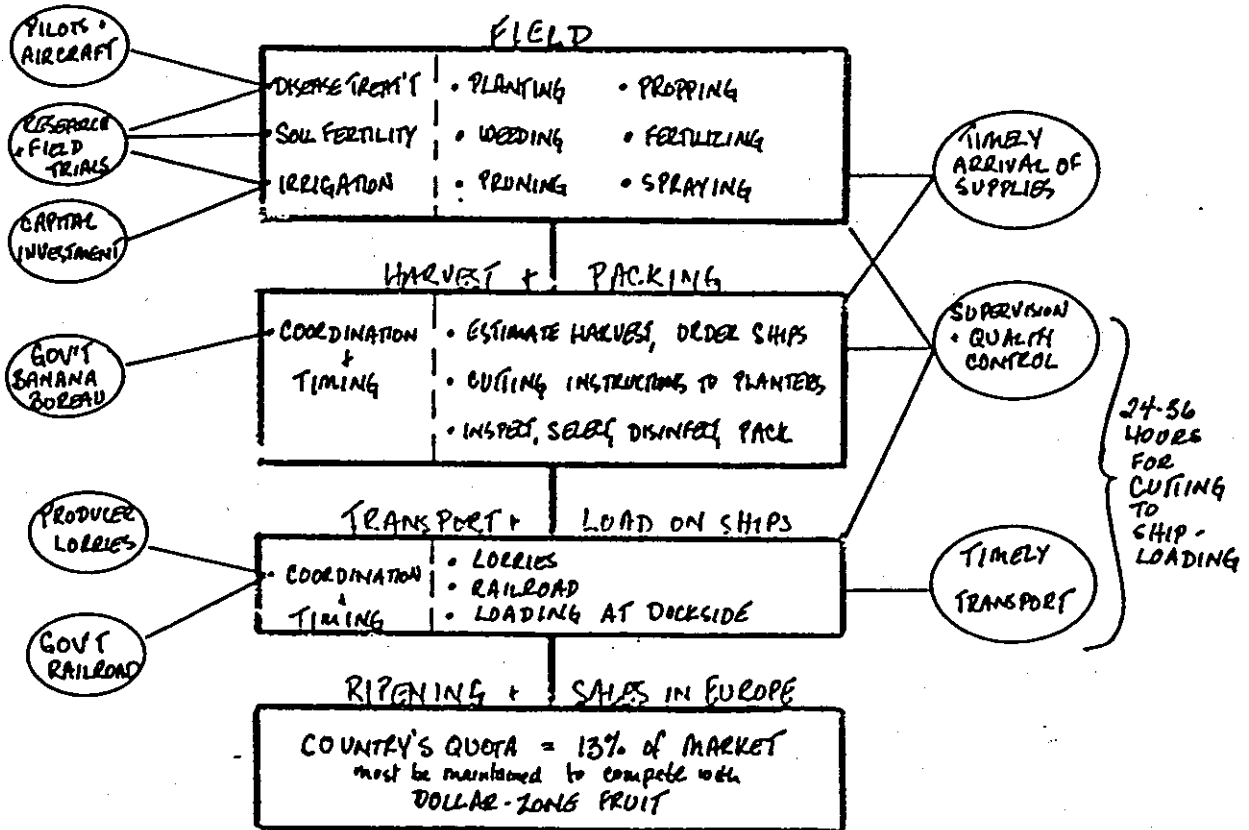
CONSEQUENCES

- | <u>Family Level</u> | <u>National Level</u> |
|---|---|
| 1. Reduced income + increased expenses | 1. Need for public support |
| 2. Cash crop income first reduced, then lost | 2. Lost foreign exchange earnings |
| 3. Children taken out of school | 3. Lost 'development investment' in education (self-financed) |
| 4. Reduced diversity of food crops
a. lost income
b. malnutrition
c. increased susceptibility to disease | 4. Reduced circulation of food crops
a. urban malnutrition
b. lost 'development investment' in health |
| 5. Land abandoned or redistributed | 5. Change in land tenure patterns
Increased mechanised agriculture? |

Local Level

1. More supportive relationships
2. Growth of local self-help organisations
3. Change in local political & social organisation leading to:
greater chaos? or more strength?

Figure 7: 1982 REQUIRED TASKS: FRANC ZONE BANANAS



MILITARY TIMING = HIGH QUALITY PRODUCE

