Helpdesk Research Report: Employment Intensity of Growth in Agriculture

Date: 27.07.12

Query: What is the key evidence on the employment intensity of growth of the agricultural, and particularly the agribusiness, sectors in middle-, low-income and fragile and conflict affected states. How does this vary by gender?

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1. Overview

Employment intensity of growth of the agricultural sector is a measure used to quantify the effect on levels of employment from growth in the agricultural sector. Existing research suggests that growth of the agricultural sectors in middle- and low-income countries (including fragile and conflict affected states) does not necessarily lead to increased employment. In fact, the relationship between employment and growth of agriculture is complex and highly context-dependent. The relationship varies as a result of the type of produce (e.g. fruits and vegetables versus cereals), the structure of the business (e.g. small landowner versus larger agribusiness) and the wider economy as a whole. Growth of the secondary and tertiary sectors in an economy and non-farm income opportunities can reduce the supply of cheap and available labour. Social factors such as migration, in particular rural to urban migration, can have a similar effect. Though smallholder agriculture tends to be more labour-intensive, evidence suggests that these high levels of employment intensity are difficult to sustain when agricultural activities are scaled up. Whereas labour from family members is cost-effective, the cost to supervise staff and maintain quality is often prohibitively expensive.
In relation to gender, some regions show a significant difference in employment intensity of growth between men and women. Women can face discrimination in agriculture, including in larger agribusiness, but agribusiness can, nevertheless, provide new and unique employment opportunities for women.

2. Employment intensity of growth in agriculture

Employment intensity of growth can be defined as 'a numerical measure of how employment varies with economic output – for instance, of how much employment growth is associated with 1 percentage point of economic growth' (Kapsos 2005: 1). Employment intensity of growth can refer to growth of the economy as a whole or to individual sectors, such as agriculture. Elasticity of employment with respect to output growth is a commonly used measure of the employment intensity of growth (Islam: expert comments) and some authors (e.g. Kapsos 2005) use the terms 'employment intensity of growth', 'job intensity of growth' and 'employment elasticity' interchangeably. Elasticity of employment is measured as the ratio of the percentage of change in employment to the percentage of change in output during a given period.

Islam (expert comments) highlights a number of difficulties of drawing generalisable conclusions from employment elasticity in agriculture. Firstly, growth in the agriculture sector may be commensurate with growth of the wider economy of a country. A growth of agriculture with a rise in employment demand may be offset by a steeper rise in employment demand in other sectors. The result may be to make the task of hiring more workers in agriculture no longer cost-effective. As an economy develops, labour is expected to be transferred to higher productivity sectors within agriculture and beyond. This may mean that even though agricultural output growth is positive, growth in employment may fall. In any case, employment elasticity in employment in agriculture may be lower compared to other manufacturing and service sectors industries.

Kapsos (2005) created estimates for employment elasticities in various regions and on a global scale (see table 1) from which several observations are derived. Sector GDP elasticity indicates whether employment is growing or shrinking in a given sector, both overall as well as relative to other sectors. The sector value added elasticity gives an indication of the extent to which growth in a given sector is being driven by productivity or employment.

Table 1: Employment elasticities and growth in value added in agriculture, 1991-2003

Region	Sector GDP	Value added
Central and Eastern Europe (CEE)	-0.51	-1.06
Commonwealth of Independent States (CIS)	0.23	0.41
East Asia	0.10	0.23
South East Asia	0.01	0.20
South Asia	0.38	0.71
Latin America	-0.16	-0.33
Caribbean	-0.38	-0.11
Middle East	2.06	1.94
North Africa	0.88	0.55
Sub-Saharan Africa	0.69	0.82
Global	0.24	0.41

Source: Kapsos, 2005

In CEE, there has been a steady deterioration in the region's employment intensity of growth in general and the sector-specific elasticity trends reveal ongoing structural change. As GDP has grown in the region, jobs have been shed in both agriculture and industry, while employment in the service sector has expanded. Every one per cent point of GDP growth has been associated with a reduction of 0.51 per cent points in agricultural employment. Value added growth in agriculture has been fully driven by productivity growth – an increase in value added agriculture has actually been associated with a decline in employment in agriculture.

In the CIS, both employment and productivity have declined in agriculture and industry. Every one per cent point reduction in GDP was associated with a decline of 0.23 per cent points in agricultural employment. The value added elasticities indicate that both employment and productivity declined. In agriculture every one per cent point reduction in value added output has been associated with a reduction of around 0.4 per cent points in employment (and hence a reduction of 0.6 per cent points in labour productivity).

The Asia and Pacific region has witnessed the most dynamic growth and development of all of the regions in the world between 1991 and 2003. In East Asia a one per cent point increase in GDP was associated with an increase of 0.1 per cent points in agricultural employment, and in South East Asia a one per cent point increase in GDP was associated with essentially no growth in agricultural employment. This is indicative of an ongoing structural movement toward a larger share of industry and service sector employment in the region. In South Asia a one per cent point increase in GDP was associated with an increase in agricultural employment of 0.38 per cent points, which is similar to increases in industrial and service sector employment. The similar employment intensities across the three sectors indicate that of the three regions. South Asia is exhibiting the least degree of structural economic change away from agriculture into industry and services.

In South East Asia, agricultural growth has been driven more by productivity growth, while growth in industry and particularly services has been led by employment growth. South Asia provides a contrast, as growth in agriculture has been driven mainly by employment growth, while around two-thirds of industrial and services output growth has been due to growth in labour productivity.

Overall, economic growth in Latin America has been more employment-intensive than growth in the Caribbean. One potential reason for this is that the Latin America region has faster overall population and labour force growth than the Caribbean. Therefore, in order to maintain stable unemployment, Latin America requires greater employment intensity for a given level of growth. Employment elasticities in the Caribbean have also shown a trend decline. Following declining unemployment rates, the region's overall unemployment rate rose between 1999 and 2003. There is evidence of ongoing structural change in both Latin America and the Caribbean, particularly regarding movement away from employment in agriculture and into the service sector, the latter having grown the fastest in both regions.

Africa and the Middle East have some of the highest employment elasticities reflecting the sub-regions' unique growth, employment and poverty-related characteristics. In the Middle East, overall gains in output are still skewed heavily toward employment growth rather than labour productivity growth. In sub-Saharan Africa, the region's very high population growth rate necessitates high employment intensity of growth. Amongst the sub-regions in Africa

and the Middle East there is no evidence of systematic structural economic change taking place in these three regions. Indeed, in the Middle East and in North Africa, the agricultural sector has seen the most job growth in comparison to manufacturing and service sectors. Growth in agriculture value added in the Middle East has coincided with rapid employment growth and declining productivity in the sector. In sub-Saharan Africa, agricultural growth has been driven mainly through employment growth, but the sector has also experienced some productivity gains.

In terms of overall economic performance, the economic growth rates represent a positive trend. Continued growth in output, with gains shared between productivity and employment are required for long-term, sustainable development in the region

Table 2 produced by El-Ehwany and El-Megharbel (2008) show employment elasticities in agriculture in Egypt between 1980/81 to 1990/91, between 1991/92 and 2004/05, and over the whole period.

Table 2: Employment Estimating Employment Elasticities to Value Added and to GDP in Agriculture in Egypt

Country	Sector GDP	Value added
1980/81-1990/91	0.47	0.23
1991/92-2004/05	0.25	0.31
1980/81-2004/05	0.27	0.32

Source: El-Ehwany and El-Megharbel, 2008

In Egypt, the lower employment elasticity value in agriculture could be explained by several factors (El-Ehwany and El-Megharbel 2008). Firstly, the relative scarcity and saturation of agricultural lands, i.e. lands in the Delta and Valley, suffer from pressure of large numbers of workers on limited agricultural land. Thus, a one per cent increase in the value added of the agricultural sector generated only a limited number of jobs. The agricultural landholdings in both lower and upper Egypt are small and highly segmented in a way that does not allow for extensive use of high-tech production techniques, which would have theoretically led to machinery replacing labour. Secondly, agriculture in desert lands – currently on the increase – applies capital intensive production techniques due to reliance on dripping irrigation and machinery, which does not create many jobs. A third factor is the growth in the productivity of employed persons in agriculture, which was positive during 1981/82-2001/02 and fluctuated around a generally upward trend at an annual growth rate of two per cent. The value of productivity elasticity rose to 0.68, i.e. more than two thirds of growth in agricultural output is attributed to productivity growth. There may be another reason for the low employment elasticity in the agricultural sector related to crop composition. Growing some crops, such as wheat, does not require many labourers, whereas growing vegetables is labour-intensive.

Islam (expert comments) has produced table 3 which looks at changes in employment elasticities in several Asian countries over time.

Table 3: Elasticity of Employment in Agriculture in Selected Countries of Asia

Country	Period	Employment elasticity
Bangladesh	1999/00 – 2005/06	0.82
	2005/06 – 2010	0.71
India	1983 – 1993/94	0.49
	1993/94 - 1999/00	-0.05
	1999/00 – 2004/05	1.04
	2004/05 – 2009/10	-0.06
Nepal	1990/91 – 2000/01	0.21
	2000/01 – 2009/10	-0.76
Vietnam	1991 – 1995	0.42
	1996 – 2000	0.28
	2001 – 2004	0.28
	2005 – 2010	-0.12

Source: Islam (expert comments)

A key observation is that there is no consistent trend across countries, with elasticities rising and falling over different time periods and alternating positive and negative elasticities in some cases.

Bangladesh and Vietnam seem to have a pattern consistent with that expected of a developing country: a gradual decline in elasticity as economic growth continues and surplus labour in agriculture gets absorbed in non-farm sectors. This cannot be said of Nepal. During the 1990s and 2000s Nepal's economic growth was weak and the industrial sector underwent a period which some describe as de-industrialisation. Consequently the negative growth in agriculture cannot be explained by labour absorption in industry from agriculture. Islam (expert comments) suggests that the observed decline in employment may instead be a reflection of the large-scale international migration of workers from Nepal. There is no clear pattern for India, with figures alternating from positive to negative. Rather than draw conclusions from the employment elasticity figures alone, Islam (expert comments) suggests digging deeper into the situation, noting a debate on the observed decline in the female labour force participation during 2005-10.

In Botswana, Ajilore & Yinusa (2011) calculate employment intensity of growth for various sectors and the country overall between 1990 and 2008. They find an employment intensity of growth in agriculture of -0.17 compared to an economy wide employment intensity of growth of 0.01. The agricultural sector is a labour-intensive sector, but the impact of technological and productivity improvements helped produce an economy with low labour absorptive capacity.

In general, there are signs that the elasticity of agricultural employment with respect to agricultural growth is falling in some countries to surprisingly low levels and the reasons for this are unclear (Wiggins et al, 2007). For agricultural growth to translate into new jobs, it is important that obstacles to creating jobs are eliminated, in particular problems with factor markets. Wiggins et al. (2007) highlight that in labour markets, the transaction costs of hiring and supervising workers pushes up the cost of labour so that employers use less labour per unit area than they otherwise would.

Economic growth which is biased towards labour-intensive sectors, such as smallholder agriculture, are more likely to lead to faster employment growth than growth patterns that are biased towards capital-intensive sectors, such as pharmaceuticals, and resource-intensive sectors, such as mining (Kunal and Kirkpatrick 2009). However, in the long run most economies will reach a turning point where secondary and tertiary sector industries become a greater part of the economy and pull in more labour with higher productivity jobs that offer better salaries and stability (Wiggins, expert comments).

3. Employment variation in types of agriculture

There seem to be no readily available figures that disaggregate employment intensity of growth in different types of industries in agriculture. Yet various pieces of qualitative research suggest trends in relation to employment intensity of different types of agricultural firms.

Agriculture is the largest source of work in rural areas of the developing world. Most of these are self-employed with most farming carried out by household (i.e. family) labour ─ apparently due to high transaction costs of labour supervision (Wiggins et al., 2007). A greater share of the work force is not being hired in, as expected, for most types of agriculture. The exception is semi-industrialised operations ─ horticulture, pigs and poultry ─ which involve almost all the labour force being hired in. Such operations are generally higher value and the demand for such items is growing rapidly.

Rural workers are increasingly engaged in non-farm activities and it is common to find in household surveys that rural households earn 40 per cent or more of their income from these activities (Wiggins et al., 2008). This can be attributed to two key reasons: farming is creating fewer jobs for each additional unit of output; and the growth of the rural non-farm economy itself. The growth of the non-farm economy has come about as a result of agricultural growth but also from closer links to cities though these depend on public investment in rural infrastructure

Wiggins (expert comments) notes that though growth in agriculture may grow employment by a greater extent than growth in other sectors, this may not be sustainable employment or reduce poverty. Agricultural jobs may be significantly less productive (in value) and consequently be remunerated less than jobs in manufacturing and service sectors. Larger agribusiness will not necessarily be either more or less intensive than other types of agricultural business. Larger agribusinesses come about when products are required for a more modern food retail chain which depends on regular, high quality produce. Of note, however, is the danger of pre-maturing creating large farms. Wiggins notes that the costs of recruiting, supervising and resolving labour disputes can be prohibitively expensive, especially when this is over a short time-frame. Such costs may mean that small farms can be

more productive than larger farms and mean that farms stay small. Those that grow may do so with relatively little employment growth or with a preference for more capital-intensive processes.

Wiggins (expert comments) also highlights the political economy effect of large farms. Owners of large farms can push for favourable reforms or reforms that hinder the growth of smaller farms. Wiggins (expert comments) does, however, note the case of Thailand as a successful example of growing small farms. Many of those working in agriculture were able to diversify possible sources of income and only now is there shedding of labour from farms. That said, one of the major factors in the political unrest in Thailand is the 'red-shirts', formally known as the United Front for Democracy Against Dictatorship (UDD), who are significantly composed of farmers and rural workers.

Horticulture ─ the growing of fruits and vegetables ─ is one of the fastest growing agricultural markets in developing countries. Relative to cereals, horticulture generates considerable employment through production (about twice the labour input per hectare of cereals) and more off-farm jobs in processing, packaging and marketing (World Bank, 2008). Women hold many of these new jobs.

Horticulture and associated agribusinesses may provide more stable employment in the longer term. In Senegal, fresh fruit and vegetable exports to the EU have increased sharply over the past decade, which has contributed to poor households' incomes in the associated farming region (Maertens and Swinnen 2009). However, over this period increasing food standards imposed by the EU have resulted in structural changes in the supply change. There has been a shift from smallholder contract-based farming to large-scale integrated estate production. Maertens and Swinnen (2009) conclude that as a result of supply chain restructuring that local households benefit increasingly through labour markets instead of through product markets and the poorest benefit more from working on large-scale agro-industrial farms than from contract farming.

Seasonality, agricultural production risks and supervision problems affect the demand for agricultural labour. In Brazilian agriculture, the seasonality of formal employment has increased since 1999 to reach a variation of more than 20 per cent within a year (Wold Bank, 2008). In Chile, average daily earnings for workers in the fruit industry vary from 50 to 60 per cent from the peak season to the off-peak season.

4. Gender

Kapsos (2005) disaggregated estimates for employment elasticities between men and women (see table 4).

Table 4: Employment elasticities by sex and average annual GDP growth, 1991-2003

Region	Female			Male		
	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003
Central and Eastern Europe (CEE)	0.09	-0.11	-0.31	0.35	0.10	-0.11
Commonwealth of	0.23	0.26	0.22	0.15	0.31	0.14

Independent States (CIS)						
East Asia	0.16	0.17	0.18	0.13	0.12	0.18
South East Asia	0.38	0.20	0.49	0.39	0.20	0.37
South Asia	0.49	0.61	0.30	0.37	0.44	0.38
Latin America	0.96	1.01	0.49	0.49	0.52	0.43
Caribbean	0.53	0.59	-0.51	0.40	0.23	-0.35
Middle East	2.11	2.12	1.09	0.83	1.03	0.85
North Africa	0.41	1.04	0.59	0.26	0.65	0.50
Sub-Saharan Africa	0.79	0.89	0.57	0.69	0.76	0.50
Global	0.40	0.44	0.33	0.30	0.34	0.29

Source: Kapsos, 2005

In contrast with the global figures, women in CEE have fared worse than men with respect to these employment trends. The overall comparative trends between female and male employment elasticities in the CIS are not distinctly different. Women fared somewhat worse initially in terms of job destruction, but employment among women rose faster in the last period than among men.

In Latin America and the Caribbean economic growth has been more employment intensive for females than for males throughout each of the periods, though this difference has narrowed. This trend is likely due in part to a substantial narrowing of the labour force participation gap between men and women over the course of the 12 years. In the Caribbean, the higher relative female employment elasticities during the first two periods translated into fairly large reductions in these rates, but the employment picture for women also deteriorated during the 1999 to 2003 period.

There is a large difference in employment elasticities by sex in both the Middle East and North Africa, with female elasticities considerably higher than those for males in each of the periods. These two regions have the highest gender gap in labour force participation, implying that the higher elasticities likely reflect a 'catching-up' in terms of participation among women.

In the Asia and Pacific region there has been very little difference in employment intensity among women and men. This is attributable to the relative gender equality in terms of both labour force participation and unemployment rates in the region.

In general, women tend to be more disadvantaged than men in agriculture. Women in agriculture tend to suffer disproportionally from seasonal factors (World Bank, 2008). While men tend to remain in the labour force throughout the year, women's participation, which is more linked to processing the harvest, drops by nearly 30 per cent from the peak to the slack season. Females have high rates of unemployment, exceeding 50 per cent on a daily basis during the slack season.

Wiggins (expert comments) comments that in relation to agriculture, women are grossly disadvantaged in access to land, land rights, technical information, formal finance, and contracting arrangements. He notes that with reduced disadvantages women's productivity is likely to be enhanced. For example, a survey of 150 households in Burkina Faso (1981-85) provides insights into productivity differences where men and women control different plots but grow the same crops (Udry et al. 1995). The study found that women farm much smaller

plots than men, at a greater labour intensity per hectare, use less manure and have overall higher returns per unit area. Even with the same crops, women's yields are 18 per cent less per crop per hectare than those of men. The paper concludes that if labour and manure inputs were redistributed between male and female plots, overall yields would rise by 10 to 20 per cent. Consequently it may be best to secure land rights and access to factor markets for women to improve the opportunity of employment that agriculture provides them.

In larger agribusiness, with the creation of processing plants for agriculture, men tend to take the higher paid roles such as mechanics and overseers, whereas women take roles which involve repetitive tasks such as hand-picking (Wiggins, expert comments). Even where women have the same jobs as men they tend to be paid less. Despite the potential for discrimination, women may benefit since these jobs provide income that they would otherwise not receive and other businesses may well be equally discriminatory if not worse. On the other hand it could be argued that where women control small farms their return of labour is direct and not subject to discrimination as it would be with larger businesses.

In Ghana, women are over-represented in low paid and insecure employment agricultural work (Heintz 2005). Women's wages were consistently lower than men's for the same jobs and the labour market for women is segmented with barriers to entry to informal self-employment (Heintz and Slonimychyz 2007). Heintz and Slonimychyz (2007) conclude that improved access to education and credit markets should improve labour market mobility, but will not address segmentation.

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6. Additional information

Selected websites visited
ILO, IFPRI, USAID, FAO

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Date: 27.07.12

Appendix: Expert Comments

Below are the comments received from experts during the course of this query:

Rizwanul Islam (Former ILO)

Employment Intensity of Growth in Agriculture
By
Rizwanul Islam[1]

1. Employment Intensity of Growth: Concept and Measurement

The term employment intensity of growth is used to indicate the extent of growth in employment in relation to the growth of output, be it for an economy as a whole or its sectors. Elasticity of employment with respect to output growth is a commonly used measure of the employment intensity of growth. This is measured as the ratio of the percentage change in employment to the percentage change in output during a given period. Depending on the availability of data, different methods, ranging from econometric method to simple point estimate based on the two figures may be used to estimate employment elasticity[2].
While there are pitfalls involved in the estimation and interpretation of employment elasticity for an economy as a whole (see Islam, 2006 for further elaboration), it is important to note a couple of points that are of particular relevance for agriculture. First, in a dual economy with surplus labour in agriculture, economic growth is expected to be associated with a structural change in the economy not only in terms of change in the sector composition of output but also in terms of the sector composition of employment. As an economy grows, surplus labour is expected to be transferred to higher productivity non-farm sectors, and both the proportion and absolute number engaged in agriculture are expected to fall. Hence, it is possible for the growth of employment in agriculture to be negative _ at least when economic growth has taken place at a sustained rate for a long period _ even when output growth is positive. In any case, employment elasticity in employment in agriculture may be lower compared to other sectors, e.g., manufacturing and construction. Second, in developing countries, it may not be easy to have figures on employment in agriculture as easily as for other sectors. Moreover, given the existence of surplus labour in agriculture, the amount/growth of employment (or its growth) in the sector may not have a strict causal relationship with the growth of output in the sector. Hence, estimates of employment elasticity based on an assumed relationship between employment and output may be both difficult and sometimes misleading. An alternative way of estimating the employment intensity of growth in agriculture (and crop production in

1 Rizwanul Islam, an economist, is former Special Adviser, Employment Sector, International Labour Office, Geneva

2 For more detailed explanation and analysis, see (Islam, 2006).

particular) is to use data on labour input per unit of land for different crops and the allocation of land between various crops, and arrive at a figure of labour input per cropped hectare. The resulting figure will reflect both the composition of crops and labour input per unit of land for different crops. The direction of change in the figure would be an indicator of the direction of change in the employment intensity of growth in crop production[3].

2. Elasticity of Employment in Agriculture: Some Evidence

Estimates of employment elasticity in agriculture in several low and middle income countries of Asia are presented in Table 1.

Table 1: Elasticity of Employment in Agriculture in Selected Countries of Asia

Country and Period	Elasticity of Employment with Respect to Output
Bangladesh	
• 1999/00 – 2005/06	0.82
• 2005/06 – 2010	0.71
India	
• 1983 – 1993/94	0.49
• 1993/94 - 1999/00	-0.05
• 1999/00 – 2004/05	1.04
• 2004/05 – 2009/10	-0.06
Nepal	
• 1990/91 – 2000/01	0.21
• 2000/01 – 2009/10	-0.76
Vietnam	
• 1991-95	0.42
• 1996-2000	0.28
• 2001-04	0.28
• 2005-10	-0.12

Source: Compiled by the author from different studies

The estimates of employment elasticity presented in Table 1 need to be interpreted carefully. For Vietnam, the figures seem to be consistent with the pattern that is expected in a developing country, viz., low elasticity, a gradual decline and negative elasticity as economic growth continues and surplus labour in agriculture gets absorbed in non-farm sectors. The figures for Bangladesh also indicate change in the expected direction, viz., gradual decline in the elasticity of employment in agriculture as the economy grows. But it is not clear whether the same remark would apply to the figures for Nepal where negative employment elasticity is observed for the 2000s. Economic growth in Nepal during the 1990s and 2000s has not been

3 This method has been applied for Nepal in Islam (2012)

very high. More particularly, growth in the industrial sector has been so low that many refer to the situation as one of de-industrialization. And yet, there has been negative growth of employment in agriculture. This cannot perhaps be explained by a rapid rate of labour absorption in industry and a consequent transfer of labour from agriculture. The observed decline in employment in agriculture in that country is perhaps more a reflection of the large scale international migration of workers from Nepal.

For India on the other hand, the figures alternate from positive to negative, with no clear pattern emerging. So, rather than drawing any firm conclusion from the figures of employment elasticity alone, it would be important to dig deeper into the situation obtaining in the sector with respect to growth in output as well as employment. For example, in India, there is currently a debate on the observed decline in the female labour force participation during 2005-10.

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25 July 2012

Steve Wiggins (ODI) (Summary of phone interview 25th July 2012)

Will growth in agriculture create more jobs?

Of course it will. For every $10,000 of added value in agriculture, this should create at least 10 jobs, often more. Not many other activities typically have the labour intensity of agriculture. Try comparing agricultural to manufacturing in India in terms of the added value of the sector and the number of jobs.

That said, if it takes10 people to generate $10,000, that's bad. Labour productivity in agriculture is miserably poor compared to other sectors. Investment in agriculture will create more jobs in agriculture but we need to create the right kind of agricultural growth, which will increase labour productivity.

If successful with agricultural development, we can create more jobs but over time agriculture grows and we start shedding jobs from agriculture to manufacturing and service sectors. Agriculture is a big driver of growth, so it's a good thing. So to create jobs in agriculture in the short run is good but in the long-run we want to move these jobs to different sectors. Agriculture can be a way to creating lots of jobs. Labour-intensive and high productivity jobs would be ideal.

What sort of jobs are these?

These are for higher value perishables - fruit and vegetables, dairy, livestock (poultry, pigs). These provide lots of jobs and are high-value. An example is green beans in Kenya. One hectare of green beans has an approximate value of $2-5000 whereas a hectare of maize would be worth $500-1000. This type of agriculture might provide employment which reduces poverty.

Is this true for all countries?

Urbanisation and the growth of other sectors will eventually create enough jobs to see movements of labour out of agriculture. This leads to a turning point on which there is much literature: economic growth increases, and though agriculture grows, agriculture becomes an increasingly smaller share of the economy. Roughly, this is a decline from 33% of GDP to 15-20%; and in employment, from 2/3 to 40% in agriculture.

What about larger agribusiness?

Agribusiness is needed when we start to deal with products which are integrated into modern food retail chains which require consistency and high quality. Agribusiness comes in when sophisticated processes are needed. Agribusiness doesn't change the market necessarily but is more related to the nature of product in demand.

Agribusiness isn't necessarily bad but there is a significant danger of premature large farms. A large farm owner doesn't always employ many people. Say, if I have a 5000 ha vegetable

farm which needs a labour force of 5000 people for work in fields. The costs of recruiting labour and supervising labour are very high indeed.

Agricultural labour supervision is particularly difficult. In manufacturing the machine leads the person. In agriculture it's more difficult for those to ensure quality. In consequence small farms can be more productive than large farms due to cost of supervision. For example, in Ghana, a widow says hiring local boys for weeding means they cut down good vegetables as well as weeds. For small farms not only is most labour self-supervising since these are family members, but also when additional help is hired they may work shoulder-to-shoulder with family labour, so that supervision costs little.

Also with a larger workforce there can be problems with labour disputes. This is less a problem with smaller farms.

So for the large farm, it's generally best to mechanise and keep down the demand for hired labour. Choice of crops and enterprise may follow from that. For example, some large farms may turn over much of the land to cattle grazing, not because this is the best use of the land, but since it requires little labour. But cattle grazing rarely has high returns per hectare, so land ends up being underused.

Are there other impacts?

There are large political economy factors from large farm owners. Large-scale farmers, faced by relatively high costs of supervising labour, may then persuade governments to reduce importing costs of tractors, or to offer cheap credit for machinery — despite being in countries where labour is abundant and capital scarce and costly.

In Latin America there are horrendous problems of this kind in the countryside with large farms.

The politics of large and small farms is complicated. The best way forward is to encourage small scale family farms which in time will get bigger.

Thailand is a good example of agricultural growth through small scale family farms. Only recently has it started to shed labour from farms with rural people increasingly having non-farm work on the side. Contemporary China may be another good example of how to do the transition well: growth has come from very small farms, many of which do not generate a living wage, but where off-farm jobs have allowed households to farm while supplementing their incomes from other jobs.

On the other hand Latin America shows what happens with an entrenched land-owning elite run agricultural policy. The cases of Colombia, Guatemala, and perhaps even Mexico are good examples. Elites pushed policy-makers to favour the large farms, regardless of the fact that many small farms are very productive.

What about agriculture and gender?

There are a lot of women in farming and the majority of farmers in Africa are female. However, most female farmers are grossly disadvantaged in access to land, credit, and technical information. There is a lack of formal finance and contracting arrangements. Studies, for example Udry 1995, show that if women had better access to credit and inputs then agricultural production would rise.

When agribusiness goes to work with processing plants, men get the jobs of mechanics, overseers, whereas women get the hand-picking, repetitive jobs. Men are given the premium jobs and women the poorer paid jobs. Women in the same jobs have typically lower pay. However, when agribusiness sets up these can be some of the few jobs that women can get. Cash income from that labour is better than nothing.

One overall conclusion: If women are employed in agribusiness they can often be subjected to discrimination — with little risk: women are often seen as less 'trouble' and diligent. On the other hand when women control small farms, the returns of labour are direct. If you want gender fairness, smaller farms with secure land rights and access to factor markets may be the best solution. You may not get gender fairness with larger agribusiness.

Any other comments?

Yes, it may be good to create jobs on small farms, but circumstances can change. There is an example of Senegal (Maertens and Swinnen 2009). Senegal exports of green beans were coming from small farms under contracting. When Global GAP food standards came in, small farms could no longer meet these standards. So exports increasingly came from estates. Since these needed much labour in hand picking and packing, a lot of jobs were created. In the change, jobs were lost on small farms, but these were outweighed by jobs on the estates to the benefit of not just some of the smallholders, but also the landless.