

## Assessment of the Myanmar Agricultural Economy

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### Overview

During two weeks in January 2009 a team from the Asia Programs unit of the Harvard Kennedy School's Ash Institute, International Development Enterprises (IDE), and the Ministry of Agriculture and Irrigation of the Union of Myanmar conducted a humanitarian assessment of food production and the agricultural economy in Myanmar.<sup>1</sup> We focused on paddy production, because rice is the country's staple crop. Based on fieldwork in cyclone-affected areas of the Ayeyarwady River Delta and in Upper Myanmar, we conclude that paddy output is likely to drop in 2009, potentially creating a food shortage by the third quarter. Our estimates are based on imperfect data, and this scenario may not materialize, but the avoidance of a food shortage this year would represent a temporary reprieve, not a recovery. Myanmar's rural sector is stretched to the breaking point and the natural resilience that has sustained it is leaching away. This paper recommends a set of interventions to avert this looming crisis: 1) an increase in credit for farmers and other participants in the rice economy including traders and millers, 2) steps to increase the farm gate price of paddy in order to create an incentive for farmers to produce more paddy, and 3) a program to finance small-scale village infrastructure projects to increase demand for wage labor for the rural poor who are most at risk.

This paper proceeds as follows. Section I describes the study's rationale and methodology. Section II presents the research team's key findings. Section III offers an analytical framework for considering how and why food markets fail. The next two sections consider the implications of our finding, examining income loss, crop production, and land concerns. Section VI recommends a three-pronged policy response. Section VII concludes by considering the distinction between humanitarian responses and development strategy. Appendix I discusses Myanmar's likely actual GDP growth rate. Appendix II summarizes the policy options available to the government in the face of continued deterioration of conditions in rural areas.

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## I. Rationale and Methodology

Attempts by international and government agencies to forecast Myanmar's post-cyclone rice production have produced wildly divergent estimates. The Food and Agriculture Organization (FAO) estimated in a January 2009 Special Report<sup>2</sup> that Myanmar would produce 19-20 million tons of rice in 2008/9. By contrast, the Foreign Agricultural Service (FAS) of the United States Department of Agriculture, which forecasts output of agricultural commodities worldwide, estimated that Myanmar's production in 2008/9 would be less than 10 million tons of rice.<sup>3</sup> While we are not certain the FAS estimate is correct, their methodology is sound and their personnel are professional, experienced and technically skilled.<sup>4</sup> The goal of our study was, if not to solve, then at least to shed light on, the discrepancy in forecasts by conducting an independent assessment that considered both Nargis-affected areas as well as rice producing areas not affected by the cyclone. As will be explained below, if conditions we observed are representative of other areas—and we believe that they are—*the low forecast produced by FAS may in fact prove to be too high.*

The barriers to conducting research in Myanmar are well-known. Data are very unreliable; the discussion of Myanmar's actual GDP growth in Appendix I is a case in point. Facts are negotiated more than they are observed in Myanmar. With respect to food production, farmers know they will lose their rights to cultivate their land if they do not plant and get an acceptable harvest, so they often report what they feel they should rather than what they achieve. Local officials have never been fired for reporting good news, so good news is what they report. This goes on and tends to accumulate, to the extent that, as one participant in the rice trade remarked, if official data regarding rice production were correct, Myanmar would rank among the largest exporters of rice in the world. As it is not a major rice exporter, it is likely that the higher rice production estimates are incorrect.

We adopted a “ground-up” methodology to arrive at an independent assessment by interviewing a large number of farmers and other participants in the agricultural economy including paddy traders, fertilizer dealers, credit providers, and rice millers. Interviews with farmers were usually conducted in focus groups of 10-20 people, thus enabling us to speak with several hundred individuals over a two-week period. These interviews focused on two questions: 1) what is 2009 production likely to be, including dry season and monsoon crops? and 2) what is needed to increase agricultural production and raise incomes? With regards to the second query, farmers were asked about the costs of production, including credit, fertilizer, and other inputs, as well as about the availability of wage labor and about the quality of living conditions generally. Although

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<sup>2</sup> FAO/WFP Crop and Food Security Assessment Mission to Myanmar, 22 January 2009; Table 12 shows 30.5 million tons of paddy or at 65 percent milling, 19.8 million tons of rice.

<sup>3</sup> Estimates of both 2006/7 and 2007/8 for paddy production in Myanmar were in the 18.5 million ton range or 10.7 million tons of rice at an estimated 58 percent milling rate. For 2008/09, the FAS estimates less than 17 million tons of paddy or 9.5-10 million tons of rice. These estimates are published in the US Department of Agriculture's *Rice Outlook* reports, published most months, and available online at <http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1285>.

<sup>4</sup> We do not have similar confidence in the FAO methodology which measures deviations from the official data of the previous year rather than taking a “clean sheet” approach and checking area and yield data. However, the FAO/WFP report dated January 22, 2009 found sharply lower food output due to cyclone Nargis and rat infestations. We agree with this part of their assessment, but believe that even areas not affected by these calamities face severe problems and may have overstated production in official data.

focused on the rice economy, we sought to acquire a picture of production of beans and pulses and other cash crops where their cultivation is economically significant to farmers.<sup>5</sup>

The research team was composed of agronomists and development professionals from IDE, the Ministry of Agriculture and Irrigation, and Yezin Agricultural University.<sup>6</sup> In the field, our work study was greatly facilitated by IDE's staff network and specialists from the Myanmar Agricultural Service (MAS). In addition to organizing focus groups with farmers, these IDE and MAS colleagues were a wealth of information about the agricultural and economic conditions in their areas.<sup>7</sup>

In Nargis-affected areas, the team conducted field visits in Kungyangon and Labutta townships of Ayeyarwady Division and in Kyauktan township of Yangon Division. Although international researchers have encountered difficulties in securing permission to visit areas outside the Nargis zone, we were able to travel extensively in upper Myanmar, conducting fieldwork in Yamethin, Pyawbwe, Meiktila, Myittha, and Kaukse townships in Mandalay Division and in Saudaung and Shwebo townships in Sagaing Division. The team alone decided which village tracts to visit.<sup>8</sup> In order to gain at least a general sense of conditions in major rice producing areas that we were unable to visit, including to Bago Division and parts of Ayeyarwady Division that were not affected by the cyclone, IDE staff from these divisions met with the team in Yangon.<sup>9</sup> In this way it was possible to acquire a general picture of rice production in the areas that are home to a majority of the Myanmar population. We did not visit more remote divisions and states. For a host of reasons these areas may be at great risk of a humanitarian crisis. Subsequent assessments should be sure to include these areas.

## II. Observations

This section presents the team's observations based on fieldwork in the Ayeyarwady River Delta and Upper Myanmar. While the representative nature of these findings is necessarily limited by the scope of the assessment, we believe that taken together, they form a reasonably accurate picture of the economic situation in the regions we visited.

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<sup>5</sup> Liberalization of the beans and pulses market in the 1990s led to a dramatic increase in production, from 270,000 metric tons in 1988-89 to more than 1.1 metric million tons in recent years. As a result, Myanmar is today the second-largest exporter of beans and pulses. Sales to India account for 70 percent of Myanmar's beans and pulses exports.

<sup>6</sup> The participating Harvard personnel specialize in the economic development of Southeast Asia. We have worked in Vietnam for two decades and have also worked extensively in Indonesia and Cambodia. In the mid-1990s Dapice and Valley conducted several studies of humanitarian conditions in Myanmar under the auspices of the UN. More information is available at <http://ashinstitute.harvard.edu/vietnam>

<sup>7</sup> IDE is active in 109 townships that collectively are home to approximately 70 percent of the Myanmar population. In the wake of cyclone Nargis, IDE mobilized its extension personnel to provide relief and then farm recovery support in the Ayeyarwady Delta. Their deep knowledge of Myanmar's agricultural systems and rural society enabled them to provide critically needed assistance with speed, efficiency, and empathy. We salute their achievements.

<sup>8</sup> A "village tract" is typically composed of 3-7 villages; although it is an administrative unit, residents of constituent villages share a common sense of identity to the village tract. The significance of the village tract as an integrated social unit was sometimes overlooked by international relief organizations that flooded into Myanmar in the aftermath of cyclone Nargis. Decisions by some organizations to distribute aid in only one village within a village tract sparked tensions that in some cases lead local leaders to reject offers of assistance unless it could be shared equally by all members of the village tract.

<sup>9</sup> Bago and Ayeyarwady Divisions together account for nearly 50 percent of Myanmar's annual rice production.

## 1. Paddy farmers are losing money and are taking steps to minimize their losses

The team found that, for most farmers inside and outside Nargis-affected areas, there is no profit from growing paddy. Many farmers reported that paddy prices had dropped as much as 50% from 2007 levels, from 4,000 to 2,000 kyat per basket. Farmers generally agreed that 3,000 kyat per basket was their break-even price.<sup>10</sup> In response to low prices, farmers are responding as one would expect, by minimizing their potential losses. Farmers reported that they would reduce acreage under cultivation, in the case of dry season paddy, and decrease intensity of cultivation, such as by switching from transplant to broadcast seeding, or reducing the quality of land preparation in the case of monsoon paddy. Farmers also reported that they would reduce inputs, including fertilizer.

The FAO/WFP study also found that farmers receiving 2,200 kyat per basket would often be unable to earn a profit. However, the lack of profit is even worse than shown in the FAO calculations, which do not include the cost of credit. With monthly interest rates of 10 percent when credit is available, there is a loss on each basket of paddy produced. Farmers universally reported being deeply in debt and feared they might lose their land altogether as many of their neighbors have already.

## 2. Credit is scarce or nonexistent

Every group of farmers that the team spoke with identified a lack of credit as one of the principle problems they faced. With the exception of small amounts (8,000 kyat per acre) available from the Myanmar Agriculture Development Bank (MADB), farmers reported that credit was scarce at any price. In previous years, farmers could borrow at interest rates of 10-15 percent per month; individuals with gold collateral could borrow at 5 percent per month. At present, farmers reported that credit was difficult to find even at high rates and that oftentimes a strong personal connection was needed to borrow money. Other participants in the agricultural economy echoed the farmers' complaints that cash had disappeared. Most shop owners, including fertilizer and hardware stores, reported declining sales (in some cases 30-50 percent) and an increase of sales on credit.

The extreme shortage of credit leads to a glut of paddy for sale at harvest time, as farmers have to scramble to repay debts. This creates very low farm-gate prices at harvest time. *Again, almost all farmers we talked to had little if any paddy left over for home consumption right after harvest because they had to sell everything at harvest time.* They then have to buy back rice later at much higher prices. This is one reason they are so deeply in debt. The government's recent decision to call in MADB loans intensified this credit shortage.

Where has the credit gone? In Nargis-affected areas, assets—gold, paddy, draft animals, etc.—were wiped out. However, the cyclone does not explain the absence of credit at a national level. The bubble in beans and pulses prices resulting from speculative investments of a group of Yangon exporters, discussed in Section III below, likely also had an impact.<sup>11</sup> The decline in

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<sup>10</sup> There are various attempts to estimate the cost of cultivating one acre of paddy and these show costs of 1,500 to 3,000 kyat per 20.9 kg basket, depending on monsoon or summer crops and region. See, for example, Table 22 of FAO/WFP Crop Assessment. It estimates costs for monsoon paddy of 2,975 kyat per basket in Mandalay and summer crop costs of 2,269 kyat per basket in Sagaing.

<sup>11</sup> These exporters purchased beans and pulses at above market rates on credit from lower level traders. When world prices fell, they were unable to pay the traders. It is reported that perhaps 600 small scale beans and pulses traders were severely affected by this event and that as many as half of these individuals were also active in paddy trading.

global commodity prices, including rice and beans and pulses, as well as the contraction in global credit have also had an impact.

### *3. Household indebtedness is high and rising*

The team found high rates of indebtedness inside and outside the Nargis zone, with indebtedness in the Ayeyarwady Delta the highest. Villagers whom the team spoke with in the Delta reported that virtually *all* farmers were in debt, including households with 10-15 acres of land or more. Many are saddled with levels of debt—500-700,000 kyat (\$415-583) or more—that they have no prospect of paying off. Another indicator of indebtedness the team observed was the high percentage of households without food stocks immediately after harvest. Such households had to sell all their food stocks to service their debts. Indebtedness was also prevalent in Upper Myanmar, although levels of cumulative debt were not as high.

### *4. Landlessness is widespread and increasing*

The team found high rates of landlessness, especially in the Ayeyarwady Delta, where 70 percent of households in some village tracts visited were landless and 50 percent of all households in Labutta were without land.<sup>12</sup> Residents reported that landlessness had been increasing over the past decade, with forced sales due to indebtedness the leading cause of land alienation. Land consolidation is reported to be high in the lower Ayeyarwady, including Labutta and Bogalay townships. Rates of landlessness in Upper Myanmar were in general lower but still ranged from 25-40 percent in every village tract visited.

### *5. Wage employment is scarce*

At least half of rural households depend on wage labor for all or part of their livelihoods. Landless farmers and farm workers, and families not engaged in agriculture fall into this category, but so do many land-poor families. Farmers in the villages visited by the team reported that opportunities for wage labor, either in agriculture or in nearby towns, were scarce. Farmers with larger landholdings reported that they planned to hire less labor as they reduced acreage or the intensity of cultivation. Significantly, virtually all farmers – even ones with larger holdings – said they would engage in wage employment if it were locally available at prevailing wage rates. Many interviewed felt that opportunities in cities such as Yangon and Mandalay were not attractive, although young people in villages in Mandalay, Bago and other Divisions were finding construction work in Naypyidaw. Many villages in the Ayeyarwady Delta reported that young people who migrated to Thailand and Malaysia in search of work are now returning, as the global economic slowdown affects the economies of these countries. The loss of wage labor opportunities is especially significant in light of the discussion of food markets in Section III: previous humanitarian crises teach the hard lesson that food shortages are caused not only by a decline in the availability of food but by a drop in the ability of people to buy food or receive donations from neighbors. With less work on local farms, in most cities, or abroad, the prospects of many for securing food are not good.

### *6. Cash is gone and assets are depleted*

“Cash has disappeared” was a frequent refrain in the team’s discussions with farmers and other rural residents. In Nargis-affected areas assets like livestock and poultry were largely wiped out, but in Upper Myanmar farmers also reported having to pawn possessions including jewelry and

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<sup>12</sup> These figures come from local land settlement records offices.

clothing. Village-level traders in Mandalay Division reported selling cooking oil by the teaspoon, which in the past had been sold by the condensed milk can. Consumers were switching from sesame and peanut oil to the less tasty but cheaper palm oil. Combined with high indebtedness and a lack of wage labor opportunities, a picture emerges of people whose assets are rapidly dwindling, with little or no margin left. Although eggs and meat are unattainable luxuries for many, the price of low quality rice has, thus far, remained low.<sup>13</sup> Whether this remains the case following reduced harvests is a critical question.

### *7. The agricultural value chain is very inefficient*

Myanmar's rice economy is beset by inefficiencies at every stage in the production process, the combined effect of which are depressed prices. The team visited a number of rice mills in the Ayeyarwady Delta and Yangon, most of which use technology that is many decades old. Electricity is scarce and unreliable in most areas. (In Labutta, which is a rice producing area, we were told that none of the mills had grid electricity.) The team was also told of high unofficial fees and tolls imposed on internal shipments of agricultural products which further depress farm-gate prices. The port of Yangon is regarded as one of the most expensive and least efficient in the world. The loading and unloading of cargo is slow and ships are unable to purchase fuel, to name two problems.

Government imposes large costs on rice exporters. Large minimum stock requirements impose significant costs on those who want to apply for an export license.<sup>14</sup> The 10 percent tax on exports of agricultural commodities is another cost. (Neither Thailand nor Vietnam impose a tax on rice exports.) Many market participants with whom the team spoke believed that these requirements, coupled with export licenses, prevented capable businesspeople from engaging in export trade.

These inefficiencies, coupled with a government policy of keeping rice prices in the urban areas low have conspired to depress the price that farmers can earn for their paddy. Farmers in Myanmar have a paddy price per ton only about one-third of the rice export price per metric ton, while in Vietnam the ratio is 50-60 percent.<sup>15</sup> Vietnamese farmers were selling paddy for \$230 per ton in January 2009 compared to less than \$90 per metric ton for Myanmar's farmers. Farm prices of paddy in Myanmar would jump by one-half if rice export prices of Myanmar's 25 percent broken could equal those of Vietnam's, which were \$340 to \$400 per metric ton in January 2009. Farmers in Myanmar would earn even more if their paddy/rice price ratios were closer to Vietnam's. Figure 1 compares export prices of rice in Thailand, Vietnam, and Myanmar.

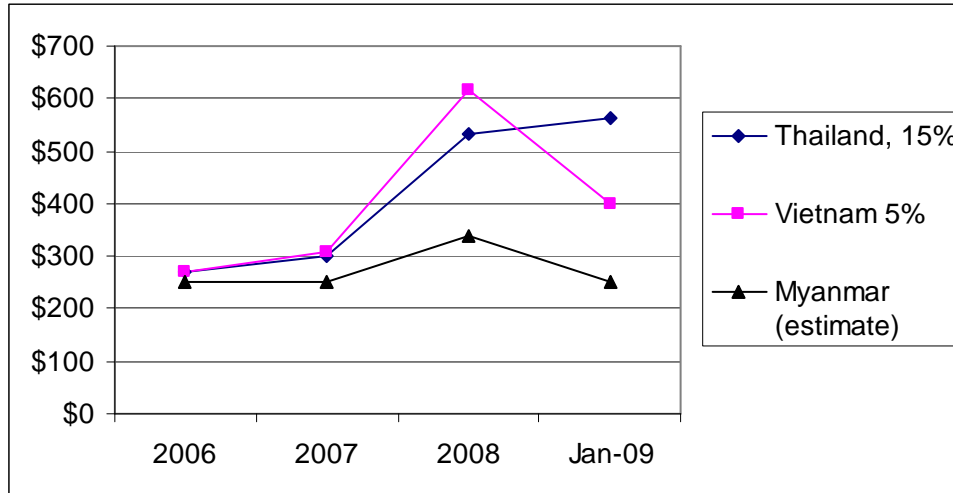
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<sup>13</sup> In January 2009, low quality rice was selling for 400 kyat per *pyi*. A *pyi* of rice is 2.1 kg. A family of six consumes two *pyi* of rice per day.

<sup>14</sup> Requirements had been set at 10,000 tons of rice stored in addition to any rice to be exported for any trader wanting an export license. This was being lowered to 5000 tons, but this still would require over \$1 million in inventory at present prices. Such requirements exclude many potential exporters.

<sup>15</sup> In our visits, farmers sold paddy for \$86 per metric ton. Domestic rice export prices are about \$250 per ton, a ratio of 34 percent. Both the low price of exported rice from Myanmar and a low share of value passed on to farmers cause losses for rice farmers.

Figure 1. Comparison of Export Prices (US\$)



Sources: U.S. Department of Agriculture, *Rice Outlook – January 2009*, p. 24 for Thai 15% and Vietnam 5% rice exports; and news reports for Myanmar rice exports. Thai 15% broken rice normally commands up to \$20 more per ton than Thai 35% broken.

#### *8. The current economic conditions are without precedent in living memory*

All of the individuals with whom we spoke were asked to compare conditions—depressed prices, lack of credit, few off-farm employment opportunities, etc.—with earlier periods in their lives. The universal response was that the current situation is the worst they could ever recall. Many respondents in the cyclone zone emphasized that economic conditions independent of the destruction wrought by Nargis, were unprecedented. Elderly people in both Ayeyarwady Delta and Upper Myanmar, who had lived through the turbulence of the 1930s and '40s, reported that current conditions were more difficult.

Individuals commented that it was not just the poorest who were suffering. The village story we heard was not one of small farmers and landless laborers doing poorly because of large farmers. Rather, all farmers were confronting very difficult conditions and curtailing output as a result.

#### *9. Entrepreneurial spirit remains*

Despite the gravity of the current situation, we were impressed by the ability of farmers, traders, and millers to envision more prosperous economic futures and to accept reasonable financial risks to realize them. This attitude is reflected in the fact that all respondents were interested in borrowing money should credit become available at reasonable commercial rates. In the event of a return to more normal economic conditions, farmers expressed a desire to invest in poultry or livestock or to expand their land holdings. Rice millers using century-old equipment in Labutta spoke eagerly and in great detail about modern machinery they would buy if given the chance.

### **III. Why Income Matters: Understanding Food Shortages**

The objective of our assessment was to determine the likelihood of a drop in agricultural production in 2009. However, one of the most important observations from our fieldwork regarded income loss experienced by many in rural areas. Obviously a significant fall in production could in turn lead to food shortages. However, food shortages—defined as the inability of people to acquire food—need not be precipitated by a production shortfall.

Economists have shown that food consumption shortages occur even when enough food is available on a per capita basis to feed the population of a region or country if people are no longer able to purchase food.<sup>16</sup> In other words, a drop in household income can cause food shortages, even if there is enough food available on a per capita basis for the entire population. History reveals that the segments of society most vulnerable in such a scenario are the rural poor, especially those who rely on income (in cash or in another form) to acquire food, including agricultural laborers, fishermen, and petty traders and service providers. This is why the conditions described above are so potentially serious. At present many people in the Myanmar countryside do not own land and depend on other activities to earn income to purchase food. Yet people in rural areas reported that opportunities for wage labor were scarcer. Other safety valves such as migration to urban areas or neighboring countries are also less certain. If landowning farmers reduce the acreage and the intensity of cultivation, they will require less labor, further reducing employment opportunities for the landless.

If there are “social entitlements” – access to food based on village solidarity or risk sharing – then temporary income shortfalls might be buffered. Examples of such entitlements can include the ability of poor families to secure food from better off relatives or from religious institutions in the village. These safety nets have traditionally been strong in Myanmar but we found them to be under severe strain, as even “middle level” farmers were deeply in debt with little or no reserve to share with the less fortunate.

The drop in incomes observed by the team means that ensuring adequate food supplies is not just a matter of growing rice, and it cannot be ensured through investments in inputs alone. Avoiding a deterioration of humanitarian conditions will require a concerted effort not only to boost production but also to raise incomes, especially of the landless and land-poor, by promoting economic growth, especially growth that provides income to these poorer rural groups. Thus far, low retail rice prices have served as a lifeline for poor families, even though some are only able to eat rice twice per day. Should prices increase without more wage work becoming available, the consequences could be severe. Even if prices stay low, lack of income forces poor families to take drastic measures that tend to lock-in poverty, such as pulling their children out of school and selling their few remaining assets.

#### **IV. The Agricultural Economy in 2009**

##### **A. Paddy Production**

The clear implication of these observations is that rice production is likely to fall if more credit is not made available to farmers (as well as processors and traders) and if rice prices are not raised. As noted above, as long as these conditions persist farmers are likely to farm less intensively. This leads us to believe that yields will be lower for monsoon paddy in 2009 and both area and yields of the summer paddy crop will be down even more.

This line of analysis could be wrong, but suppose for a moment it is right and rice output falls by one million tons or more in 2009. Myanmar could shift from being a rice exporter to a rice importer. The domestic rice price would shift from being a low FOB export price to a high CIF import price. At present, all of the high costs of the Yangon port decrease the export price of Myanmar rice, resulting in lower (or at present zero or negative) profits for farmers. Should Myanmar be forced to import rice, these same inefficiencies would increase the rice price paid by

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<sup>16</sup> Harvard economist Amartya Sen is well known for his work in this area. Professor Sen is a research associate at the Global Equity Initiative of the Harvard Kennedy School's Ash Institute.



consumers.<sup>17</sup> The export tax on rice would no longer keep urban rice prices low. Even if the world rice price stayed the same as now, domestic retail rice prices could rise by over 30 percent. If even cheap Thai rice (100 percent broken) was imported, this would increase prices another 20 percent. It is possible that the increase in rice prices would choke off demand and poorer people might consume less rice. This would be seen as a food shortage, even without imports.<sup>18</sup>

Another scenario is also possible. If the decline in wage income and transfers from abroad is sharp and deep enough, prices may not rise and there could even be exports, even as hunger increased. This would amount to a slow motion humanitarian crisis that would become visible only if civil disorder rose as hungry parents stole food or money to feed themselves and their children.<sup>19</sup>

Given the limited coverage of townships, it is not possible for this team to reliably estimate the likely amount of output with and without the proposed interventions. However, it is our opinion that crop output will fall significantly unless much more credit becomes available and crop prices improve markedly. With the prospect of less intensive farming and fertilizer applications falling by up to one-half and area planted falling, a significant reduction in paddy production is all but certain if conditions were to remain the same. For every 100,000 tons of reduced fertilizer use, there would be a drop of 600,000 to 800,000 tons of paddy according to field observations. (Fertilizer applications on paddy land in the areas surveyed were from 50 kg to 150 kg per acre, with urea being the most used and triple super phosphate the next most common.) If we assume 17 million acres planted to paddy, for every 10 kg per acre reduction in fertilizer use, then 170,000 tons less fertilizer would be used and paddy production would fall by 1.0 to 1.36 million tons. It is likely that fertilizer use will fall by at least 20 kg per acre in the areas we visited. However, it is not clear what total fertilizer demand has recently been in Myanmar. In 2006/07, it was only 180,000 tons, and 234,000 tons in 2005/06. On the other hand, manure applications in the Delta area will be less due to fewer animals. Overall, our guess is that a potential decline of over one million tons of rice is quite possible (This hypothetical shortfall is ten to fifteen times the volume of World Food Programme deliveries.)

## B. Cash Crops

This discussion has focused on rice paddy production, but the picture with pulses is also troubled. Prices have collapsed due to the aforementioned scandal involving six major pulse traders in Yangon who defaulted on about \$200 million in credit to smaller traders who in the past provided

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<sup>17</sup> It is critical to appreciate how the structure of international commercial transactions and the severe inefficiencies of the Myanmar agricultural value chain combine to depress farm gate prices. When rice is exported from Myanmar, purchasers pay what is called a “free on board” (FOB) price. This means that all of the costs incurred in production, processing, transportation, and customs clearance are paid by the Myanmar exporter. If Myanmar were to purchase rice from abroad, the price would be calculated according to the “cost, insurance, freight” (CIF) structure, meaning that the Myanmar importer would pay *all* costs from the moment the cargo is loaded on the ship in the port of origin, including transportation, unloading in Yangon port, customs clearance, etc. All of the internal inefficiencies in port clearance, transportation, etc. would therefore increase the final retail price.

<sup>18</sup> It is not certain that rice would be imported. It is possible that domestic prices will rise enough to choke off local per capita consumption. If rice consumption declines enough, even reduced production might be enough to provide all that consumers can afford to buy, but this outcome would be indicative of food security problems.

<sup>19</sup> We were told that immediately following Nargis some villages approached this level of desperation until relief supplies were brought in. If conditions deteriorate enough, a large fraction of households could experience similar conditions.

credit to farmers and purchased their crops. This represented a reversal of the usual terms of agricultural credit. In normally functioning markets, the largest exporters have the best access to credit and extend credit to local traders who supply them with crops for export. In turn, local traders normally supply credit to farmers. But recently, the large exporters promised to pay later at a high price, effectively borrowing from local traders and farmers who are now without credit or any ability to trade or produce.<sup>20</sup> The lack of credit and lost confidence in the market are likely to reduce production in the short term. In some cases, prices almost disappeared as there were no buyers or the price was so low that it was scarcely worth the cost of harvesting.

This breakdown in market functions puts very heavy pressure on indebted farmers. Many we talked to were worried about losing their land and joining the 30 percent to 70 percent of landless families in their villages. This combination of falling paddy and pulse production and rising landlessness will only tend to reduce output further and could create political tensions.<sup>21</sup> Similar price patterns were observed for onions and chili peppers, though export controls may have been responsible in those cases. The result was similar to that of pulses – sharply lower income, higher debt, and reduced ability to plant future crops.

The collapse of Indian pulse buying, or rather a rearrangement in the means of purchase, and the general contraction of global credit have aggravated the local problems. The inability of traders to use letters of credit is another drawback. It is unlikely that commodity prices will quickly reverse their current slide since growth in major economies is likely to be negative in 2009 and growth in developing Asia will be much slower than in 2007 or 2008. With stock and real estate market prices falling, commodity prices are also suffering from depressed demand in key international markets. No dramatic reversal should be expected in the next few quarters.

## V. Land Concerns

### A. Alienation

We asked about landlessness in most of the villages we interviewed. There was substantial variability, with the landless to total household ratio sometimes as low as 25 percent in some places in the north to over 70 percent in some places in the Delta. Questions on the trends in landlessness got different responses, but many farmers expressed concern over losing their land and many times they reported neighbors had in fact lost their land.

In 1993, the total population was 43.1 million and there were 31.5 million rural inhabitants. There were 5.4 people per rural household, or 5.8 million rural households. The Agricultural Census in 1993 reported 2.92 million holdings, of which 0.2 million had no land. This would suggest a total of 3.1 million rural households without land, or 53 percent of total rural households. The average 1993 Census holding of 5.74 acres gave a total farm area of 16.8 million acres, but the *1997 Statistical Yearbook* states that net area sown was 21.53 million acres in 1992/93. This is a contradiction, since net area sown already adjusts for (deducts) double cropped area. It may be

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<sup>20</sup> One farmer said, “In Mandalay now, you cannot buy a candy on credit, much less a sack of fertilizer!” Only a heavy injection of capital will correct this.

<sup>21</sup> There are many reasons why high rates of landlessness tend to lead to reduced paddy production, some of which are discussed in Section V. Agricultural laborers tend to farm less carefully when they are cultivating someone else’s land and to spend less time preparing land and improving the soil. In the 1930s in the Ayeyarwady Delta, when landlessness rates were high, it was observed that quality and output per acre declined.

that the 5.3 million “extra” acres was on plantations, estates, or other areas not included in the farm census as household farm land.

The rural population had grown by 18 percent from 1993 to 2003 and so did the number of holdings. The area of the average holding increased slightly by 2003 to 6.2 acres and net area sown rose to 25 million acres, a 16% increase over the Statistical Yearbook’s estimate for 1993 area. This would suggest that landlessness remained at about the same share of households from 1993 to 2003.

While most rural households are engaged in farming either as an operator or laborer, there are other rural occupations which do not require land. Therefore, the calculated landless ratios can be regarded as possibly biased upwards on the degree of rural landlessness for farm-oriented households. On the other hand, very small holdings are not really viable without extra outside income and these are similar in prospects and behavior to landless households. Taking these factors into account, it is probably fair to say that one-half to two-thirds of rural households are landless or near-landless farmers or farm laborers. If the viable farm size is taken at five acres, as reported in our interviews, then only about one-fifth to one-third of rural households currently own viable farms.

## B. Optimal Farm Size for Rice Cultivation

There has been a recent move to experiment with large (100 acres or more) contract rice farms run by large, urban-based firms. These contract farms are well above the size of even larger family farms which seldom exceed more than a few dozen acres, while most farmers cultivate ten acres or less.<sup>22</sup> The relative productivity of different sizes of rice farms in poor nations has been widely studied. The general findings are that relatively smaller farm sizes of a few acres to a few dozen acres generally show higher output per acre, greater use of labor and less use of capital per ton of paddy than very large farms with similar land and water conditions. In places where labor is relatively inexpensive and capital is relatively expensive, this gives smaller farms lower costs *unless they face very high costs of inputs, borrowing and marketing* compared to larger farms. In other words, if rural policies and markets created a “level playing field” and allowed equal costs of inputs, the smaller farms would be more competitive. But if the large farms can borrow cheaply and sell their paddy at higher prices later in the season, they will become more profitable, even if their yields per acre are lower. This uneven situation would lead to land loss by smaller farmers even if they make better use of the land. Good government policy should encourage the efficient use of land and should not force farmers off their land if they are competitive. This suggests that productive policy changes would include development of a better credit system, and better post-harvest storage and processing facilities so that farm gate prices at harvest time would be higher. Private investment in such facilities would be encouraged by more reliable electricity, better roads, lower administrative barriers to exports, and lower port costs. Overall, an efficient and equitable direction for government policy would be to find ways to improve the productivity of typical farmers.

Small family farms are not only desirable from an economic efficiency perspective; there is evidence that they promote political and social stability as well. For evidence of this trend from the region, one need only contrast the experience of Thailand and Vietnam, where family farms predominate, with that of the Philippines, which for a variety of reasons has a large rural proletariat of landless laborers.

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<sup>22</sup> The 2003 Agricultural Census reported 3.45 million farm holdings of which 6477 or 0.2% were over 50 acres and 157 thousand or 4.5% were twenty to fifty acres. The average holding was 6.2 acres.

## VI. Policy Recommendations

The basic problem, aside from the lack of credit, is that the cost of producing rice and other crops has not dropped so much as their prices. If prices fall below the cost of production, output will fall until production is profitable again. But such an adjustment is undesirable because the incomes of farmers will fall and the price of rice in urban areas will rise due to the switch to imports and/or lower supply. *Increasing food imports may be a necessary emergency step, but will not address (and may aggravate) the underlying problems.* It is better to reduce the costs of production and let the paddy price rise to a sustainable level and so have more domestic output. How can this be done? It would require a stimulus package aimed at promoting agriculture. It should have three major thrusts to support farm production.

### 1. *Credit must be expanded by at least a factor of ten but at a higher interest rate.*

The Myanmar agricultural economy is severely undercapitalized. Revitalizing the economy and increasing production will require a dramatic expansion in the amount of credit available to farmers, traders, and processors as rapidly as possible but in a sustainable manner.

#### A. Institutional considerations

Providing credit to farmers on a large scale requires robust institutional capacity. At present the Myanmar Agricultural Development Bank (MADB) is the institution best-positioned to administer such an increase. Indeed, at present it is the only financial institution that is permitted to loan money to farmers.<sup>23</sup> MADB has a network of branches across the country, down to the township level in central Myanmar. It is likely that its staff are reasonably well-informed about local conditions although they are not used to making credit judgments because credit is lent according to the acreage a farmer cultivates. Most (landowning) farmers already borrow from the MADB. However, managing the credit expansion proposed here effectively will require significant enhancement of institutional capacity. The easier loans are to obtain, the more willing farmers are to borrow. Loan procedures should be streamlined and needless bureaucratic procedures abolished. Branches should be established at the village tract level, and in the interim credit officers should be mobile and readily accessible to their customers.

An effective agricultural stimulus will also require extending credit to traders, fertilizer dealers, and processors who traditionally provide credit to farmers. Rather than working through MADB, which has relatively weak credit assessment skills, it would be more efficient and also more effective for longer-run financial development, if the private banks had more deposits and were able to recapitalize traders who sell farm inputs and buy and process crops.<sup>24</sup> There are a handful of private banks with offices outside the few major cities and they should be the recipients of these deposits, as lending in market towns would be most likely to reach more farmers. The loans would be made at prevailing commercial interest rates and normal credit screening procedures would be applied by the banks. (There may be regulations regarding bank capital/loan ratios which would have to be met by investing capital in these banks or by allowing more loans for a

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<sup>23</sup> Although several private banks have expressed interest in providing credit to farmers, and have succeeded in doing so in small-scale pilot projects, thus far MADB retains an effective monopoly on agricultural credit.

<sup>24</sup> Several other changes would have to be made to the MADB to make it approach operating like a normal bank. It now has to pay 25% of profits to the government as a dividend and also can make it difficult for depositors to take out their money on demand.

given amount of capital. Allowing private banks to pay interest on deposits higher than the inflation rate would also help them attract more funds to lend out. So long as they proceed carefully, this would help improve the banking and financial system.)

<b>Key Features of Sustainable Agricultural Credit Systems</b>
Borrowers pay market-based interest rates (5%/month in case of farmers)
Scale: must be available to most paddy farmers
Institutional capacity: closeness to farmers, simple borrowing procedures
Multiyear time horizon to continue lending (necessary to provide incentive to repay)
Credit must be made available to traders and processors

#### B. Amount and terms of credit

The amount of credit MADB currently makes available to farmers—8,000 kyat per acre—is only a small fraction of the cost of paddy production. Official estimates of summer paddy costs are around 180,000 kyat per acre and over 130,000 for monsoon paddy. A tenfold increase from 8,000 kyat per acre to 80,000 kyat per acre would immediately inject a realistic amount of purchasing power for inputs into the rice production system.

An increase in the amount of credit must be accompanied by an increase in interest rates. This is necessary to absorb some rate of non-payment and to ensure that the government earns a reasonable rate of return on its investment.<sup>25</sup> Presently MADB charges 1.5 percent per month; we believe that an interest rate of 5 percent would be sufficient to ensure the program's viability. Farmers, who are used to paying 10-15 percent per month, responded enthusiastically to the prospect of 5 percent credit, which is typically only available to borrowers with gold collateral.

For farmers, if paddy prices were as high as in previous years, it is likely that applying one sack of fertilizer costing 25,000 kyat would produce at least 15-20 extra baskets of paddy and (assuming a paddy price of 3000 kyat per basket as in 2007) that would yield 45-60,000 kyat in revenue. This would provide ample margin for repayment. There would be enough extra output to easily cover the repayment of any reasonable loans.<sup>26</sup>

While interest rates should rise to 5% a month, the term of loans should be extended beyond the immediate harvest. Farmers often have to sell at very low prices at harvest time in order to repay loans, and then are forced to buy back rice at much higher prices later on. Extending the repayment term of production loans would allow them to store paddy for a few months and sell at more favorable prices. Giving a few more months to repay loans while charging interest would

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<sup>25</sup> The repayment rate on MADB's loans is estimated to be about 75 percent, though this was partly due to the very low price of paddy.

<sup>26</sup> This statement is true at current "normal" world rice prices. In January 2009, Vietnam was exporting 25 percent broken at \$340 to \$400 per ton while Thailand was exporting 100 percent broken ("A-1 Super") at \$300 per ton. This analysis assumes that Myanmar could earn \$280 a ton for its 25 percent broken rice with export and port reforms and its farmers should get \$140 per ton for their paddy with no export tax. That is equivalent to 3400 kyat per basket of paddy, but loans could be repaid at even 3000 kyat per basket.

help improve farm incomes. The policy of requiring immediate repayment of MADB loans created severe burdens for many farmers.

While credit is urgently needed in the short-term, any credit expansion should be for a period of at least several years. *The reason most farmers pay back loans is so that they will be able to borrow again.* It is imperative that an expansion of agricultural credit not be a one-time event, as it is likely that repayment rates would be low. Any government intervention, with or without foreign assistance, should be aimed at creating an ongoing source of funds for the rural sector. It is much better to lend less on a sustainable basis than a lot on a short-term basis. A major danger is that aid is used in a non-sustainable way and retards financial development. If there is an emergency need for assistance to farmers, it should be met by fertilizer or other grants, not by one-shot soft loans. This is important for both foreign aid and for government programs.

### C. Sources of capital

Obviously the effort envisioned here would require a significant amount of capital and could only be fully provided by the Myanmar government. With about 17 million acres of paddy, this program could potentially use over \$1 billion. However, we emphasize again if credit is made available at 5 percent per month and the program is administered reasonably professionally, the government would earn a return on its investment. Capital could be provided out of Myanmar's foreign exchange reserves or borrowed on international markets against future oil and gas revenues. Bilateral aid could be deposited in private banks and loaned to traders and processors.<sup>27</sup>

### D. Alternatives

If less capital were available, credit could be focused on those areas hit by Nargis or with the most responsiveness to extra credit. The MADB would lend this money, but allowing and encouraging other banks to lend to farmers, traders and processors would also help to reduce their credit squeeze.<sup>28</sup>

Another response is to give away more fertilizer in hard-hit areas. Fertilizer has been distributed for free to farmers in Nargis areas, but they are clearly well short of recovery. A sack of fertilizer sells for about 25,000 kyat (about \$20) and one sack per acre (or per farmer with limited aid resources) is one way to transfer needed and productive resources to those who might otherwise not have the means to use this input. If there were five million acres and one sack per acre (something like 1.5 or 2 sacks per acre could easily be justified on an agronomic and economic basis), this would represent a cost of about \$100 million. This is likely to be easy to do, productive in its impact, and relatively equitable with limited losses. It is also scalable, in that more or less area can be targeted for distribution.

## 2. *The farm gate price of paddy must be increased*

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<sup>27</sup> Another possibility is for foreign banks, such as Export-Import banks, to finance fertilizer and other input purchases on longer than normal terms. This would help to recapitalize the rural credit system.

<sup>28</sup> While banking was not the focus of the study, it is clear that with inflation higher than interest rates, it is very difficult to attract bank deposits. A move to normal banking with interest rates above inflation is badly needed and would be positive for the farm sector, but financial and macroeconomic reforms are required for banking to function well.

Even if credit is made available, as long as paddy prices remain at current levels, farmers will be reluctant to borrow to purchase fertilizer and other inputs.<sup>29</sup> An expansion of agricultural credit must therefore be accompanied by a concerted effort to raise the farm gate price of paddy. To raise rice prices to 3000 kyat per basket, several steps need to be taken.<sup>30</sup>

Existing policies that depress the farm gate price should be abolished. Currently it is not easy to export rice from Myanmar. A large private stock of thousands of tons of rice is needed to even apply for an export license. There is a 10 percent export tax on rice. The costs of Yangon harbor are high and ships prefer to avoid it. Internal restrictions on trading rice add to complexity and costs. Reforms and investments would reduce port charges and delays. The export tax could be dropped when world rice prices are very low. Export licensing could be abolished or greatly eased. At present, buyers fear that the government may prevent export contracts from being honored, which creates uncertainty and a disincentive to export. A special rice warehouse could be established that was legally (not physically) out of the country, so that a contract signed for rice export from that warehouse would be sure to be honored.

We observe that for many years the government has sought to keep retail rice prices in urban areas low, and has at times resorted to strong administrative measures to achieve this. While the government is correct to be concerned with food prices, if price control measures are imposed in a draconian manner without regard for market incentives, at some point farmers will respond by growing less paddy. This is the situation we may be witnessing now. Internal restrictions on the movement of rice should be abolished because they interfere with market operations and encourage rent-seeking behavior. Doing so would also lower prices in regions where prices are now relatively high. This is desirable for rice farmers in areas of low cost production and for consumers in areas of high cost production. It would result in some farmers switching out of rice into more profitable crops. This should be encouraged rather than be an issue of concern.<sup>31</sup>

Rice quality must be improved. One reason why the export price is low is that the quality of Myanmar rice is poor in comparison with other exporters in the region. (The export price is a reflection of the quality of a given category of rice.) Inadequate drying facilities and antiquated mills that lack modern technology like color sorting produce rice that is inferior to Vietnamese and Thai alternatives. As a result, at present Myanmar rice of the 25 percent broken variety commands an export price that is even lower than 100 percent broke Thai rice. We were told that several modern mills have been built but are sitting idle or operating at low capacity; these facilities could presumably increase output quickly. On the whole, however, upgrading existing facilities will take time and considerable investment. Before they are willing to make such investments, businesspeople must have confidence that their investments will be protected and they will be able to earn a return.

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<sup>29</sup> If a sack of fertilizer costs 25,000 kyat and 10 percent a month interest, it could end up costing 35,000 kyat with interest. Yet it might yield only 15-20 extra baskets of paddy and these might sell for as little as 2,000 kyat for each basket. Thus it might generate as little as 30,000 kyat, or a loss.

<sup>30</sup> Even if paddy prices were to rise to 3000 kyat per basket, Myanmar's paddy prices would still be equal to *only about half* of paddy prices now received by farmers in Vietnam.

<sup>31</sup> Prior to launching agricultural reforms in the mid-1980s, Vietnam imposed restrictions on transporting rice across province lines. The result was that, denied a market for their paddy, farmers in the Mekong Delta (the country's most productive rice growing area) grew less, while rice deficit regions in the center and the north suffered food shortages. When these restrictions were removed, the market began to function properly, to the benefit of producers in the south and consumers in the north. Northern farmers shifted to other crops that produced higher returns.

If the export price of rice were to rise, the retail price would too. This in itself is not desirable for urban consumers, but maintaining rice prices at artificially low levels undermines economic development. Higher rice prices would stimulate rice production and generate multiplier effects that would accelerate the growth rate of the whole economy. When farmers' incomes rise, they buy inputs and consumer goods produced in cities. This creates urban employment, and helps city people buy more food, which in turn stimulates the agricultural economy. Throughout Asia, economic growth began with rising demand in the countryside, where most people live. There are no examples of Asian countries that have enjoyed rapid economic growth without a profitable farm sector.<sup>32</sup>

It is completely understandable that the government would be nervous about "freeing up" the rice trade. One argument is that the best time to do it is when world rice prices are low, because there is not a major impact. A second argument is that the rice export tax can be brought back if there were a need to prevent excessive domestic price increases. A third way to control rice prices would be to invest in a domestic paddy reserve that could be used to provide additional supplies where shortages appeared. *Acquiring and managing such stocks is not cheap and requires a high level of skill to turn over the paddy and to buy and sell it without creating major losses.* The experiences of BULOG in Indonesia may be of some use in thinking about the feasibility of this sort of approach.<sup>33</sup> However, some combination of policy options such as these would allow the government to avoid sharp and unwelcome jumps in the domestic price of rice. This is a totally legitimate and important goal.

If a market based intervention were not favored, the other obvious approach would be to intensify the "instruction" model. Farmers could be instructed to grow summer paddy, even when they do not want to and when other crops would be better for them and for the land. (Many farmers noted declining fertility of land in areas where multiple rice crops were "strongly encouraged." The reasons could include a lower level of organic matter, a lack of potassium, or micro-nutrient deficiencies.) They could be given inputs and forced to repay their cost.<sup>34</sup> But such an approach might make the farmers poorer. It moves rice farming toward a centrally planned economy – while Vietnam has become among the top rice exporters by going in precisely the opposite direction. Most of all, it tries to "paddle upstream" and force the farmers to do what is against their own interest. They will try to persuade or pay local authorities to look the other way. Only intense supervision and pressure will result in a temporary success. But if more farmers lose their land, it could be a costly victory. Rice is grown most efficiently on small farms, not by contract farms. If farmers are given a decent price and credit, they can get higher yields. Moving towards a market-based model will produce more stability and output than an "instruction" approach.

### *3. Labor-intensive rural infrastructure is needed to raise farmers' incomes*

Many farmers are deeply in debt. Even if credit were available and paddy prices improved somewhat, many good farmers will still be in deep trouble. A third element is needed. Grants for

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<sup>32</sup> The only exceptions are the city states of Hong Kong and Singapore, but even these countries benefited from rapid agricultural growth in neighboring countries and regions (Malaysia and Indonesia in the case of Singapore, and China in the case of Hong Kong).

<sup>33</sup> BULOG is a state logistics agency established to stabilize the price of rice and other commodities. Its record of losses and high costs suggest that it is not easy and may be very expensive to involve the government in rice storage, trade and logistics in order to stabilize prices.

<sup>34</sup> There is not significant government pressure to plant monsoon paddy, since rice is about the only viable crop under most monsoon conditions. It is only with irrigated summer paddy that the farmer may prefer to grow a non-rice crop but feel under pressure to plant rice.



local infrastructure should be made to villages. (Technical assistance on road or bridge building or small irrigation canals could be provided from the township level if needed.) The object of these grants should be to increase demand for wage labor in the off-season for the landless and for indebted farmers. It should also strive to produce needed rural infrastructure, chosen by the village committee – not by higher levels. The amount of the grant, its terms, and any instructions or supervision would need to be worked out but similar schemes have worked in Indonesia and Thailand and more recently in Cambodia. If food aid were used in support of such activity, it would be helpful in addressing systemic and not just emergency problems. The reduction in rural debt burdens, the reduction in transport costs, and the ability of the landless to avoid real hardships would all be tremendous benefits of this proposal. Indeed, farmers in the Ayeyarwaddy Delta universally expressed interest in work that paid 2,000 kyat per day, including farmers with 10-15 acre holdings. The need for this type of program is clearest in the Nargis-damaged zones where much rural infrastructure was damaged or destroyed. But even in other areas, the high debt levels and poor rural roads and irrigation canals would suggest an infrastructure program would be productive.

These three proposals: much more credit at a higher interest rate; better farm prices for paddy and other crops, and labor-intensive rural infrastructure would be economically efficient and socially stabilizing. They would reduce poverty and landlessness. They would improve nutrition<sup>35</sup> and rural livelihoods and boost Myanmar as a rice exporter. This would in turn help ensure that urban rice prices were held to reasonable levels and would not jump out of control. While the temptation is to use instructions to force more rice output and keep retail prices low in the current manner, this would only be a short-run solution. It is actually a risky policy in the current environment.

Finally, it should be understood that virtually all nations are undertaking stimulus packages in the current global slowdown. Should Myanmar choose to invest more in its people and rural sector, it would not suggest any different approach than that of other nations, including many in Europe, the US, Japan and China. A stimulus package is a response to a changed international environment and is a sign of good economic management, not of weakness. Had rice and pulse prices stayed high, the stimulus package would not be needed nearly so much, so quickly or over so much of the country.

## **VII. Conclusion: Humanitarian Intervention versus Development Strategy**

A core message of this paper is that the precarious state of the Myanmar countryside will persist even if a food shortage is avoided this year. For many years an exceptionally productive wet rice ecology cultivated by industrious and skilled farmers has endowed the Myanmar countryside with a resilience that has enabled it to produce a surplus despite chronic underinvestment and counterproductive policies, such as in the area of prices, that have distorted incentives. Because of this resiliency, it is difficult for many in Myanmar to envision the possibility that the country may experience a shortfall in paddy production and resulting food shortages. But this faith in the continuity of the status quo is undermined by reality in the countryside, where farmers are deeply indebted and scaling back production to minimize their losses, while the most vulnerable are reduced to living meal-to-meal. We believe that without a concerted policy response along the

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<sup>35</sup> A November 2008 UNICEF presentation reported malnutrition rose from 34 percent in 2003 to 41.9 percent in 2008 in Nargis-affected areas. An increase of this magnitude is very unusual and suggests significant food security issues. After Nargis, 71-74 percent of families reported spending over 75 percent of income on food – a very high level consistent with the higher wasting and stunting observed.

lines described above, the agricultural economy may sputter to a halt, with potentially devastating economic, social, and political repercussions.

The immense potential of Myanmar's rice economy is undeniable. Historically, the country has been a major exporter. But in 2007, Myanmar exported only 10 percent of the volume it exported in the 1930s and Myanmar's rice commands a lower price on world markets than equivalent categories of Thai and Vietnamese rice. Myanmar faces challenges of quantity and quality. In this paper we have recommended a set of policies to boost production and avert a possible food shortage. While some of the steps we recommend will take longer to implement, all of them are humanitarian interventions: they are steps to avert a crisis, but are not enough to put Myanmar on the path to greater prosperity followed by its neighbors. Reversing decades of underinvestment in the rural economy and achieving Myanmar's potential will require much more than humanitarian interventions. What is needed is a vision for the country's future and a development strategy to attain it. Development will require the coordinated implementation of a raft of reforms across a range of sectors.

The basic finding of this study is that farmers in Myanmar that we talked to, in both the north and south, were facing an unprecedented lack of access to credit and inability to afford inputs. In addition, prices of many crops were below profitable levels. If these conditions persist, it is likely that both yields and area planted (especially for summer paddy) will fall. This would cause a significant decline in output. If the entire farmed area were similar to those areas we visited, then production would fall by at least two million tons of paddy. In addition, important cash crops would follow a similar path, depriving farmers of the ability to buy rice. It is of very high priority that these negative influences be reversed. If they are not, many farmers and their families will want for enough food. The shortages could even extend to the cities, further aggravating the food security situation. The result could be a humanitarian crisis rivaling Nargis in its destructiveness. *Farm recovery should therefore be viewed as a necessary continuation of the humanitarian response to conditions in Myanmar.* The government must recognize that it alone has the resources to invest the amount of capital the agricultural finance stimulus package requires. For its part, the international community should consider modifying the sanctions regime to permit support for agricultural finance, trade and small-scale infrastructure projects.

The solutions are clear. If credit is lacking, it has to be made available. If prices are too low, they have to be raised. Credit could be lent through the MADB and other banks at a rate high enough to cover costs and risks of lending. Investing (not spending) foreign exchange reserves or other available sources of funds is necessary and justified and would be profitable. There is some urgency in this recommendation, as conditions are harsh and normal pressure valves, such as working in the cities or abroad, are not feasible as before. As for prices, removing export taxes and bans or licenses would be a huge first step. In addition, lowering the costs of Yangon port and of internal transportation, as well as eliminating restrictions on the movement of paddy within Myanmar would also tend to raise prices, especially where they are lowest.

In addition, establishing a cash-for-work rural infrastructure fund at the local level would allow farmers and the landless to earn extra income in the off-season. It would help them avoid risky and sometimes dangerous migrations to distant work places while building up local roads, bridges, irrigation canals and markets. If food aid is introduced, it should be tied to some sort of paid infrastructure work.

If steps such as these are not taken, it is likely that the food security of Myanmar will be severely challenged. It cannot be in the interest of any government to have such a situation develop. It is not only a serious situation, but also one in which timely action is needed. Fortunately, the steps

needed should pay off in a business sense as well as in a political and social sense. The needed steps can be taken by the government. However, thoughtfully administered development assistance would hasten and deepen their impact.

## Appendix I. Calculating Myanmar's Actual GDP Growth

Official GDP growth data in Myanmar are implausible. The reported growth of 12.8 percent per year from 2000 to 2008 exceeds that of China. Yet China has invested over 40 percent of its GDP every year while Myanmar invests only 10-14 percent of its GDP each year. In addition, a great deal of the investment in Myanmar is in low-return or slow payoff projects such as the Mandalay airport. No country in the world grows at a rate equal to its investment rate/GDP for long periods of time, even if investment is very well chosen. The more normal relationship is for three to five units of investment to be needed for one unit of growth. Based only on the investment ratio, the expected growth of Myanmar's GDP would be 2-4 percent a year or 0-2 percent in per capita terms since 2000. (Population growth is about 2 percent a year over this period and should be deducted from GDP growth to get GDP growth per capita.)

Another indirect way of measuring GDP is to observe the growth of electricity. Electricity normally grows faster than real GDP, often twice as fast in nations with relatively low initial consumption per capita. Electricity generation by the Myanmar Electric Power Enterprise was 5118 million kWh in 2000/01 and 6604 million kWh in 2007/08, an annual increase of 3.7 percent. Again, the expected real GDP growth based on electricity growth would be 1.9 percent to 3.5 percent a year. It is likely that diesel generation grew quickly in this period, but data are not available for that decentralized source. However, the amount of self-generated power is probably small relative to centrally produced electricity, so even if it were included it would not cause total power generation to grow very much faster. For 2005/06, one estimate put the diesel generation of electricity at 12 percent of the central generation. This would leave the electricity-based GDP growth estimate very close to the growth estimated from investment.

A third observation is that economies with very rapid growth also experience rapid structural transformation. The share of agricultural GDP drops sharply while manufacturing and higher value services rise. There has been very little structural change of this sort, suggesting that actual growth has been much slower than reported.

Putting all three of these cross-checks together, it appears that there was a positive but modest growth of real GDP since 2000. It is possible that per capita GDP growth was close to zero, but more likely that per capita growth was 1-2 percent per year. This is quite modest for Asia and slower even than the Philippines. If income distribution were becoming more concentrated (say due to the rapid growth of natural gas exports which are controlled by the state), then it is quite possible that most people would have level or even declining real incomes over this period.

## Appendix II. Responding to Emergency Situations

When a situation tips from bad but within a normal range to truly critical, it is typically the case that unusual interventions are employed to prevent widespread harm. If the agricultural situation in all or part of Myanmar fall within this description, humanitarian aid is likely to be made available. Such aid often includes food aid, cash and other grants as well as low cost credit and food-for-work.

In thinking about a productive and effective response, it is useful to take into account longer-run issues, even while dealing with the immediate problem. For example, the credit system in rural areas has largely broken down. Fairly high interest rates are needed to attract capital on a sustainable basis. Yet because of widespread distress among the landless and many farmers, there is often a desire to make loans at low interest rates. Such loans can actually exacerbate a difficult situation. If terms are too short, who borrow from the “cheap” program may be forced to repay by borrowing at very high rates before their crop produces income. Or the loans, which are often temporary, might depress the development of sustainable institutions and leave the farmers without credit once the emergency aid program ends.

A better solution to an emergency situation is to give away cash or fertilizer. There are obvious problems with this approach – who is to say the right people get the cash? However, in the Nargis areas, IDE distributed fertilizer to farm families equitably and transparently. The distribution plan can be based on a per family or per acre basis or some mix, depending on intent and resources available. If IDE or other capable organizations are available, it is *much* better to give away inputs or cash and also to lend at market rates. The point of this is not to adhere to market ideology but to allow and encourage sustainable credit institutions to develop after the aid stops. The combination of grants plus regular loans can be made exactly equivalent to a subsidized loan in terms of burden on or transfers to the targeted families.

Another point to keep in mind is that the entire rural system and economy does not work well. That means a production loan, due upon harvest, will force farmers to sell their crop at abnormally low prices. Since most farmers are short of cash and in debt, they will all sell at harvest; as there is little capital in the system, paddy or other crop prices will fall precipitously. In order to help increase net incomes, a well designed credit system would extend credit some period after the harvest, allowing farmers to sell at more favorable prices. Simply providing input credit for a short period will help farmers produce more but may not increase their incomes much.

In addition to these considerations, the characteristics of successful agricultural credit programs described in Section VI above are important. Sustainable credit should pay market-based rates, be widely available, be close and simple, be from a permanent institution, and should include processors and traders – not just farmers. To mobilize savings in adequate amounts to provide these loans, interest rates on savings deposits or bonds should pay a positive real interest rate (more than inflation).

Beyond lending, the large fraction of families without land or with very little land should also be considered. In current conditions, the amount of work and therefore income for these households is apt to be limited. Any emergency program should consider ways to provide income-earning opportunities for this group. It is likely that local (village tract level) public works could be organized and executed if funding were provided. Again, the problem is finding a way to communicate the program design, transfer the cash without leakage, and spot check the results to ensure adequate execution. Using NGO's to implement some of these functions may be preferable to relying solely on higher levels of the government. In the event though, village tract

and village-level officials will have to be relied upon to select and execute these projects. This will mean some level of waste, but good design can keep this well within acceptable limits.

Myanmar may be forced to import food, but if food is available within the country, it would be better to negotiate lower internal barriers and transfer it from surplus to deficit areas. Of course, if incomes are so depressed that many families lack the income to buy food, then buying and distributing food may be necessary. But it is preferable to focus on the production and distribution of food than on its importation, at least in a “natural” food exporter such as Myanmar. The ultimate and immediate goal is to prevent hunger and reduce poverty, but accomplishing this in a sustainable manner is preferable to an approach that leaves little or no incremental capacity after the program terminates.