Chapter 3

Food and agriculture in the Asia-Pacific region: past performance and future prospects

by
Sumiter Singh Broca[9]

I. Introduction

The Asia-Pacific region has made great strides in reducing poverty and hunger over the past four decades although problems persist, especially in South Asia. Strong agricultural growth based on improved seeds and growth in yields (the Green Revolution) played a vital role in this process by raising rural incomes and increasing food availability, which kept food prices low.

However, the success of the Green Revolution seems to have created a sense of complacency among policy-makers, as shown by their failure to increase public investment in agriculture sufficiently to meet growing demand. The resulting supply-demand imbalance was one of the major causes of the food price spike of 2007/08 and it remains a problem. This implies that renewed attention to agricultural growth will be required if projected increases in food demand are to be met.[10]

The strength of agricultural growth and the form it takes will be shaped increasingly by the following major factors:

- slowing and cessation of population growth in the region by the middle of this century;
- urbanization and new supply channels;
- convergence of living standards and food tastes in an increasingly urbanized and interconnected world; this implies a shift in demand towards milk, meat, eggs, fruits, vegetables, oils, fats, sugar, livestock products and processed and convenience foods;
- growth in agricultural trade;
- increased application of biotechnology to crops and livestock production;
- food safety;
- environmental factors, especially climate change, land quality and land and water availability;
- biofuels;
- land acquisition by developed countries in less developed countries.

To study the implications of all of these expected developments is beyond the scope of this paper. Instead, this paper presents projections of demand and supply for broad commodity groups that are the results of FAO's global projection studies. Since these projections cannot account for all the developments described above, they should, like all projections, be regarded as only describing likely directions of change and orders of magnitude.

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[9] The author, Sumiter Singh Broca of the Policy Assistance Branch, FAO Regional Office for Asia and the Pacific notes: "I wish to express my profound gratitude to Dr S.J. Malik, President Innovative Development Strategies, Islamabad, Pakistan, for providing some very valuable advice and suggestions, to Mr M.A. Gill, Macroeconomic Studies Division, Research Department, International Monetary Fund, for providing the data on government expenditure on agriculture and to both for coming to my help at very short notice. The responsibility for any errors is, of course, my own."

[10] Agricultural imports will be another source of food for the countries of this region.

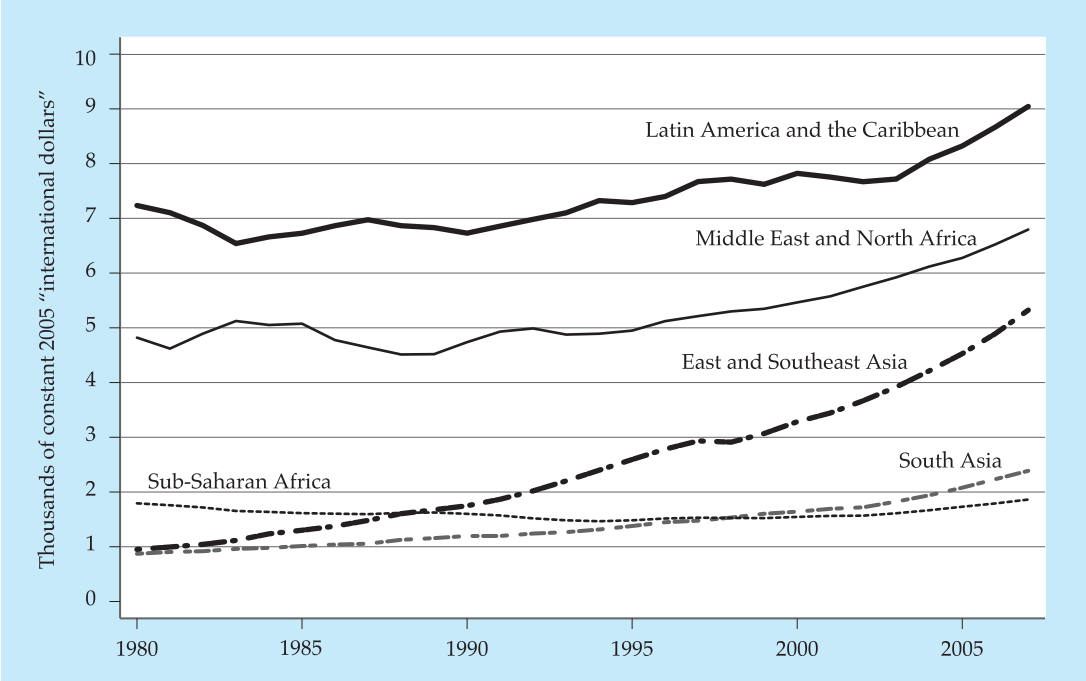
II. Economic growth, poverty and hunger in the Asia-Pacific region, 1960–2006

The Asia-Pacific region has experienced remarkable economic growth in the past 45 years. Until the mid-1960s, this region had among the world's lowest incomes, exceptionally low intakes of dietary energy and some of the highest rates of poverty and malnutrition in the world.

The region's transformation began with the start of strong economic growth in the "Asian tigers" (i.e. the Republic of Korea, Singapore, China, Hong Kong Special Administrative Region and Taiwan Province of China) in the early 1960s, spread to the other countries of Southeast Asia, then to China and finally to India. During this period, the region experienced some of the highest growth rates in real per capita GDP ever recorded.

However, because the region started with the lowest per capita GDP levels in the world, even the strong growth it has enjoyed for the past 40 years has not raised average per capita GDP levels beyond those of the Middle East and North Africa region or the Latin America and Caribbean region. Figure 1 below shows real per capita GDP in PPP terms from 1980 to the present,[11] separately for the major regions of the developing world with the Asia-Pacific region disaggregated into two major subregions: East and Southeast Asia and South Asia. It should be noted that the East and Southeast Asia subregion excludes Japan, Australia and New Zealand, but does include the Republic of Korea, China, Hong Kong Special Administrative Region, Taiwan Province of China and Singapore. Per capita GDP (PPP) in South Asia is still less than a quarter of the level in Latin America and the Caribbean, despite the relatively strong growth it has enjoyed since the mid-1990s.

Figure 1: Real GDP per capita (PPP), 1980 to 2007



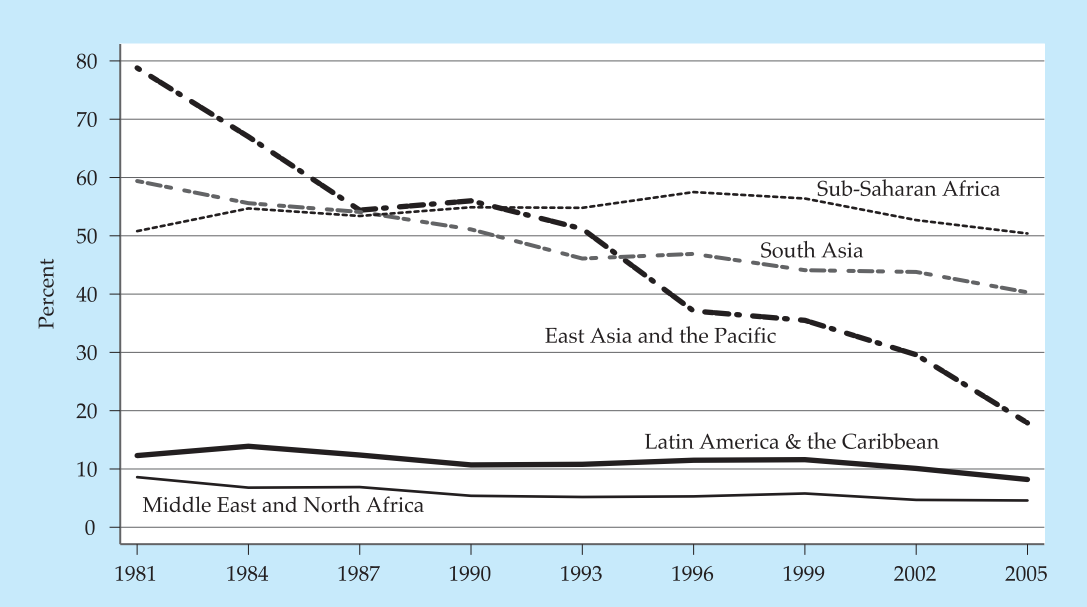
Source: World Development Indicators.

[11] These data are from the 2005 International Comparisons Programme (ICP). This ICP includes 29 more countries (including China) than the 1993 ICP and uses an improved methodology. Unfortunately, data are not available for the period before 1980.

The relatively low levels of per capita GDP combined with the fact that the Asia-Pacific region is home to over half the world's population (3.4 billion people) means that the region continues to have the largest number of people living in poverty and hunger. This is despite some of the largest reductions in poverty and hunger in recorded history. In East Asia for example, almost 80 percent of the population lived on less than $1.25 a day in PPP terms in 1980 while almost 20 percent did so in 2005.

Figures 2 and 3 below illustrate the main trends in poverty reduction in the developing world over the past 25 years. Figure 2 shows changes in the proportion of the population in poverty, while Figure 3 shows changes in the number of people in poverty.

Figure 2: Proportion of population living on less than $1.25 per day, PPP by region 1981 to 2005



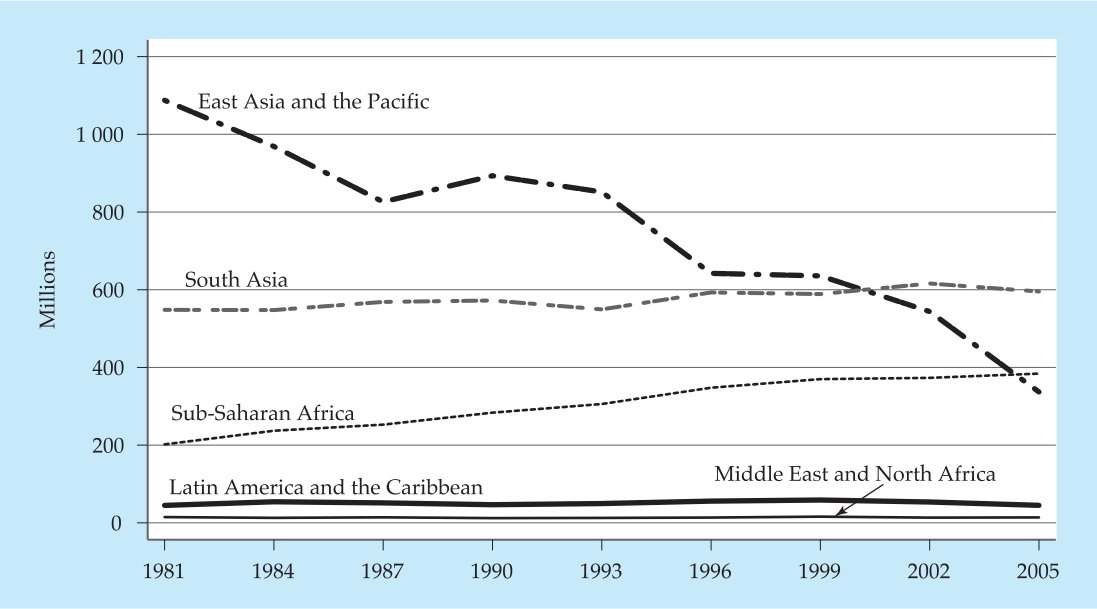
Source: Chen S. and M. Ravallion (2008). The developing world is poorer than we thought but no less successful in the fight against poverty. World Bank Policy Research Working Paper No. 4703.

The principal conclusions to be drawn from Figure 2 are consistent with what would be expected from the data on economic growth, presented in Figure 1. There was a dramatic decline in poverty in East Asia and the Pacific particularly after 1993, accompanying the dramatic increase in per capita GDP after 1993 in that subregion. It should be apparent that the average per capita GDP for East Asia and the Pacific is driven largely by the experience of China and the average for South Asia is driven largely by India.

A similar trend in poverty reduction is noticeable in South Asia, but at a slower pace. Part of the slower pace of poverty reduction in the South Asia region mirrors its slower pace of growth in per capita real GDP (PPP). However, the pace of poverty reduction slowed down in South Asia precisely when GDP growth accelerated. In other words, economic growth became less pro-poor. The reasons for this are not well understood, but probably have to do with the nature of economic growth in South Asia. Economic growth originating in agriculture has a stronger impact on poverty than growth originating in other sectors, provided some conditions are met. This point will be addressed more in depth later in this paper.

Despite the dramatic decreases in poverty over the past 25 years, headcount poverty rates, particularly in South Asia, are still higher than in either the Middle East and North Africa (MENA) or Latin America and Caribbean (LAC) regions. The population of the Asia-Pacific region is so large that

Figure 3: Number of people living below the poverty line of $1.25 per day, PPP by region 1981 to 2005



Source: Chen S. and M. Ravallion (2008). The developing world is poorer than we thought but no less successful in the fight against poverty. World Bank Policy Research Working Paper No. 4703.

even the dramatic reductions achieved in the proportion of the population in poverty have left very large numbers of people in poverty. From Figure 3 above, it appears that there has been a slight increase in the number of people in South Asia living on less than $1.25 per day in PPP terms since the mid-1990s. In 2005, there were approximately 340 million people in poverty in the East Asia subregion and approximately 600 million in the South Asia subregion; these two subregions accounted for two-thirds of all the people living in poverty in developing countries in 2005.

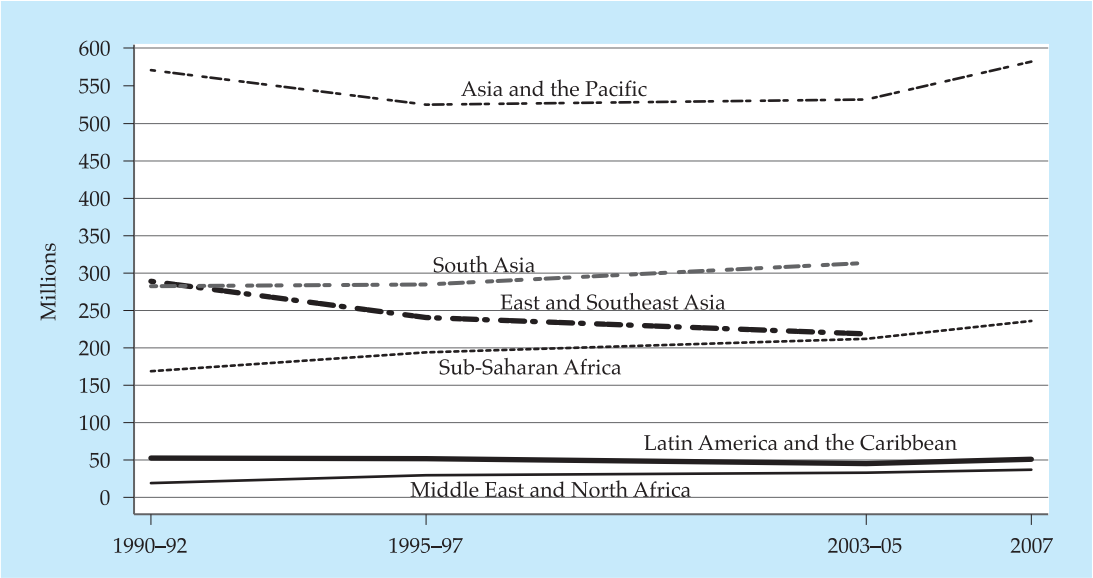
Figure 4 presents a breakdown of the number of undernourished people by region from 1990–1992 to 2007. The trends are broadly similar to those of Figure 3 for the period after 1990–1992. The evidence shows no drop in the number of undernourished people from 1990–1992 to 2007 in any region of the world, with the exception of East and Southeast.

Asia, where the number of undernourished people fell from about 290 million in 1990–1992 to about 220 million in 2003–2005. Since then, the total number of undernourished people in the Asia-Pacific region has risen by about 10 percent, but a breakdown for each subregion is not available. The biggest single factor in the increase in the number of undernourished people from 2003–2005 to 2007 is the sustained increase in food prices since 2006. As with the poverty headcount numbers, the LAC and MENA regions had very low percentages of their populations undernourished to begin with and continued to have low percentages.

It is noteworthy that the poverty figures are produced independently by the World Bank and the undernourishment figures are produced by FAO. The qualitative concordance between the two sets of figures inspires confidence in the conclusion that the two regions with the highest poverty and undernourishment rates are also the regions where there has been an increase in the number of people living in poverty and undernourishment.

The first MDG calls for reducing by half the proportion of the population living in poverty and hunger between 1990 and 2015. From the evidence presented above, it seems highly improbable that the first MDG can be met in South Asia, although it may remain possible in East and Southeast Asia.

Figure 4: Number of undernourished people in the developing world by region 1990–1992 to 2007

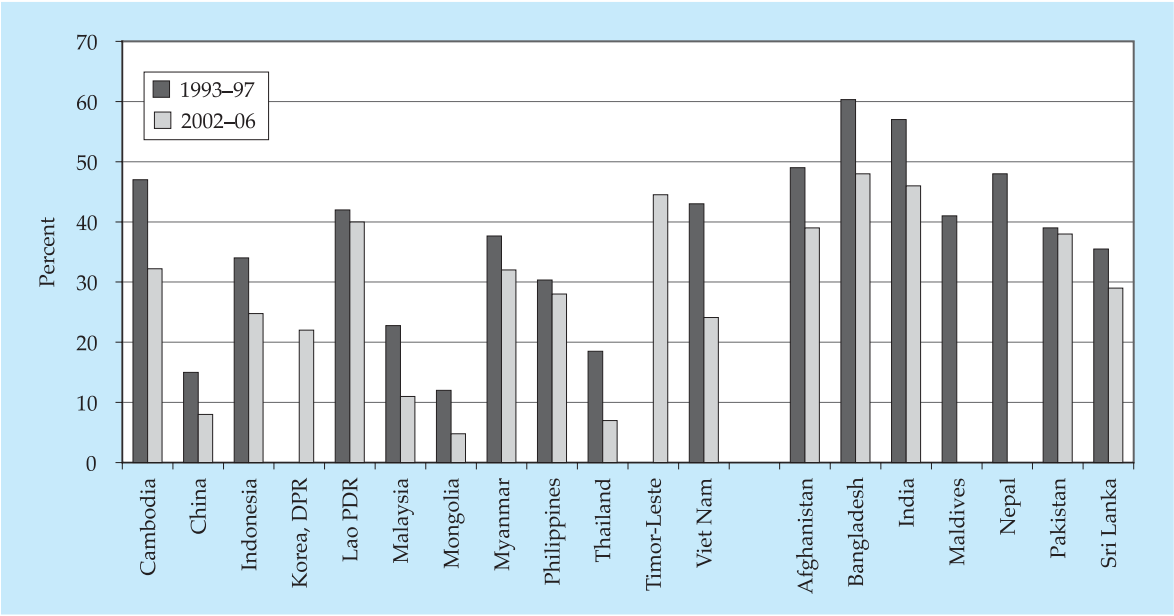


The figures on the number of people undernourished produced by FAO are only available from 1990–1992 onwards and were not calculated separately for South Asia and East Asia and the Pacific for 2007.

Source: FAO (2008). State of Food Insecurity in the World 2008.

The prevalence of underweight among children under the age of five is another widely-used indicator of malnutrition. Figure 5 below presents evidence on this point for selected Asian countries. It appears that the countries of East and Southeast Asia started out with generally lower levels of underweight prevalence and also lowered it more quickly (with some exceptions such as Myanmar and the Philippines). China, Malaysia, Mongolia, Thailand and Viet Nam have already achieved the child malnutrition sub-goal of MDG1.

Figure 5: Percentage of children under five who are underweight



Source: World Development Indicators 2009.

By contrast, the countries of South Asia have made very slow progress in lowering the levels of underweight prevalence, with the well-known exception of Sri Lanka. For example, evidence from the latest National Family and Health Survey (NFHS) shows that child underweight prevalence in India is at 46 percent, down from 57 percent at the time of the first NFHS almost 15 years ago. The other countries of the subregion exhibit the same kind of performance.

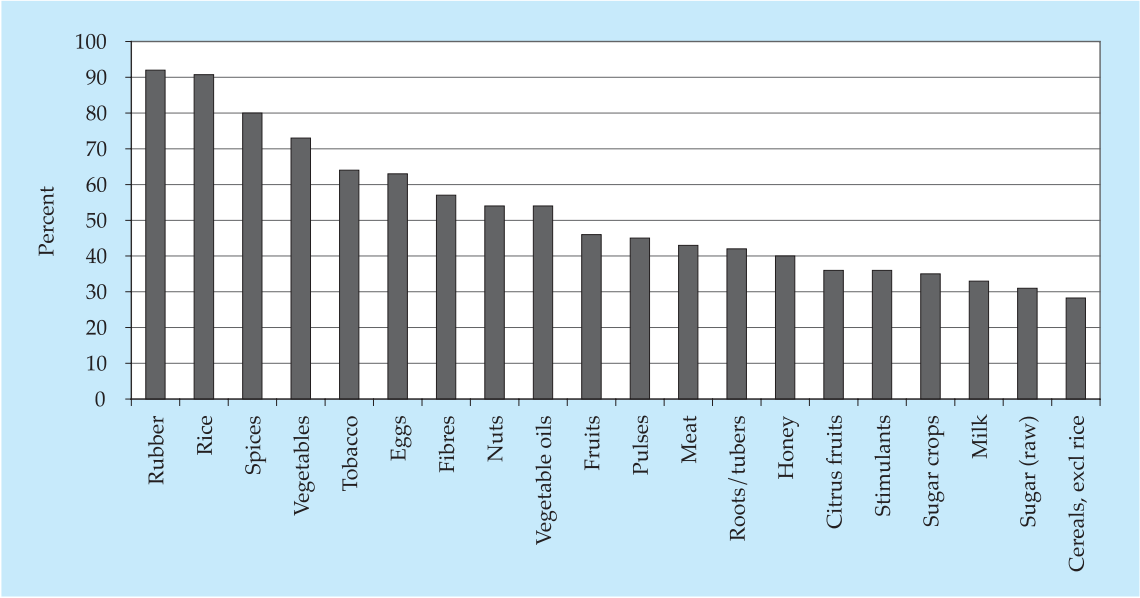
In sum, the Asia-Pacific region has made remarkable progress in increasing per capita income; however, the increases that have been achieved are concentrated in East Asia, mainly China, and in Southeast Asia. Economic growth rates have increased recently in South Asia as well, but not by enough to bring about large reductions in poverty and hunger. Agricultural growth was slower in South Asia than in the other two subregions and so the composition of growth there has not made a large dent in poverty, malnourishment and malnutrition.[12]

III. Agricultural growth in the Asia-Pacific region, 1961–2004

3.1 Trends

The Asia-Pacific region's position in world agriculture has been shaped by the patterns of its growth over the past 40 years. The region accounts for the bulk of the world's output of several important agricultural commodities (e.g. rubber, spices, vegetables, vegetable oils and fibres), as shown below in Figure 6. Although not shown in the figure, the region almost completely dominates the production, consumption and trade of rice.

Figure 6: Percentage of world production of selected commodities originating in the Asia-Pacific region

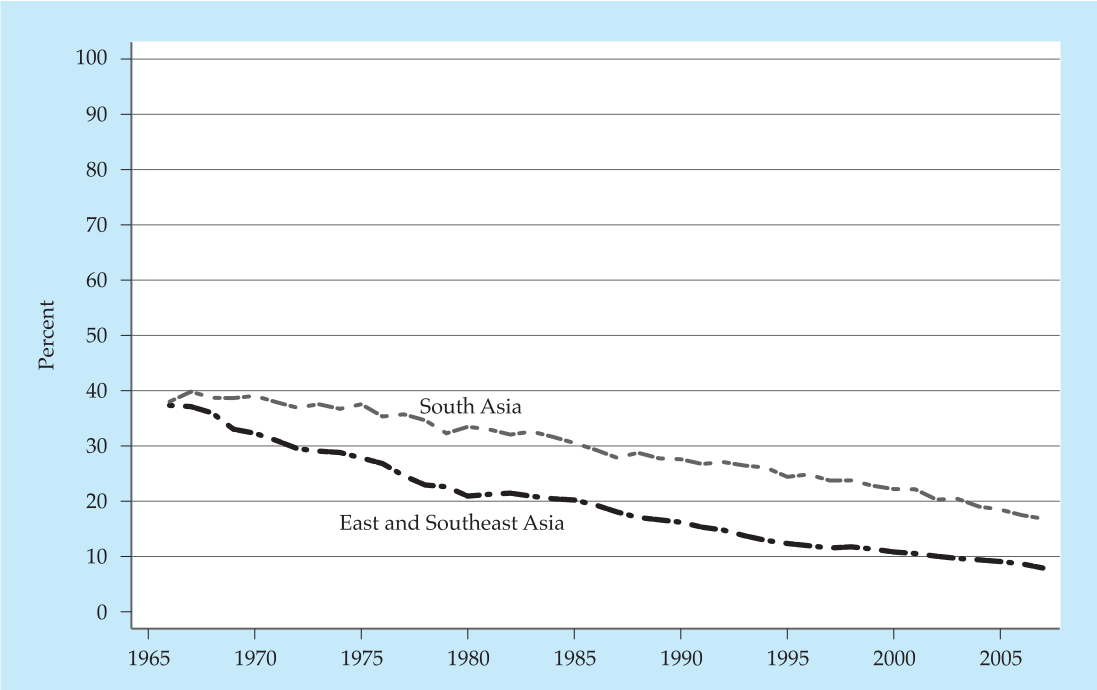


Source: FAOSTAT

The share of agriculture in GDP (i.e. the proportion of value added originating in the agricultural sector) declines with economic growth. This is verified below in Figure 7. It can be seen that in East, Southeast and South Asia, about 40 percent of GDP originated in the agricultural sector in the mid-1960s. This had shrunk to under 20 percent in South Asia and under 10 percent in East and Southeast Asia by 2007.

[12] FAO draws a distinction between malnourishment and malnutrition. The former is identified with low intakes of dietary energy, while the latter is identified with poor nutritional outcomes.

Figure 7: Percentage of value added originating in agriculture 1965–2007



Source: World Development Indicators.

Figure 8 presents index numbers of real agricultural GDP per capita from 1965 to 2007. While agricultural GDP per capita in real terms doubled in the East and Southeast Asia subregions, it increased by less than 40 percent in South Asia. South Asia experienced an initial spurt in the Green Revolution years in the second half of the 1960s, followed by stagnation in real agricultural GDP per capita from the early 1970s to the mid-1980s. Indeed, almost all the increase in agricultural GDP per capita appears to have been packed into the period since 1985, with renewed stagnation in the early years of this decade. By contrast, agricultural GDP per capita growth in East and Southeast Asia appears to have picked up since 1980 and does not appear to have stagnated in the first part of this decade.

It is natural to ask whether faster agricultural GDP growth leads to even faster overall GDP growth, so that the share of agricultural GDP in total GDP shrinks faster – as hypothesized by Professor John Mellor.[13] This is an interesting question that cannot be definitively answered here, but the evidence presented in Figure 8 is not inconsistent with such a hypothesis.

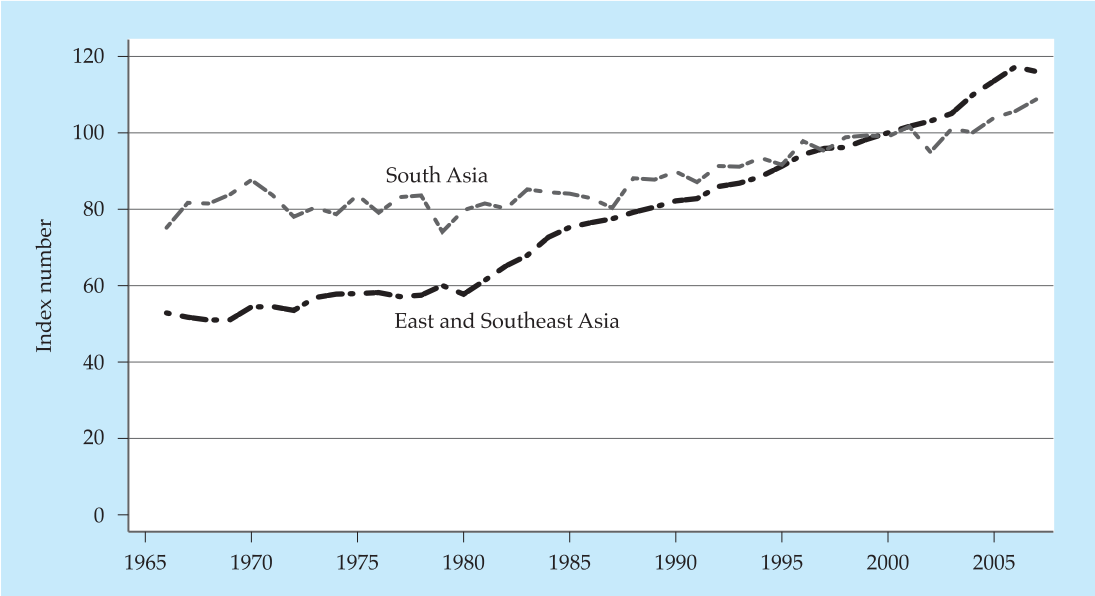
While Figure 8 describes growth in agricultural value added, Figure 9 presents evidence on growth in final agricultural output.[14]

There is one main difference between the two concepts: Agricultural GDP is expressed in value-added terms and uses domestic input and output prices to value goods and services which are then converted into US dollars at market exchange rates and deflated by the United States Consumer Price Index. The Production Index Numbers (PINs) measure the value of final agricultural output in "international dollars", which are the same in all countries, implying that the weight given to each commodity is the same across the world. However, this calculation will not necessarily be close to

[13] Mellor, John W. 1995. Agriculture on the road to industrialization. *IFPRI*, Food Policy Statement Number 22, December 1995.

[14] Please refer to Appendix 1 for an explanation of the method for calculating the FAO Agricultural Production Index Numbers (PINs).

Figure 8: Index numbers of real agricultural GDP per capita 1965 to 2007

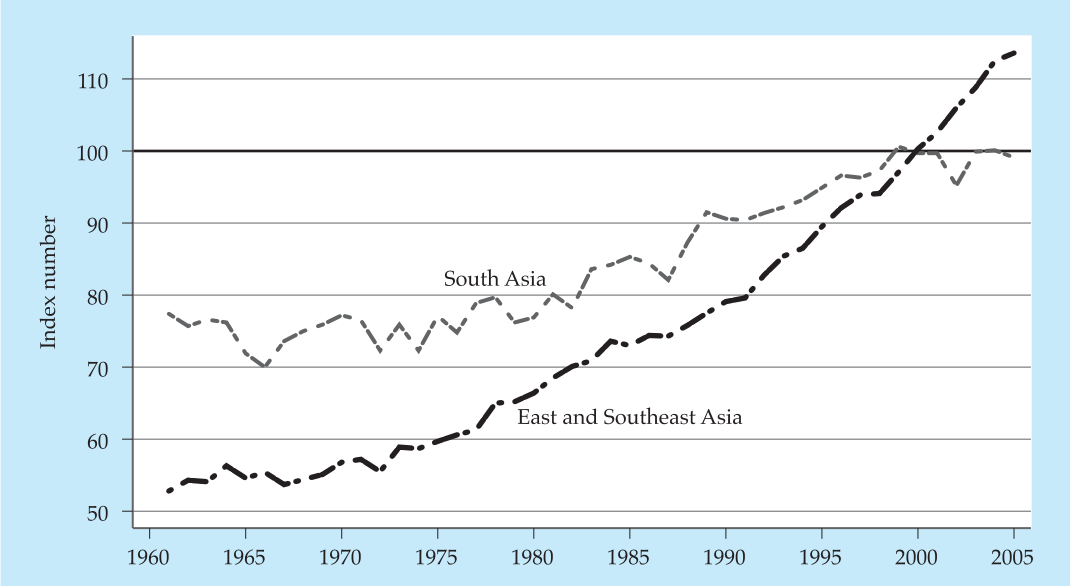


Base: 1999–2001 = 100

Constant 2000 US dollars

Source: World Development Indicators

Figure 9: Index numbers of net agricultural output per capita 1961 to 2005



Base: 1999–2001 = 100

Output net of agricultural intermediates, seed and animal feed

Source: FAOSTAT

the agricultural PIN because international prices could be quite different from local currency prices. For example, the price of beef is likely to be low relative to other prices in India, whereas the international price ratios will reflect the importance of beef internationally.

There is no correct way to measure agricultural growth. FAO uses "international dollar" prices for exactly the same reason that the International Comparisons Programme does: to avoid using exchange rates for computing world and regional aggregates and to facilitate international comparisons of productivity at the national level.

If the two sets of numbers diverge, pinpointing the sources of the divergence can uncover deeper patterns. For example, if the PINs are increasing, but value added is not, this may indicate problems with resource use efficiency, such as when it was found that value-added growth had been negative at world prices in some Eastern European countries in the 1980s, despite positive output growth. This indicated that in these countries, inputs were not being used efficiently. Thus, studying both sets of data provides deeper insights into agricultural growth than studying one set alone.

A comparison of the two sets of numbers shows that the growth rate of per capita agricultural production was similar to the growth rate of per capita agricultural GDP. In East and Southeast Asia, both agricultural value added (GDP) and net agricultural output per capita roughly doubled between 1965 and 2005. The main difference is that net agricultural output per capita began to grow in 1967 and accelerated from about 1977, whereas value added began to grow only from about 1980. In other words, from 1967 to 1980, output per capita was growing slowly but value added was not, suggesting that productivity increased with a lag. As Evenson and Gollin (2003)[15] point out, while modern seed varieties were introduced in the early years of the Green Revolution, realizing their full potential in raising productivity required changing the system of crop production and this process required time.

The picture is similar in South Asia, where the main difference is that agricultural value added and final output both increased by about one-third between 1965 and 2005. Net agricultural output per capita began to grow from the early 1970s, while value added per capita began to grow slowly from about the mid-1980s (i.e. barely at 1.5 percent per year from 1985 to 2005).

To sum up, the principal difference between the agricultural growth patterns of the subregions is that agricultural growth was much stronger in East and Southeast Asia than in South Asia. Reassuringly, there is no indication that value added growth was actually negative. This indicates that growth in agriculture was not brought about by increasing the levels of factor input use beyond the point of diminishing returns. Also, this growth caused food prices to be lower than they would otherwise have been and also raised incomes in rural areas. As a result, East and Southeast Asia enjoyed larger increases in food consumption and more diversified diets than South Asia. This led to lower rates of malnourishment and malnutrition as well as poverty.

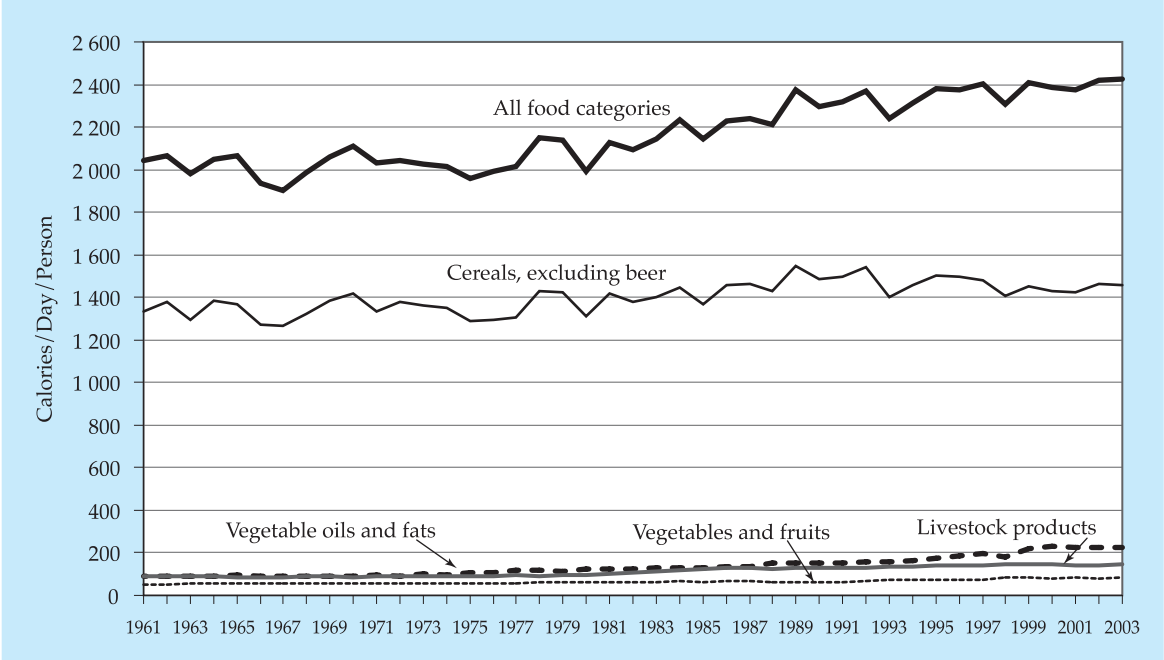
3.2 Food consumption and production

South Asia has experienced very little increase in calorie consumption over time, from close to 2 000 kcal/person/day in 1961 to about 2 400 kcal/person/day in 2003, with most of the increase occurring from 1981 to 1995 (see Figure 10). The source of the extra calories was mainly vegetable oils and fats and, to some extent, sugar, with livestock products playing a minor role.

In Southeast Asia, there was a much larger increase in calorie consumption, from 1 800 kcal/person/day in 1961 to about 2 700 kcal/person/day in 2003 (see Figure 11). The extra dietary energy was obtained from cereals and then later from vegetable oils and fats and livestock products, unlike in South Asia.

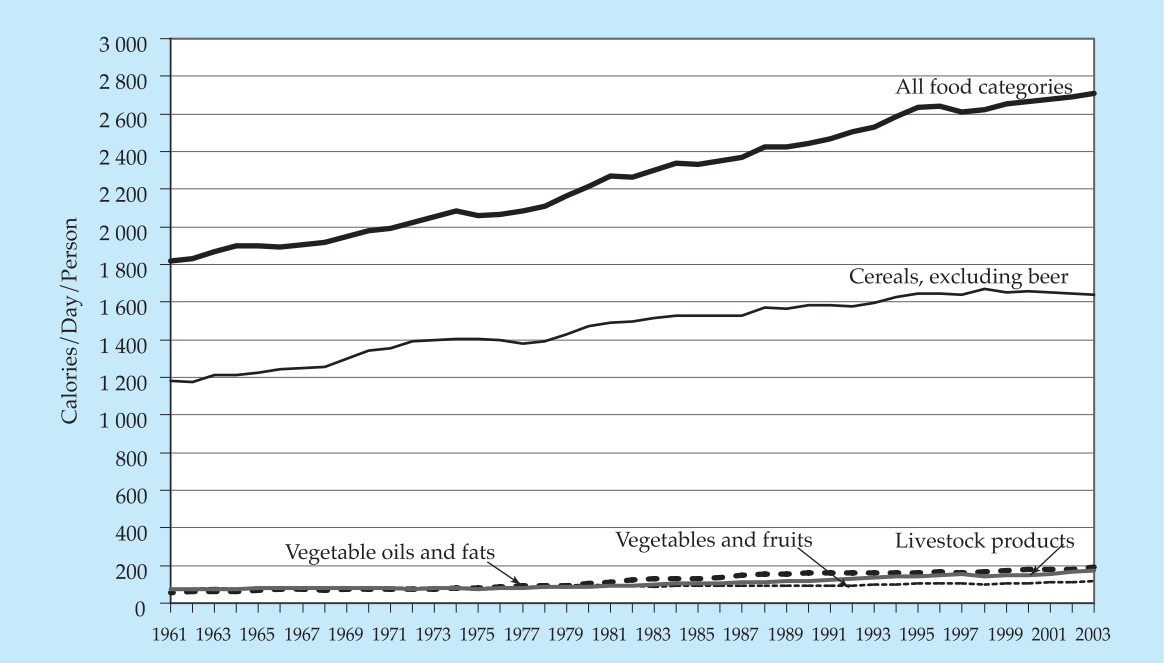
[15] Evenson, R.E. and D. Gollin (2003). Assessing the impact of the green revolution, 1960 to 2000. *Science* Vol. 300. No. 5620, pp. 758–7622.

Figure 10: South Asian calorie consumption



Source: FAOSTAT

Figure 11: Southeast Asian calorie consumption



Source: FAOSTAT

In East Asia, the picture is quite different (see Figure 12 below). As in Southeast Asia, there was a dramatic increase in calorie consumption to nearly 3 000 kcal/person/day in 2003. However, the source of this extra dietary energy was mainly livestock products, vegetable oils and fats; cereal consumption stagnated and even declined in the 1990s.