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Elements of a Poverty Reduction Strategy for Guatemala

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Guatemala is a lower middle income country by world standards, but the incidence and the intensity of poverty is comparable to that of the very lowest income countries (World Bank 2000). Guatemala maintains the third highest degree of income inequality, with only Brazil and Pakistan showing higher rates of inequality among all low to middle income countries (World Bank 2000). The level of poverty in Guatemala, like Nicaragua, is the second highest in Central America at 68% in 1994, after Honduras which shows 73% (IFAD 1999). In Latin America and the Caribbean, Guatemala is the third most impoverished nation, with Haiti and Honduras showing higher rates (IFAD 1999).

The 1996 Peace Accords give urgency to reducing that poverty, particularly in the highland areas of high concentration of Mayan people. And yet, Guatemala faces extreme difficulty in reducing poverty because of the unequal distribution of income and assets. Widespread statistical studies, supported by well developed theory, show that under such circumstances growth is slow and what growth occurs tends to reduce poverty very little (Deininger and Squire 1996, Ravallion and Datt 1996, and Timmer 1997).

Fortunately, the highland areas offer a special potential for rapid reduction in poverty. Given the general intractability of poverty in Guatemala, it is essential that poverty reduction efforts take full advantage of that opportunity. This paper presents the outline of a poverty reducing growth strategy for the highlands that is consistent with well documented experience in poverty reduction from a large cross section of countries (Mellor 2000a, Lipton and Ravallion 1995, Timmer 1997). The Annex presents a numerical statement of the poverty reduction components for the

* This statement was prepared on short notice as a preliminary thought piece as in input into thinking about poverty reduction in Guatemala. While the broad outlines of the presentation are consistent with experience in a wide range of developing countries, backed by careful statistical studies, the details for Guatemala require considerable further analysis and development. The author hopes that this presentation will move the analytical process along in a useful manner. Many thanks to Moira Chiong for help on data, references and presentation.

highlands.

Because of the sharp regional differences in the context of poverty in Guatemala, a poverty reduction strategy must be quite different for each region. While this paper emphasizes the highlands as an area of particular importance in the context of the Peace Agreements, and of particularly large potential for poverty reduction, the strategy must be spelled out in greater detail for each region. In addition, if the approach seems useful the strategy must provide specific priorities and sequences for action and numerical targets for monitoring implementation. In that context, all elements of the strategy would be examined in great detail and many modifications are likely. Thus, this paper is a preliminary statement. Further, considerable improvement will be needed in the quantification of the strategy and the details of its implementation. The Annex is a first attempt at that, but is limited by the paucity of data that is specific to agro-ecological zones.

BACKGROUND

The broad conditions for poverty reduction are particularly unfavorable in Guatemala. However, specific opportunities in the highlands are substantial and a good start is already in hand for the necessary institutional development.

The Interaction of Income Distribution, Growth, and Poverty

Several studies from the World Bank's research department and elsewhere confirm that growth slows in countries with highly unequal income and asset distribution (Birdsall et al. 1995, Ravallion 1996, and Timmer 1997). Consistent with that, Guatemala rarely achieves a GDP growth rate higher than four percent per year. Many lower middle income countries achieve growth rates over eight percent. Even low income countries such as India achieve six to seven percent growth rates for considerable periods of time.

Even more unsettling, while growth does reduce poverty, it does so very efficiently in countries with relatively equal distribution of assets and income and very inefficiently in countries with very unequal distribution of assets and income. A given growth rate reduces poverty only half as much in countries with Guatemala's income distribution as compared to the countries with the most equal distribution of income (Deininger and Squire 1996).

Because tax receipts are an unusually small proportion of GDP in Guatemala, poverty cannot be substantially reduced through social programs alone. Indeed, rapid reduction in child mortality and

expansion of primary education will move large numbers of people onto the job market in 15 years time. It is only rapid, poverty reducing growth in employment that can prevent an explosive political problem. In contrast, with rapid growth in employment, the demand for healthy and educated employees will substantially outstrip current rates of growth for such labor.

The Peace Accords promise much and provide some of the specifics of a poverty reduction program. But, for those promises to be met it is essential to find a structure of growth that can efficiently reduce poverty, despite the unequal distribution of income.

Growth and Poverty Reduction in the Highlands

The highland regions of Guatemala have three key features favorable to both rapid growth and to efficient conversion of growth into poverty reduction. For that reason, an effective poverty reduction program must center on realizing the immense potentials of the highlands. The Peace Accords emphasize the highland regions with their high concentration of Mayan people.

Highly Productive Soils and Climate

The highlands are largely comprised of volcanic soils of excellent structure and high fertility favorable to high value crops, high levels of nutrients, and high yielding crop varieties. The climate is well suited to a wide range of high value crops, including high quality coffee, cardamom, and fruits and vegetables that command a premium in a wide range of markets from domestic, to Central America, to the high income countries of North America and Europe. There is already substantial experience with these crops and the rudiments of the institutional structure necessary for rapid expansion are in place.

High Population Density

The highland areas, because of the highly productive soils and climate, already support a high population density. That reduces the cost of infrastructure per family. Thus, the returns to investment in roads, telephone, and electricity are high given the low cost per family reached and the high value of agricultural output possible on the favorable physical resource. This is the area that will provide high returns to infrastructure investment. That infrastructure is essential not only to agricultural growth, but to the derived growth in rural non-farm jobs and to provision of quality social services.

Relatively Equal Distribution of Land and Income

While large estates are common in the highlands, particularly in coffee production, small farms occupy a high proportion of land and the bulk of the population. A significant number of the small farms are already producing coffee at higher yields and of higher quality than the large farms. Small farms are also producing high value horticultural products more efficiently than the larger farms. Most important, as will be documented below, small farmers spend the bulk of their incomes locally on goods and services which require labor intensive production. Thus, income increases to the small farmers of the highlands have powerful multipliers to employment growth and poverty reduction.

The Process of Employment Creation and Poverty Reduction

Recent major comparative studies of poverty reduction show that it is agricultural growth, not manufacturing growth, and rural growth, not urban growth that sharply reduce poverty through increased employment (Mellor 2000c, Lipton and Ravallion 1995, Ravallion and Datt 1996b, and Timmer 1997). Using the Deininger and Squire data for 35 developing countries, Peter Timmer has projected that a one percent growth in agricultural GDP per capita leads to a 1.61 percent increase in per capita income for the bottom quintile of the population. Meanwhile, a one percent increase in industrial GDP increases it by 1.16 percent, and service sector increases bottom quintile incomes by only 0.79 percent (Timmer 1997). Guarav Datt and Martin Ravallion found that for India manufacturing growth had no effect in reducing poverty. They also found that higher growth rates in farm yields and lower inflation rates led to higher consumption and reduced absolute poverty (Ravallion and Datt 1996c). This study also found that no factors which reduced absolute poverty adversely influenced income distribution (Ibid.).

The impact of agricultural growth on employment and poverty works largely through indirect processes. Increased agricultural production does increase employment in agricultural production. But the reduction in poverty exceeds that which can be explained directly by employment. The driving force of employment growth and poverty reduction results from the expenditure of higher farm incomes on locally produced goods and services. Research on farmer expenditure patterns in middle income countries shows that 40 percent of incremental income is spent on locally produced non-farm goods and services (Hazell and Roell 1983). The proportion for lower income countries is lower, due to higher expenditure on food, and a less diversified economy.

The poorest people are in rural areas producing goods and services that are not tradable. That is, they do not participate in foreign markets and hence increased demand comes only from rising local incomes. When the incomes of small farmers rise sharply due to growth in production of high value crops they spend that income locally. They increase employment of the poorest laborers by substituting hired labor for that of family workers. Children are released from farm work to go to school; wives are released from the most onerous farm work for more time in family activities or more remunerative employment. Some household help is employed. Farmers improve their houses, hiring carpenters and other construction people, increase their clothing expenditure, employing local tailors, and buy locally made furniture.

All the foregoing are non-tradable goods and services. If local demand does not grow, they cannot export those goods and services to markets in Paris, Washington and Tokyo. They depend for expanded incomes and employment on increased local incomes. The primary source of such increased income comes initially from agricultural growth. With such growth, credit programs help bring broad participation in that growth. Without growth in agricultural incomes, credit programs to rural micro enterprise simply helps some prosper at the expense of others who will also tend to be poor.

With rising incomes, farmers and those employed in agriculture-related activities will also consume more livestock and horticultural products, facilitating further expansion of the most labor intensive parts of agriculture. Thus, when agricultural incomes grow rapidly, employment in rural areas grows rapidly and poverty is sharply reduced. That is what the Ravallion and Timmer studies show to be the case and what Mellor had suggested as the process long before rapid growth in many countries allowed an empirical testing of the concept.

Note that when income from agricultural growth accrues to those who are very wealthy these multipliers on the rural non-farm sector will be weak or nonexistent. Very rich people consume largely imports and capital intensive goods and service as their incomes rise. That is why the Ravallion and Timmer data show that rising agricultural production does little to reduce poverty when land is held in very large holdings and particularly when the owners are absentee.

Thus, agricultural growth on the coast will do little to reduce poverty while agricultural growth in the highlands will efficiently reduce poverty.

THE CORE PRIORITIES FOR POVERTY REDUCING GROWTH IN THE HIGHLANDS

The core strategy for poverty reduction in the highlands must bring about a large increase in income of farmers, must be widespread, and must be accompanied by rapid growth in non-farm employment. At least initially, emphasis must be given to commodities that will bring incremental income into the region. That income will then drive the increase in demand for the goods and services, including some agricultural commodities, for which demand must come from domestic sources.

Large Increase in Farm Incomes

The key to success in small farm agriculture is technology and product change that sharply increases farm incomes. Not only are the multipliers to non-farm income and employment large, but the demonstration of a major improvement in small farmers incomes raises the morale of all the persons and institutions involved in such change, revitalizing efforts to make the system work. Of course, farmers take up highly profitable innovations much more rapidly than only marginally profitable ones. Witness in the highlands the greater shift into high value horticulture as compared to high yield basic food staples.

Because the institutions for major change are complex, it is desirable to find a small number of commodities that will make a big difference. In the highlands of Guatemala two candidates stand out: Small farm coffee and small farm horticulture.

Small Farm Coffee

Small farmers already produce about one quarter of the coffee of Guatemala and due to higher quality about 30 percent of the value of coffee production. Small farm coffee farmers maintain higher yields and higher quality than large farmers. Small farm coffee is well suited to substantial areas in the ZONAPAZ. ANECAFE already has a small farm unit that is providing technical assistance to small farm coffee farmers associations. Credit to small farm coffee is recognized by the credit institutions as among the most profitable uses of credit, and therefore most likely to be repaid on time.

A plan for small farm coffee must have the following components:

1. An explicit plan for rehabilitation of existing small farm

coffee in areas in which it has deteriorated, including credit for replanting where that is desirable.

2. An explicit plan for upgrading the quality of small farm coffee and hence the value of output. This could include a carefully analyzed program for increasing production of organic coffee for specialty markets.

3. An explicit plan, detailed in terms of location, for rapid expansion of the area planted to small farm coffee.

4. A plan for credit expansion for small farm coffee including intermediate term credit for replanting.

5. Coordination of ANECAFE plans for expansion of production, by geographic area, and expansion of the credit system.

The plan for coffee should target at least an eight percent per year growth rate in the value of small farm coffee. With ample area for conversion to coffee and the high profitability to small farm coffee compared to other alternatives that is a modest target.

Assuming that with present prices large farmers find coffee of low profitability one might assume their production would hold constant. With an eight percent growth rate, small farm coffee would double in ten years and would then comprise roughly half of Guatemala's coffee production. The additional production of roughly 1.5 million pounds would not significantly affect international coffee prices. In any case, small farmers can absorb some price decline and still find coffee a desirable option.

Horticulture

Horticulture has a growing market in Guatemala, a large Central American market due to the unique climate of the Guatemalan highlands, and large markets in high income countries. Guatemala has substantial experience in horticultural exports, even though production has yet to grow to a level that would have a major effect on poverty reduction.

Export horticulture production in the highlands of Guatemala is on the order of 15 times as profitable to small farmers as traditional crops of maize, beans and squash (von Braun et al. 1989). Horticulture on average uses 50 percent more labor per hectare than the traditional crops. Thus, it meets the basic requirement for a major role in poverty reduction as detailed above. The constraint to rapid expansion of horticulture production is in marketing and technology.

The private sector exporters must be able to operate in a political environment that is encouraging, stable and predictable. They face enormous risks in foreign markets and will not perform well if national policies add to those risks.

To continue to compete and to increase production so that it will have a major affect on poverty reduction, farmers will need a flow of improved technology that allows them to compete with other countries. Typically, horticultural exports from developing countries reach a peak at modest levels of output and then decline as technological bottlenecks arise. Further, the changing phytosanitary rules in developed countries require constant attention to the technology of meeting those rules. The private seed suppliers and marketing firms can provide some of this technology. But, the experience of other countries demonstrates a critical complementary role for public sector technology generation.

A major poverty reduction role for the horticulture sector requires a plan for an eight percent rate of expansion. That requires specifying areas with adequate transport, targeting high density of participation through farmers associations, assisting the private sector in producing competitive marketing service and associated technical input, and coordinating the provision of credit. Credit requirements per hectare run some 13 times that of the traditional food crops (von Braun et al. 1989).

Other High Value Commodities

While small farm coffee and horticulture will have the largest aggregate impact on poverty reduction in the highlands, other crops may become important. Cardamom is already an important crop with strong export earnings. Others will appear from time to time. However, in judging whether to give priority to a new high value crop it must be ascertained whether it will have an aggregate impact in a few years time.

Many commodities appear suitable that will not have that major impact. The need is to avoid spreading scarce institutional support services so thinly that nothing gets accomplished. The strategy should not be exclusive. Many activities may occur, but the major push of institutional development will concentrate on those commodities that can have a major aggregate impact. Failure to have aggregate impact in the past have been mainly due to spreading resources too thinly.

Basic Food Staples

Yields of the basic food staples in Guatemala are very low by international standards, particularly considering the potential productivity of the soils and the climate. Farmers growing high value horticultural crops have about 30 percent higher yields on basic food staples on average than other farmers. Farmers not growing high value crops seem disinclined to use high yielding varieties or fertilizer.

The common pattern in developing countries is for fertilizer to spread from the cash crops to the basic food crops. That is because farmers learn on the more profitable crops and then spread to the still profitable food crops. From this it would seem that the correct strategy is to increase production of the high value crops on a widespread basis and then to proceed to increasing yields of basic food staples.

Since the high value crops are already important in some areas, farmers in those areas will increase consumption of the basic staples while simultaneously the proportion of area to those crops falls. Thus, a program to raise yields of the basic staple might best start in those areas. The initial importance of the basic staples in both area and value of output is sufficiently high that no opportunity to accelerate their production should be lost(see the Annex numbers)

In the meantime, strengthening the national agricultural system and leveraging the International Center for the Improvement of Maize and Wheat (CIMMYT) to provide hybrid maize varieties suited to specific elevations and latitudes in Guatemala will be helpful to the long run strategy.

Livestock

Small farm livestock production in the highlands probably comprises about 10 to 15 percent of the value of agricultural production (the aggregate for Guatemala is reported in the statistics as 31 percent for the country as a whole). As incomes rise, consumption of livestock will grow quickly, creating scope for production to expand at a six percent rate.

Highlands small farm livestock is a non-tradable good. It is unlikely to be competitive on international markets, but high transaction costs will make it competitive in domestic and local markets. Thus, once incomes start to rise, livestock growth will contribute significantly to the rate of increase of agricultural production and agricultural incomes. But, the main push on livestock should be seen as coming after a few years of accelerated growth in the priority export-oriented commodities.

The Agricultural Growth Multipliers

As emphasized above, the impact of agricultural growth comes through its income multipliers increasing demand for non-tradable, rural goods and services that are highly employment intensive in their production.

Numerous studies show that the most important constraint to expansion of these activities is lack of effective demand (Liedholm 1987). Supply proves to be highly elastic in response to increased demand. As demand increases, credit programs can be helpful in two respects.

First, as the process matures some small enterprises may have the capacity to expand to become medium sized business. That will require credit.

Second, credit extended to poor and disadvantaged groups may increase their ability to enter these businesses and thus spread the benefits. When total demand is expanding in response to rising agricultural incomes, broadening the ability to enter the market economy can be favorable to total expansion and the increase in employment.

It is notable that an important source of increased employment is the increased substitution of hired labor for family labor. In high value horticultural production, the use of labor increases greatly. In that circumstance it is important that credit programs lend for the hiring of labor. Often credit programs do not cover hired labor. From the point of view of poverty reduction that is a mistake.

Effect on Migration

In Guatemala, migration to work on the coast is an important coping strategy to deal with income inadequate even to cover total annual food consumption of the family. The migrants and their families understandably show an aversion to such migration, except as a response to extreme privatization. In the areas in which high value horticulture has been widespread, migration to the coast drops sharply and even ceases entirely. The personal and family functions effects of that must be considered one of the most important benefits of a poverty reduction program working through increased employment both on farms and in rural non-farm work.

Policy Requirements

An employment increasing, poverty reducing strategy for the highlands requires careful diagnosis of policy needs. Those policies have to do with public macro policy, public regulation, public investment, and pubic institution building.

Public Expenditure

Rapid agricultural growth requires substantial public expenditure.For example, Victor Elias found that in Latin America, government expenditure on agriculture constitutes 20 percent of productivity growth in agriculture (Elias 1985). In the short run of the next two or three years, rapid expansion of incomes can come largely from increased production of coffee with low transport costs and of horticulture near existing roads. But for continued growth over a decade or more, poverty reduction to half or less of present levels will require rapid expansion of the all weather road system. A plan is needed for full coverage of the highlands with all weather roads over a ten year period.

In the context of improved roads, improved market facilities including market yards, market storage, and market information systems are needed. Pubic investment in such systems greatly increases competition among private sector marketing enterprises with consequently improved prices, production and incomes to farmers.

As detailed below, technology generation has a public institutional component that is no less essential because of its complementary relation to the private sector's technology generation efforts.

Public Macro Policy

The basic engine of growth for agriculture of the highlands must be exports - specifically of coffee and horticultural commodities. Exports infuse large income which generates the effective demand for rural non-tradables that are critical to employment growth. Government policies with respect to exchange rates are vital, and essential to ensure that the real exchange rate not become overvalued.

Real interest rates in Guatemala are very high by world standards and certainly will deter investment in small farm agriculture and its accompanying marketing systems. High interest rates have a multitude of causes, but unbalanced budgets tracing from very low rates of tax collection are an important element in Guatemala. Attempts to balance those budgets with reduced expenditure to complement agricultural production is the worst policy for poverty

reduction.

Public Regulation

Major exporters must play a key role not only in developing markets in Guatemala, Central America and in high income countries, but also in access to improved technology. It is essential that exporters have an association for conveying to government its needs and problems. Perhaps most important it is essential that government policies not inhibit the operation of a vigorous private business export sector.

Public Institution Building

Small farmer development of the type that quickly reduces poverty requires support from key public sector institutions. Technology generation through research and extension are a key element. Care must be taken to ensure a complementary relationship with private sector technology generation. Private seed companies can effectively test new vegetable and fruit seeds and stock. The public sector may complement that with some testing and with integrated pest management to ensure profitable and environmentally sound use of pesticides. The public sector will have to do much of the research on the basic food staples including the important role of coordination with the international centers such as CYMMT, CIP, and CIAT that deal with crops vital to food security in Guatemala.

Decentralization

The highlands are a highly diverse region with respect to ecology, market conditions, and ethnic forces. If development is to accelerate it must be cognizant of these diverse conditions. That requires decentralization of functions. That process is underway in Guatemala and will interact well with the poverty reduction strategy outlined here.

In addition, the financial demands for agricultural development, particularly including the communications system, cannot be financed in the short run without local participation. To tax people for such purposes normally requires decentralization of the decision making process.

Further, the processes of democratization are forwarded by the broad based agricultural and rural development strategy that is particularly appropriate to the highlands of Guatemala.

SOCIAL EXPENDITURE

Social expenditure and employment creating growth as described for the highlands are highly complementary. The demand for education is elastic with respect to employment growth. The rapid growth in employment in the outlined strategy will quickly increase the demand for educated people. The expansion of retail trade, transport, light manufacturing such as tailoring and carpentry, all provide high returns to education. That not only ensures employment for school leavers, but increases the incentives to remain in school rather than dropping out for unskilled jobs.

Conversely, increased education and decreased child mortality will add to the stock of idle educated people in 10 years time if employment growth is not rapid. Thus there is much to be said for a balance of expenditure for agricultural growth and social expenditure.

It should also be noted that rapid agricultural growth requires rapid expansion of physical infrastructure. But, if such infrastructure of roads and communications is not provided the effective expansion of both education and health services will tend to be largely in the cities. That is because rural areas ill served with communications are not attractive to the educated people that are required to staff those institutions.

It is no accident that rural urban disparities in health and education are increasing in countries that do not have vigorous agricultural and rural development. The consequence is a pouring of people into urban slums. The rapid growth in urban poverty is in Africa and Latin America where agricultural growth is slow or not favorable to rural non-farm growth, not in Asia where rural growth has proceeded rapidly.

GENDER ISSUES

Guatemala has an unusually high proportion of low income female headed households due to the effects of the war. The development strategy for poverty reduction has elements favorable to improved employment opportunities for women. Women tend to be disproportionately highly represented in those occupations which are stimulated by rising agricultural incomes. In many parts of the world, women participate disproportionately in the production and marketing of high value agricultural products. For this to occur in Guatemala, will require special efforts to ensure women's access to credit (which may be relatively more important to poor women than the population as a whole), to improved technology, and to marketing opportunities.

CONCLUSION

Guatemala fights an uphill battle in reducing poverty because of the effect of unequal income distribution on both slowing growth and reducing the impact of growth on poverty reduction. However, major regions in Guatemala have a broad distribution of income and assets. Those regions, particularly the highlands, have opportunities for rapid increase in agricultural incomes and large multipliers to non-farm income and employment.

To realize these opportunities, poverty reduction programs must be tailored to the specific conditions of major geographic areas, emphasize large increase in agricultural production per farm that accumulates into large aggregate regional income increase. Small farm coffee and horticultural production, both mainly for export, represent the most effective means of bringing the increase in agricultural production essential to increasing the effective demand for the labor intensive, non-tradable goods and services that dominate rural employment.

ANNEX

Tables 1 and 2 present numbers intended to represent conditions in the highlands of Guatemala. Statistics for Guatemala are not in general presented by agro-ecological zone and major political boundaries do not follow such zones. Hence, the data presented are quite rough. Nevertheless there is internal consistency to the presentation and it probably roughly represents what the strategy presented in the main text would look like in implementation.

Agricultural Growth Rates

Table 1 divides the agricultural sector into three sub-sectors, provides a target growth rate for each sub-sector and shows the proportion of the agricultural sector's growth due to each sub-sector.

As explained in the main text, the high value commodities are stated to grow at eight percent per year. The sub-sector represents 20 percent of agricultural GDP. The sub-sector includes horticulture, small farm coffee, cardamom, and for convenience, the on farm artisan sector.

The food staples sub-sector is shown as growing at 4.1 percent. That is consistent with local demand based on the income growth shown for the region, an income elasticity of 0.6 (consistent with the low incomes in the region) and population growth of 2.5 percent. Thus the assumption is that technological advance in improved varieties and increased use of fertilizer will be at a rate to maintain parity with local effective demand. Note that because of the high initial weight to the sector its growth is nearly half of the incremental growth projected. A 4.1 percent growth rate for basic food staples is important and feasible, but will require a focused effort.

The livestock sub-sector is projected to grow at 6.6 percent per year. Like the food staples sub-sector, that is consistent with effective demand, but with an income elasticity of 1.5, which is generally consistent with that of low income countries. Livestock comprises 13 percent of the growth rate. To achieve the 6.6 percent growth rate will require some attention to improved technology through research, extension, and health programs.

The weighted average growth rate for the agricultural sector is shown as 5.1 percent per year. This is a moderately high growth rate by world standards. High growth rate countries achieve between five and six percent growth rates in agriculture (Mellor 1992). Achieving that growth rate depends on the eight percent growth rate in the high value commodities since that drives the increased demand for the food staples and livestock.

Table 2 calculates employment growth based on the preceding assumptions about the agricultural growth rate, its effect on the farm income demand driven non-farm sector and assumptions about growth in the remainder of the economy. These data are for the highlands of Guatemala. Similar analyses can be done for each of the other regions and then for the entire country.

It is estimated that 52.5 percent of employment is in agriculture, with 12.5 percent of that attributed to hired labor and the rest to small farm owners. An estimated twenty percent of the labor force is economically active in the various services and artisan activities for which farmers provide the effective demand. Thus, 72.5 percent of the employment is directly or indirectly due to agriculture.

An estimated fifteen percent of the labor force is driven by income sources other than agriculture. That would include government employees, those receiving demand from remittances and non-farm based artisans producing for export. Migrant labor moving seasonally out of the region comprises 12.5 percent of the labor force, that is, half the agricultural laborers are assumed to work in the region, while half migrate out on a seasonal basis.

The growth rate for agriculture is as calculated in Table 1. The agricultural driven non-agriculture is calculated to grow at 6.4 percent. That is calculated on the basis of the per capita growth rate in agricultural income multiplied by 1.5 plus the population growth rate, reflecting the high propensity of farmers to spend on these goods and services (see Mellor and Desai 1985, Hazell and Roell 1983 for data and Mellor 1992 for method of calculation.).

The migrant labor sector is assumed arbitrarily to grow at 3 percent per year, probably consistent with the growth rate in demand for labor on the coast. The non-farm sector driven by external forces is assumed arbitrarily to grow at six percent. That is probably a high estimate.

The conversion of the growth rates in each sub-sector into employment is a product of the elasticities of employment with respect to the growth rate. Agricultural growth tends to be accompanied by significant increases in labor productivity (see Mellor 1992) so a low elasticity of 0.6 is used. The other sectors tend to expand more nearly symmetrically with only small increases in labor productivity.

From these calculations, 44 percent of incremental employment takes place in the agricultural sector and 31 percent in the agriculture driven non-farm sector. In somewhat higher income countries, the latter tends to be two to three times as important in incremental

employment as agriculture itself. But, since the base of employment in that sector is low in the highlands due to very low incomes, and hence a very high proportion of income spent on food, the proportion of incremental employment is low. However, since demand grows much more rapidly than for agriculture because of the high incremental expenditures from farm income, the relative size of the sector will grow, giving it a higher weight in the future and hence a higher proportion of incremental employment. It should be clear that no other source of growth can induce larger employment growth. The employment effect of this strategy will grow substantially over time as the faster growing sectors increase their weight.

It is also notable that while 44 percent of employment growth is seen in agriculture itself, the share for local agricultural hired laborers will increase for reasons stated previously.

In conclusion, it should be noted that the overall growth rate of employment is only at a rate 3.6 percent. That is still faster than the rate of growth of the labor force, showing a tightening of the labor market and rising real wage rates. That 3.6 percent rate will naturally accelerate as the weight of the faster growing, more employment intensive sectors grow. That is why agriculture is so important in reducing poverty.

ANNEX

Table 1
Indicative agriculture growth rate, by sub-sector, Highlands, Guatemala, circa 2000.

Sub-sector	Tradable	Percent agricultural GDP	Target growth rate, percent	Percent total growth
Food Staples	No	70	4.1	56
High Value	Yes	20	8.0	32
Livestock	No	10	6.6	12
Total/ weighted average	**---**	**100**	**5.1**	**100**

Table 2

Indicative employment, GDP growth rate and employment growth, by sub-sector, Highlands, Guatemala, circa 2000.

Sub-sector	Percent employment	Growth rate of sub-sector GDP	Employment elasticity	Employment growth rate	Percent incremental employment
Agriculture	52.5	5.1	0.6	3.0	44
(Farmers)	(40.0)	--	--	--	--
(Laborers)	(12.5)	--	--	--	--
Non-Agricultural, Non-tradable agricultural demand	20.0	6.4	0.9	5.7	31
Non-Agricultural, Non-tradable, non- agricultural demand	15.0	6.0	0.7	4.2	17
Migrant agricultural labor	12.5	3.0	0.9	2.7	8
Total/ weighted average	**100**	**5.2**		**3.6**	**100**

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