Miss Conceptualizing Growth Role of Small Farms

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On January 24-25 IFAD is holding an international conference on small farms. The purpose of the conference is to chart “new directions for smallholder farming”. The idea is that if one increases the assets of the rural poor and their productive capacity and if they are presented with opportunities of non-farm economy, small farms are able to realize their potential as small-scale businesses. This idea is not new and it has been earnestly tried in Africa for the past few decades and according to my view it has only a relieving effect. Why put old wine in a new bottle now?

It is stated that the continued pervasiveness of poverty was the main cause in designing effective instruments believed to support small farms. Instead of trying to “save small farms” I advocated a diametrically opposite approach calling for the gradual disappearance of small farms as an economic sector. In a rather provocative form I put forward sequence of strategies to “get rid of small farms” (see http://aigaforum.com/articles/Future_of_SmallFarms.pdf). Some readers found the title as disgusting and one reader even accused me of biting the breast that feed me (putting me in mind of the people who financed my education).

Calling for Value Changes

I would like to remind these commentators that farmers’ value for subsistence agriculture has completely changed. Old day attitudes have now gone. Population pressure effects such as land scarcity and diminishing returns to labour have led to a decline in farmers’ valuation for subsistence agriculture. Farmers do not longer consider agriculture as significant and primary as it used to be when resources are in abundance. They start to value other livelihood strategies such as wage labour, migration to urban areas and/or education (Tsegaye and Bo, April 2009).

In our field study on the expansion of mass education in rural Ethiopia interviewed farmers said that “agriculture does not create jobs for their children and in cases where it does it has not improved the household material well-being”. Parents said that they do not want their children to be farmers like them because they do not any longer consider smallholder agriculture as significant and primary as it used to be when resources were in abundance.
Since they see no future in farming, they think that schooling is obligatory and will open better opportunities for their children.

My question is why some of us would like to keep them tilling and terracing the land when farmers themselves do not see it as a viable strategy? If some of you are interested in preserving the environment, why wanted farms do the job for you while you are leading a comfortable life in the cities (see the picture on terracing below and put yourself in their shoes). Why not small famers have the right to live in towns and cities just as you do? Because some ideologists for the purpose of securing political support would like to keep them in the rural valleys and plains does that mean that the life of small farms are condemned to till the land? Why consider small farms with generation of experience in agriculture as stupid and as having not tired out the various methods of developing agriculture? If some of us think that small farmers have not yet finished their homework of tilling the land, why don’t we do it ourselves? The “effective instruments” proposed in the policy framework have been tried out for many years and proved to have only short and immediate relief. What needs to be done is not “to save small farmers” but to find a permanent structural solution that knocks the poverty trap that closed them for decades. The attitude of small farmers has changed for good and it is time for us now to change accordingly and think differently.

Why condemning Ethiopian youth life to terracing in the name of small farms and agricultural growth? Change your values! The youth in rural Ethiopia deserve urban life just like you. The question is how. Think differently and you can get the answer.

My argument is that small farms cannot save themselves and at the same time be the engine of agricultural growth under conditions of population pressure and globalization process. Not only that their time is out, they cannot generate, or even if given support, they do not have the capacity to absorb the required capital for growth. Small farms contribute to agricultural development if and when they dissolve themselves into an employment based
economy. The support for small farms should be designed after the functional and market needs of manufacturing industrial expansion in rural towns, and not vice versa. First comes the industrialization of rural towns and followed by program of dissolving small holder agriculture into large scale schemes through green revolution led by the state and co-operatives.

**Questioning the Theoretical basis used to save small farms**

Besides the historical fate of agriculture and the current price hike at global level, factors which I shall take up in the later part of this paper, the fundamental reason for my argument against “saving small farms” is the unsound scientific basis used to advocate their efficiency. In the research literature the preference for small farms is based on the following views: “small farms bring several advantages over large farms, including their greater economic efficiency, their contributions to creating more employment, reducing poverty and improving food security, and their consumption patterns which help vitalize the rural nonfarm economy” (Hazell 2011).

In the case of African countries these assertions can be supported neither theoretically nor empirically. The statements hold true in countries where there have been green revolution: an introduction of an integrated technology package consisting of hybrid seeds, chemical inputs (fertilizers, pesticides) and irrigation cultivation practices. This package has to be successfully adopted by farmers to realize the potential yield. The moment small farmers start to adopt the package of green revolution, they shade their characteristics as small farms (land size of less than four hectares operated chiefly by family labour producing for own consumption). Small farmers in green revolution think and function on the logic and principles of large scale farming (due to the very nature and cost of the technology) and under such conditions there is no need of talking about small farms. In green revolution small farms assume a different quality and they simply cease to exist in their older form.

In context of African countries, the use of scale and efficiency criteria to justify the growth role of small farms are irrelevant. A microeconomic theory applied for purpose of justifying their role is the concept of economies of scale, which “refers to the cost advantages that a business obtains due to expansion”. Economies of scale is a practical concept used for “explaining phenomena such as patterns of international trade and the number of firms in a market”. The economies of scale help explain why companies grow large in some industries.
While this concept applies for large scale farming, its application for small farms is irrelevant for two reasons.

First, the theory assumes the cost advantages that a business obtains as a result of output increase more than in proportion to inputs. Examples of sources of cost advantage are: “superiority achieved through factors such as access to cheaper inputs, efficient processes, favorable location, skilled workforce, superior technology, and/or waste reduction or elimination”. Small farms do not function on the basis of such economic logic and I do not understand why this theory is used to justify their growth role. How does one expect scale economies in production as long as outputs are produced in the backyard of small households intended primarily for own consumption purpose?

The emphasis on issues of scale is appropriate for a market based economy. In subsistence economy, however, production factors (mainly land and labour) are not separate elements functioning on the basis of market price. Subsistence households are risk aversion and their objective is in securing food and they are less interested in growth. The effort of the subsistence households is to maintain the level of output that can guarantee household food security as the number of children and consumer increases in the household (see Malmberg, and Tegenu, 2006/7).

The second reason is that economies of scale assume that inputs are not fixed: one input can increase in proportion to the rest of inputs. This is not true for land based economy of small farms. In conditions of higher population density and little technological application there is always land scarcity. While the labour force grows as households multiply, land is becoming scarce variable in rural areas. When it is not possible to increase all inputs in proportion, the principle of economies of scale is not applicable. The relevant theory in the case of small farms is the law of diminishing returns, which states that “we get less and less extra output when we add additional doses of an input while holding other inputs fixed.” In other words, the marginal product of each unit of input will decline as the amount of that input increases holding all other inputs constant.

Unfortunately the law of diminishing returns is not discussed as related to policy framework on “saving small farms”. Had this theory been used to investigate the role and future of small farms, there would have not been discussion on the growth role and efficiency of small farms. In conditions where labor is abundant relative to land, farmers’ application of more labor to land than was optimally necessary in order to raise output leads to low
agricultural labor productivity, hence small farms have limited growth role. In other words, increasing application of labour on fixed amount of land eventually leads to decreasing levels of output per unit of input. Under such conditions household either intensify agriculture (Boserup model) or migrate to towns. While migration increases the speed of urbanization, intensive agriculture, under conditions of labor force grows eventually leads to reduction in labor productivity and value per unit of labor input unless complemented by increased capital intensity or technical change.

Instead of using the law of diminishing returns proponents of small farms use the empirical based hypothesis of inverse relationship between land size and productivity. This hypothesis assumes “land is homogeneous and in fixed supply to farming” but considers small farms as efficient by comparing physical yield differences between them. The hypothesis examines the relationship between farm size and (land) productivity. Empirical studies of this relationship concluded that “more is produced per hectare on small than large farms”.

I think it is first necessary to mention why some researchers are interested in this hypothesis. They assume that reforms geared towards increasing agricultural efficiency will not lead to equitable growth if the initial asset distribution is unequal among households. Land should therefore be equally distributed for the purpose of yield growth per hectar.

But there is problem in defining size. In the empirical studies on India, small is defined as land size less than four hectar. When compared to eight hectors of land (large scale farming according to the logic), those below four produce more. As I have mentioned in my previous postings the question is when does land size count as determining role in output growth per hectar? As households are not uniform in the provision of family labor (due to difference in the household demography), land size has different implication for different households.

In the case of households with low dependency ratio (young couple (singles.married) without dependents and with two dependent children under 15 years old, and elderly households with one person, two or more elderly members) the combination of land and labour is optimal, to a point an increase in land size does not lead to an increase in total production given the limited quantity of household labour. In such type of self-sufficient households increase in land requires an addition of hired labour. In the case of household types with high dependency ratio (ratio of producers to dependents)-- households with three dependent children under 15 years old, and four or more dependent children under 15 years old-- given the relative high labour input in agriculture it is possible to increase output per
worker if the household is provide with land. In the case of household types with low dependency ratio (households with two or more adult children above 15 years old, households with affiliated adult relatives and married couples who have not yet established their own households), there is no need to increase the size of land holding. What is needed is an increase in the household labour participation rate or creation of new holding for new entrants, for those who move out the household and form their independent household. The conclusion of our field study on the relationship between sources of production increase in rural Ethiopia, is that efficiency depends not on land size but on the size of household labor input.

The second reason for rejecting the use of inverse relationship between land size and productivity (IR, for short) is the consequence of technological implication on small farms. Researchers observed that IR could be rejected at a higher level of agricultural technology Deolalikar (1981). Output per acre and fertilizer use per acre relationship to be weakened as small farmers began to adopt new technology such as green revolution. During the period of green revolution there is a positive relationship between yields and farm size and large farms enjoy higher productivity than small farms. IR use is limited only to subsistence agriculture in which production factors (mainly land and labour) are not separate elements functioning on the basis of market price. Subsistence households are risk aversion and their objective is in securing food and they are less interested in growth.

Some say that compared to other types of households which are under identical conditions/settings, subsistence households are efficient because they have no agent problems (management problems). But this does not mean that subsistence households can be consider as small-scale businesses to study a given level of output based on factor combinations. Efficiency concept accounts both the value of the output and the input costs incurred to increase output either through decreasing input or maintaining the same level of output. Subsistence households are efficient not in the market sense of the concept rather in the sense of their willingness to put in a high amount of physical effort, because they are neither capable of generating capital nor capable of using it.

**Questioning the comparative Methodology of Small and Large Sale Farming**

The whole exercise of idealizing the efficiency of small farm emanates by making comparison with large scale farms. In principle comparison helps to examine further the nature of an objective which we see always. We already know the object we see but we learn more about it
when we compare it to some new similar object. We know about small farms in a given country (our working idea) and what should be done is to know more about it by looking other similar cases in different countries. Discovering similarities confirm or amplify the various essential features of small farms we know initially, and recognized differences serve to modify our working idea about small farms. In other words one can compare small farms in Africa, Asia and Latin America. But I do not see any theoretical ground or empirical necessity to compare small farm with large farm. Even if both are land based economy, they have qualitatively different theoretical and empirical basis. While both start from different beginnings we insist to proceed to examine them as if they are along the same line or as if they are similar cases. Probably this why we lack theoretical coherence in the study of small farms. As discussed above the microeconomic theory of economies of scale used for large scale farming is unnecessarily applied for cases of small farms, while IR used for subsistence agriculture is forcefully squeezed to understanding modern large scale farming.

Small Farms Contribution to Creation of Employment and Food Security

In addition to the ethical and theoretical grounds mentioned above, there are employment and food security factors used to justify the growth role of small farms. It is said that small farms have contributed to the creation of employment and improving of food security. In the case of African countries this is simply not true. I have extensively discussed these issues in my previous public postings (see http://www.aigaforum.com/articles/Labour_Force_Growth.pdf). Here I will only summarize the findings:

In our study on rural employment in Ethiopia, in the period between 1999 and 2005, the majority of employment was created in the farm sector (85,5% in 1999 and 89% in 2005) compared to the small base sectors (non-farm service sectors). The farm sector is followed by the non-farm public service sector (0, 6% in 1999 and 0,9% in 2005). In the farm sector most of the increase was in the self-employed subsector. The question what does it mean an increase in self-employed farm subsector.

An increase of small holder agriculture means further increase in land fragmentation. As the young age labor force grows employment has to be created through de-accumulation of rural assets such as land. When we say small scale farms create employment we mean there is a continued land fragmentation beyond the optimal level for self sufficient production. In the period under discussion employment creation resulted from: land/resource fragmentation
(through partition and redistribution); area expansion (into wildlife inhabited lands or fragile environment areas); sharecropping and land rent (often informal in nature).

If there are no more lands for expansion there will be rural unemployment. During our study period rural unemployment was around 3.5% (of the economically active labor force). Of those employed in the rural sector, 45% were in the wage labor category. This means there was higher frequency of farm wage labor. In addition, there was an average of 700,000 new entrants every year finding employment in a stagnant sector.

As a result of a growing young labor force and continued land fragmentation and households higher food consumption requirements, there is already problem of food security. Of the 6.5 million households in the three researched regions about five million (76.8%) households have food-grain deficit, and these households are made up of child-rich households (56.7%) and labor rich households of larger size (15%).

The conclusion of the study is that small farms cannot be the engine of employment creation and sources of food security at a time when labor force growth is characterized by young age and household types of higher consumption requirements.

**Missed Concepts: Household Multiplications and Labor Force Growth**

The missing link in the analysis of the growth role of small farms is the factors of household dependency ratio, density ratio, household multiplication and rural surplus labor. These factors are not static as they seem or assumed to be. The level, timing and distribution of these measurements affect capability and factor ratios in rural areas.

Early household formation and the increase in the proportion of marriage had multiplied the number of households over time. Children born from a father had literally formed a cluster of village (group of households) around a single family (see Figure below).
Parallel with the multiplication of households, there is growth in the labor force seeking for employment. I call this labor as surplus labor and there are two sources for its growth. The first is the under employed labor engaged in the crop production of the child-rich households. Of the 27,989,016 agricultural labor force (in 2005), 45% are self-employed belonging to subsistence households, while 44% are farm wage labor employed in “elementary occupation” (manual labor as daily farm wage labor, food for work, quarrying, construction, etc).

The start of the labor force growth in rural Ethiopia is associated with an increase in the number of

- landless households (5.5% of the 6573143 households)
- unemployment (3.41% of the economically active labor force),
- Higher frequency of farm wage labour (45% of employed persons)
- low productivity of the households (a result of food crop area expansion into marginal lands), and
• food deficiency (76.8% of the research households)

If there are no more lands for expansion and problems of technological and market adoption, what is the purpose of keeping the labor force in the rural areas where employment generation and level of productivity is very low? Is it not wasting a resource?

One final missing link on the growth role is the view to consider small farms only as production unit without their consumption requirements. The conclusion made on the contribution of small farms to food security could have been different had small farms been considered both as a production and a consumption unit. For a detailed discussion see my earlier posting titled “Get Rid of Small Farms: Reflection on 2008 World Development and 2011 Rural Poverty Reports” (retrieve from http://aigaforum.com/articles/Future_of_SmallFarms.pdf).

Future of Small Scale Farming

A look at the history of agriculture shows that small scale farms have no future. Sooner or later they dissolve into an industrial based economy or disappear in the form of large scale mechanized farming. In the country where I live it is only 4% of the labor force of the country engaged in agriculture and produce a surplus of agricultural commodities which are used inside the country and exported outside at a large scale. In Ethiopia 85% of the population live in rural areas engaged in small scale farming. The European countries experience shows that small farms disappear at some point in time. Given this experience what is the purpose of trying to save small farms from their historical fate.

Given the current trend in price hike both at the global and national levels, it is very difficult for small farms to scale up their production. In India a combination of uneconomic holding size, rising input costs, high variability in yields and in output prices, has lead to an increase in the number of suicides by small farmers. This shows the desperate need to come out of small holder agriculture. Saving small farmers will increase the suicidal or migration rate.

Scaling up or Getting rid of Small Farms

The current move is to scale up successful models around asset increase, smallholder productivity and non-farm economy (for details see http://www.ifad.org/rpr2011/). In fact, the scaling up process, if it can be implemented, it does not save small farms. The economic logic of scale up leads small farms to dissolve into large scales. The problem with scale up
approach is that, in addition to its lack of sequence and timing between the reforms, scaling up of effective instruments do not work as desired at a time when labor force growth is characterized by young age and household types of higher consumption requirements. Scaling up efforts cannot keep up with the size, speed and need of the driving force unfolding in rural and urban areas (the missed concepts I discussed above). Instead it might exert pressure leading to desperate actions. Governments, despite good intention, do not have the resources to keep up with the race of surplus rural labour and growing food deficiency. Instead of trying to idealize small farms based on old values, incoherent theories and wrong methodological approach I suggest rethinking on how to get rid of them, and sped up their historical fate.

The question is how this should be done and here lies my difference from those who advocate for piecemeal scaling up approach. In getting rid of small farms the sequences are (in order of their importance): i) industrialization of small and medium towns for the creation of productive employment for the surplus labour, ii) state-led green revolution for the purpose of food security, iii) rural land reform and consolidation for the purpose of migration and resource reallocation, iv) green revolution by smallholder farmers for the purpose of capital accumulation and creation of production and consumption linkages, v) program of family planning (method to plan rather than prevent children) for the purpose of increasing household saving, and vi) commercialization of agriculture. The measures to stimulate the rural economy, namely a favorable rural investment climate, provision of public goods, infrastructural and institutional development are largely the same for all policy suggestions.

**Interpretation of My Discussion: Feed Ethiopia, then feed the world**

Finally, few words on possible interpretation of my suggestion about “getting rid of small farms”. Some concluded that my discussion on small farms is a tacit advocacy for the continuation of land grab in African countries. Even if I have not taken up this issue in my discussion, in principle I am not against large scale investment in rural Africa. Ethiopia has to take every opportunity of rural investment. The question is a creation of a win-win situation just like any other business. The government has to take into account the discussion so far made on some of the drawbacks of the rural land investment policy and re-strength its good sides to effectively harness the potential benefit of large scale agriculture. The drawbacks include lack of stakeholders’ participation, clarity of the process, land use planning, food, employment and environmental securities. These are management problems and I see no reason of not solving them and take advantage of the investment opportunity.
In addition, I have always urged the Ethiopian government to undertake green revolution. In my previous postings I consistently mentioned and warned about problems of food security in the face of growing population (growth rate of 2,6%) and rapid urbanization (growth rate of 4,3%). The current economic shortage in the country is not a surprise to me. The situation will be worst unless the government embarks on state-led green revolution to increase food production for the domestic market. I can understand the government intention to finance its five year growth and transformation plan. Given the severity of the situation it is important to give priority in investing large scale food production. Since full development of the project will require several millions of dollars it might be necessary to postpone some programs of GTP (such as the construction of the grand railway) to a future plan. The government should know that speedy urbanization gives rise to political commotion if the parameters of housing, employment, education, health and food supply do not increase at least at about the same rate (4,3%).

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