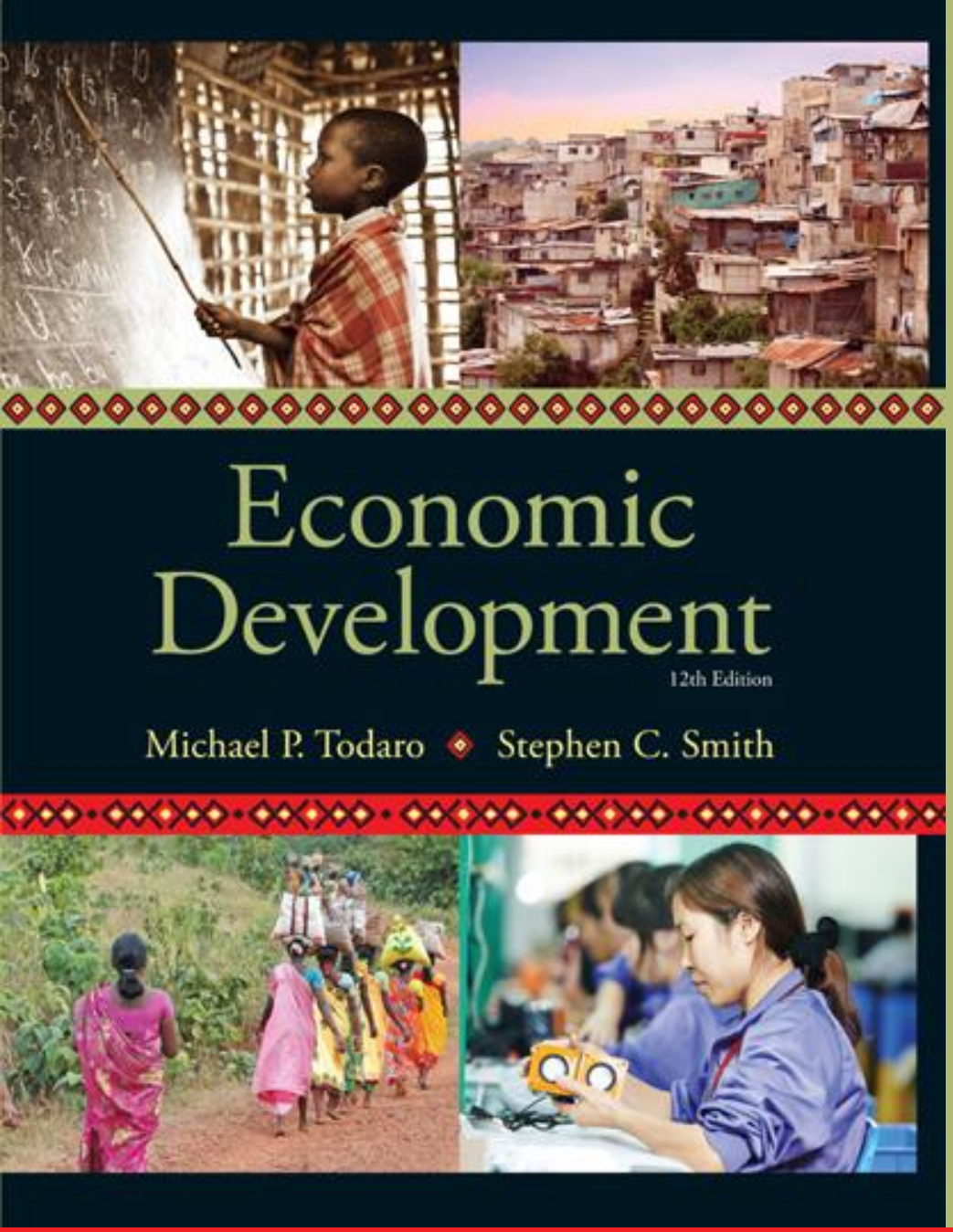


Chapter 9

Agricultural Transformation and Rural Development

9.1 The Imperative of Agricultural Progress and Rural Development

- The heavy emphasis in the past on rapid industrialization may have been misplaced
- Agricultural development is now seen as an important part of any development strategy
- Three complementary elements of an agriculture – and employment-based strategy
  - Accelerated output growth
  - Rising domestic demand for agricultural output
  - Non-agricultural labor intensive rural development activities that are supported by the farming community

9.2 Agricultural Growth: Past Progress and Current Challenges

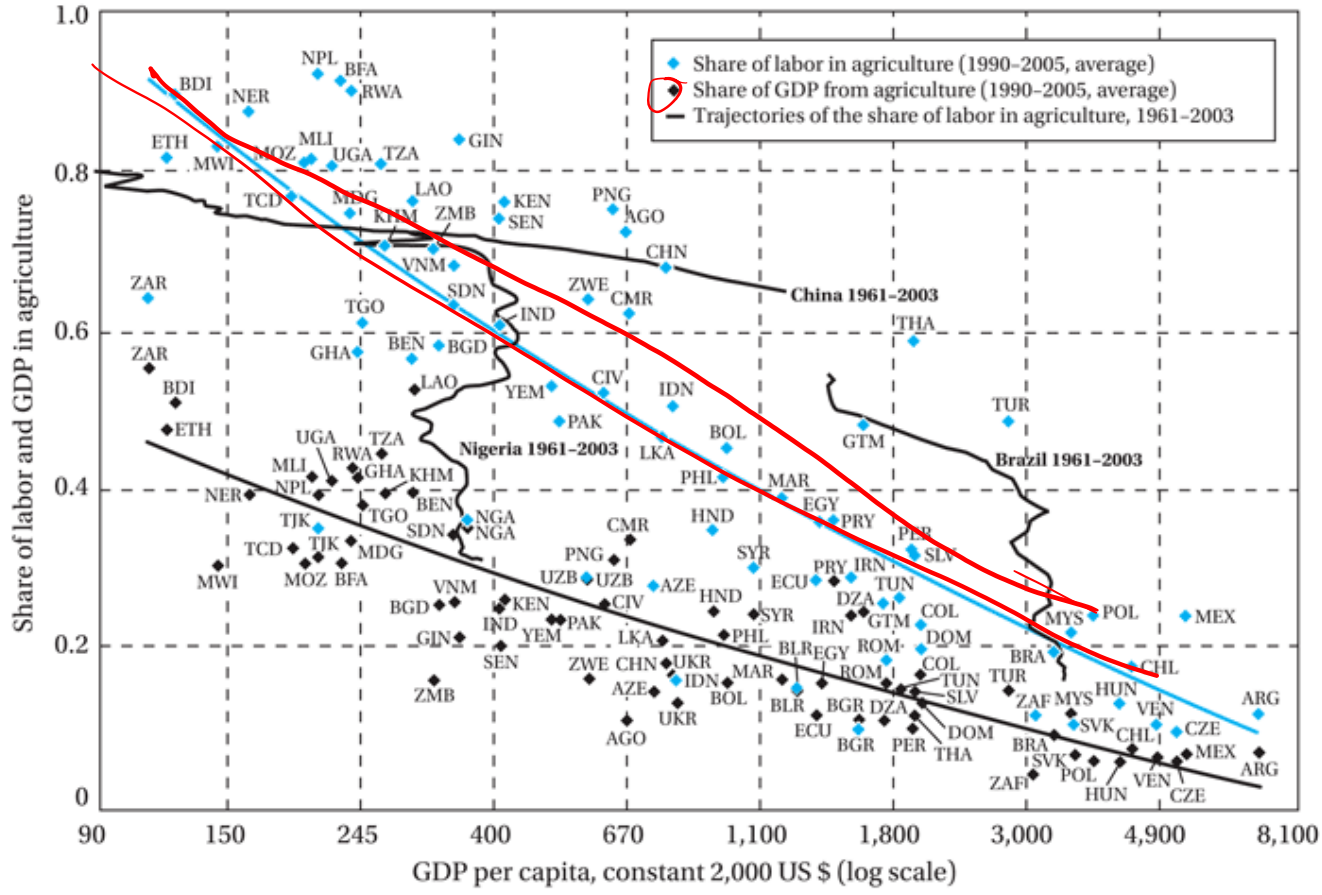
- Although agriculture employs the majority of the developing country labor force, it accounts for a much lower share of total output
- Agricultural production is rising but unevenly

Table 9.1 Average Annual Growth Rates of Agriculture, by Region (%)

	1971–1980	1981–1990	1991–2000	2001–2010	1971–2010
High-income countries	1.83	0.97	1.25	0.47	1.14
Developing countries					
Latin America and Caribbean	2.93	2.35	3.09	3.21	2.89
Northeast Asia	3.23	5.04	5.04	3.39	4.19
South Asia	2.19	3.70	2.76	2.80	2.86
Southeast Asia	3.66	3.32	3.41	4.23	3.64
Sub-Saharan Africa	1.05	2.68	3.11	2.97	2.44
West Asia and North Africa	3.31	3.84	2.61	2.75	3.13
Transition countries	0.81	1.42	−4.03	2.28	0.04
World	2.08	2.42	2.09	2.42	2.25

Source: IFPRI (International Food Policy Research Institute). 2013. Global Food Policy Report, Table 1. Washington, DC.

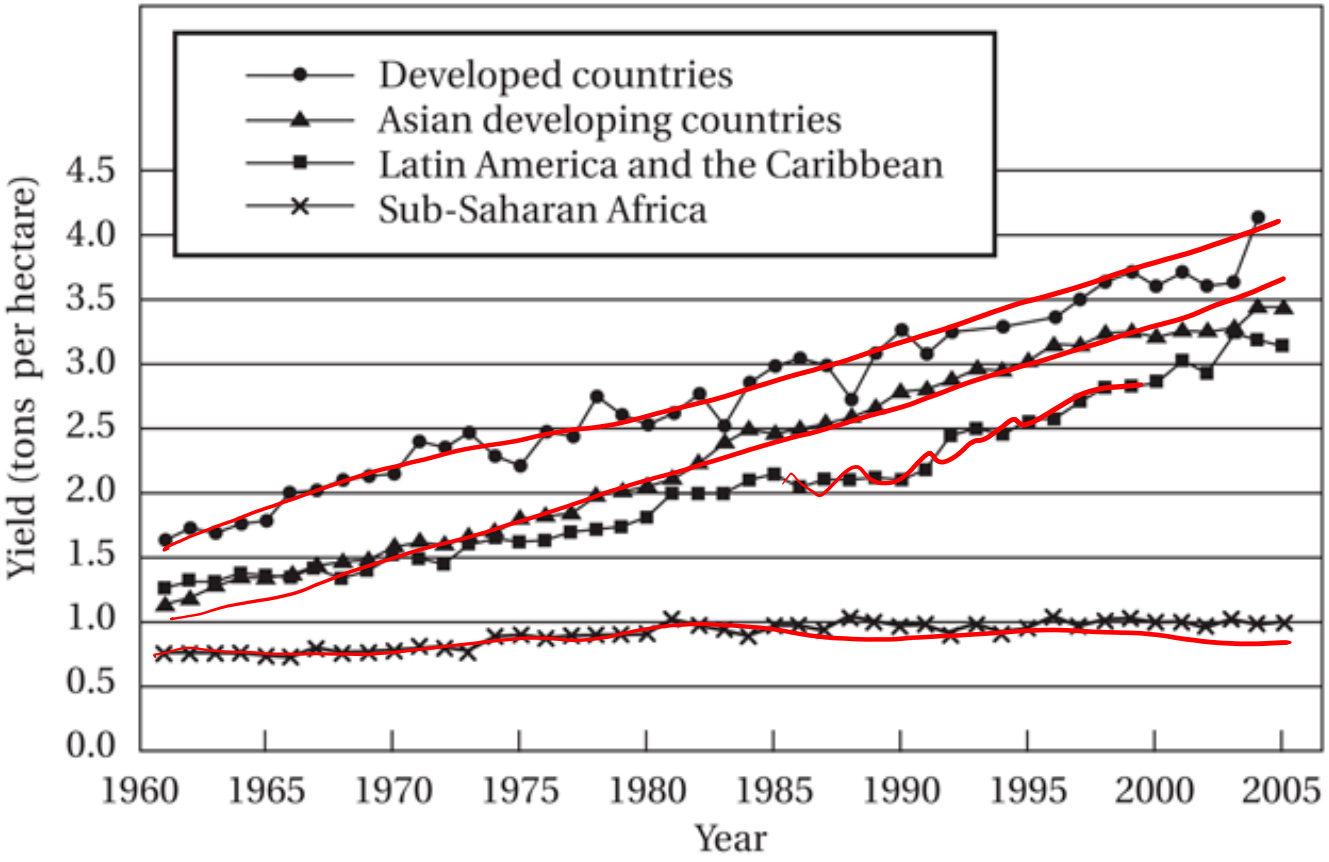
Figure 9.1 As Countries Develop, the Shares of GDP and Labor in Agriculture Tend to Decline, but with Many Idiosyncrasies



Source: International Bank for Reconstruction and Development/World Bank, *World Development Report, 2008*. Reprinted with permission.

Note: The list of 3-letter codes and the countries they represent can be found in Table 2.1 on pp. 43–44 of this text.

Figure 9.2 Cereal Yields by World Region, 1960-2005



Source: International Bank for Reconstruction and Development/The World Bank, *World Development Report, 2008.* Reprinted with permission.

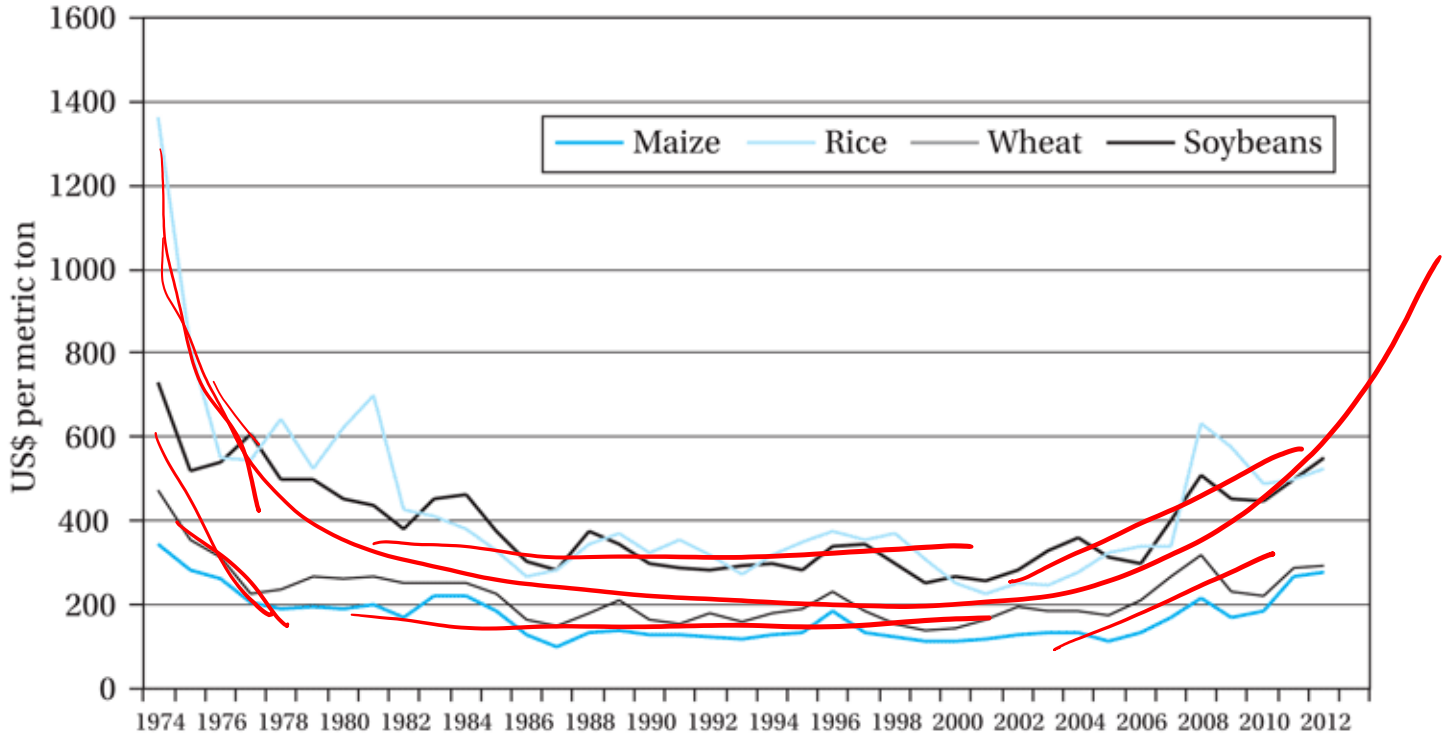
9.2 Agricultural Growth: Past Progress and Current Challenges (cont'd)

- Malnutrition and famine inspire calls for a new green revolution focused on Africa.
- Food price spike of 2007-2008 partly due to short term factors but long term factors may herald return to persistently higher food prices in the years ahead.
- New upward spike of prices by early 2011
- The presence of market failures - and poverty alleviation goals – create need for constructive government role in agriculture

Roles for Government in Agricultural Development

- Environmental externalities
- Agricultural research and extension services
- Helping create markets where they are missing
- Addressing monopoly power in input supply
- Economies of scale in marketing
- Informational asymmetries in product quality
- Providing institutions and infrastructure
- Addressing poverty traps (merit goods)

Figure 9.3 World Prices for Agricultural Commodities, 1974–2012

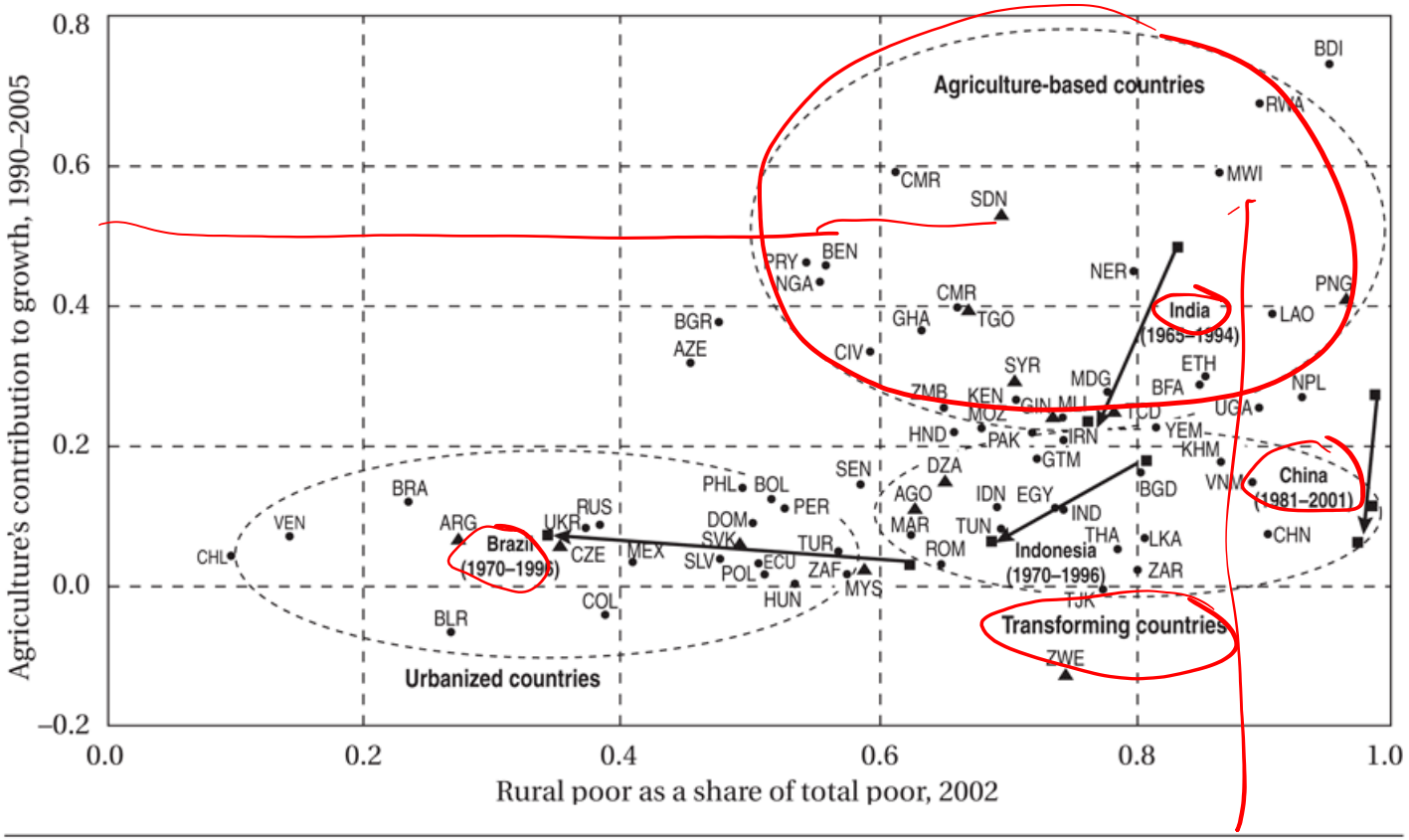


Source: Based on International Food Policy Research Institute, 2012 Global Food Policy Report, p. 90 (Washington, D.C.: IFPRI, 2013); downloaded at: http://www.ifpri.org/sites/default/files/publications/gfpr2012.pdf (accessed February 7, 2014). Prices for 2012 are through August 2012.
Note: Prices are in real 2005 US dollars.

9.3 The Structure of Agrarian Systems in the Developing World

- Three systems of agriculture
- Agriculture based countries, often subsistence, but agriculture makes up large part of growth
- Transforming countries, most of world's rural people, large proportion of poverty incidence found there, low contribution of agriculture to growth
- Urbanized countries, half or even more of the poor found in urban areas
- The trend is from agriculture-based, to transforming, to urbanized economies as illustrated with the cases of India, China, Indonesia, and Brazil in Fig. 9.4

Figure 9.4 Agriculture's Contribution to Growth and the Rural Share in Poverty in Three Types of Countries



Source: International Bank for Reconstruction and Development/The World Bank, *World Development Report, 2008.* Reprinted with permission.
Note: Arrows show paths for Brazil, China, India, and Indonesia in previous periods. A triangle denotes predicted poverty data used. Country letter codes are found in Table 2.1 on pp. 43–44 of this text.

9.3 The Structure of Agrarian Systems in the Developing World (cont'd)

- Peasant Agriculture in Latin America, Asia, and Africa
  - Latin America and Asia: similarities and differences
  - The *Latifundio–Minifundio* dualistic pattern in Latin America
  - The fragmented and heavily congested dwarf land holdings in Asia
  - Africa: extensive cultivation patterns

Table 9.2 Labor and Land Productivity in Developed and Developing Countries

Country Group	Agricultural Productivity (value added per worker, US$, in 2011)	Average Grain Yield (kilograms per hectare, 2011)
Low-income	337	2,035
Middle-income	953	3,678
High-income	21,957	4,645
Country		
Burundi	123	1,326
Congo, DR	281	766
Senegal	346	966
Kenya	363	1,514
Bangladesh	475	4,191
Bolivia	629	2,365
India	657	2,883
China	713	5,706
Ghana	810	1,594
Indonesia	937	4,886
Mexico	4,028	3,241
Brazil	5,019	4,038
Japan	42,953	4,911
United States	49,817	6,818
Canada	59,818	3,527

Source: Based on data from World Bank, *World Development Indicators, 2013* (Washington, D.C.: World Bank, 2013), tab. 3.3.

Table 9.3 Changes in Farm Size and Land Distribution

		Land Distribution Gini (percent)		Average Farm Size (hectares)		Change (%)		
Country	Period	Start	End	Start	End	Total Number of Farms	Total Area	Farm Size Definition Used
Smaller Farm Size, More Inequality								
Bangladesh	1977–1996	43.1	48.3	1.4	0.6	103	–13	Total land area
Pakistan	1990–2000	53.5	54.0	3.8	3.1	31	6	Total land area
Thailand	1978–1993	43.5	46.7	3.8	3.4	42	27	Total land area
Ecuador	1974–2000	69.3	71.2	15.4	14.7	63	56	Total land area
Smaller Farm Size, Less Inequality								
India	1990–1995	46.6	44.8	1.6	1.4	8	–5	Total land area
Egypt	1990–2000	46.5	37.8	1.0	0.8	31	5	Total land area
Malawi	1981–1993	34.4	33.2[a]	1.2	0.8	37	–8	Cultivated crop area
Tanzania	1971–1996	40.5	37.6	1.3	1.0	64	26	Cultivated crop area
Chile	1975–1997	60.7	58.2	10.7	7.0	6	–31	Arable land area
Panama	1990–2001	77.1	74.5	13.8	11.7	11	–6	Total land area
Larger Farm Size, More Inequality								
Botswana	1982–1993	39.3	40.5	3.3	4.8	–1	43	Cultivated crop area
Brazil	1985–1996	76.5	76.6	64.6	72.8	–16	–6	Total land area
Larger Farm Size, Less Inequality								
Togo	1983–1996	47.8	42.1	1.6	2.0	64	105	Cultivated crop area
Algeria	1973–2001	64.9	60.2	5.8	8.3	14	63	Arable land area

[a] Figure for 2004–2005

Source: World Development Report, 2008: Agriculture and Development by World Bank. Copyright © 2008 by World Bank. Reproduced with permission.

9.3 The Structure of Agrarian Systems in the Developing World (cont'd)

- Transforming Economies: Problems of Fragmentation and Subdivision of Peasant Land in Asia
  - Impact of colonial rule in strengthening land tenure systems of private property rights and the consequent rise of moneylenders
  - Contemporary landlordism in India and Pakistan involves absentee landlordism and persistence of sharecroppers and tenant farmers
  - Rapid population growth resulted in more fragmentation and peasant impoverishment

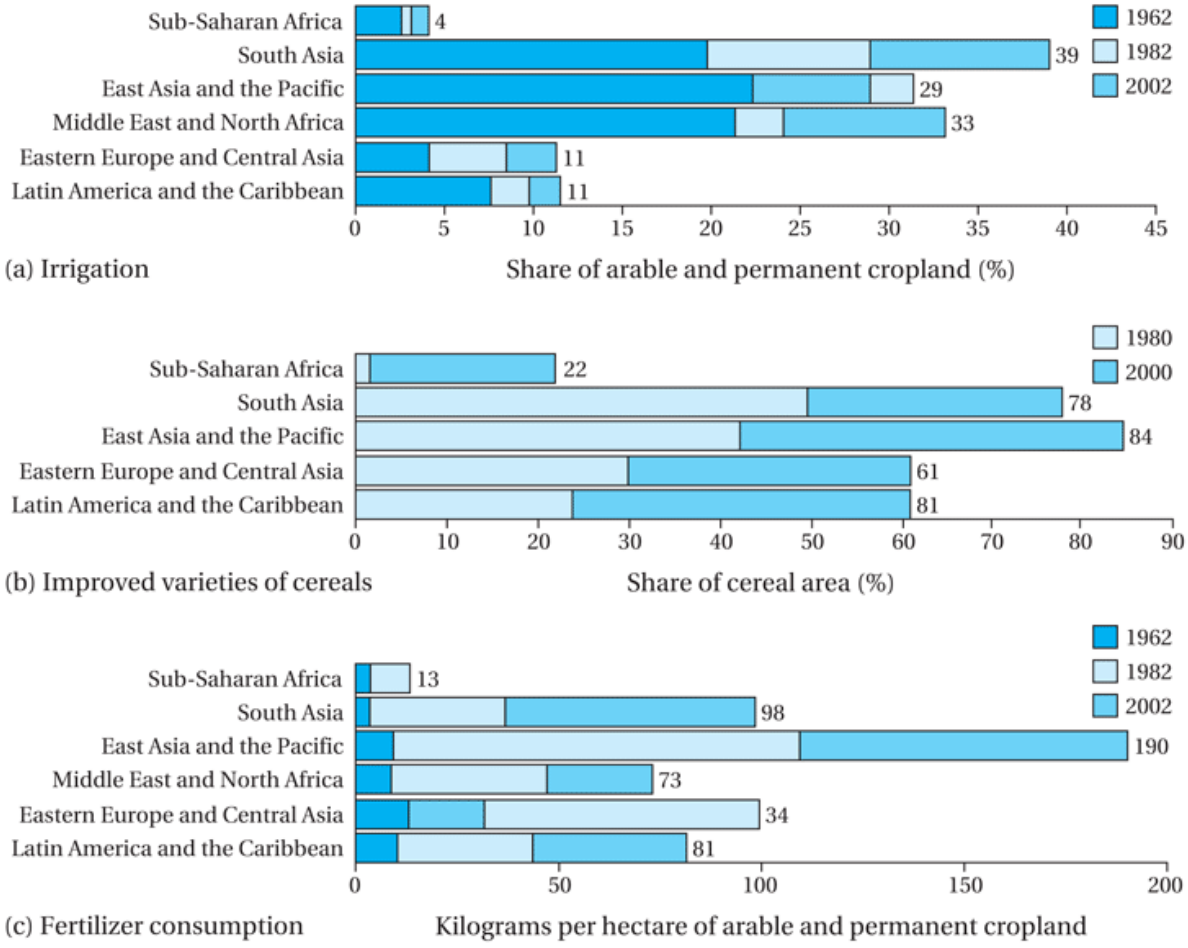
9.3 The Structure of Agrarian Systems in the Developing World (cont'd)

- Agrarian Patterns in Latin America: Progress and Remaining Poverty Challenges
  - Apart from latifundios (large holdings) and minifundios (small farms) much production occurs on family farms and medium sized farms.
  - Latifundios (traditional ones, especially) are relatively inefficient; landlords/owners are sometimes less focused on the business of farming; and large farms typically entail higher transaction costs
  - Overall the agricultural sector seems to be doing well in many Latin American countries. Two prominent examples: Chile (diversification), and Brazil (biofuels)
  - Extreme rural inequalities still persist.

9.3 The Structure of Agrarian Systems in the Developing World (cont'd)

- Subsistence Agriculture and Extensive Cultivation in Africa
  - Low productivity due to lack of technology (such as improved seeds and irrigation)
  - Shifting Cultivation
  - Seasonal demand for labor depending on rainy season
  - High dependence on unimproved seeds sown on unfertilized, rain-fed fields
  - Relatively high fraction of underutilized land
  - High concern about climate change impact
  - Need for an African new green revolution, there are hopeful signs that it is getting underway

Figure 9.5 Expansion of Modern Inputs in the World's Developing Regions



Source: World Development Report, 2008: Agriculture and Development by World Bank. Copyright © 2008 by World Bank. Reproduced with permission.
Note: Figures for improved cereal varieties are based on estimates for rice, wheat, maize, and sorghum.

9.4 The Important Role of Women

- Women provide 60% to 80% of agricultural labor in Africa and Asia, and 40% in Latin America
- Women work longer hours than men
- Government assistance programs tend to reach men, not women

9.5 The Microeconomics of Farmer Behavior and Agricultural Development

- Subsistence farming: risk aversion, uncertainty, and survival
  - Traditional neoclassical model of profit maximization with certainty is not adequate
  - Price, weather, and other uncertainty, along with limited access to credit and insurance (and even savings vehicles), largely explains the extent of risk-averse behaviors observed
  - Risk-averse subsistence farmers often (not irrationally) can prefer technologies that combine low mean-per-hectare with low variance to alternative high yielding but higher risk technologies
  - Efforts to minimize risk and remove commercial and institutional obstacles to small farmer innovation are necessary

Figure 9.6 Small-Farmer Attitudes toward Risk: Why It Is Sometimes Rational to Resist Innovation and Change

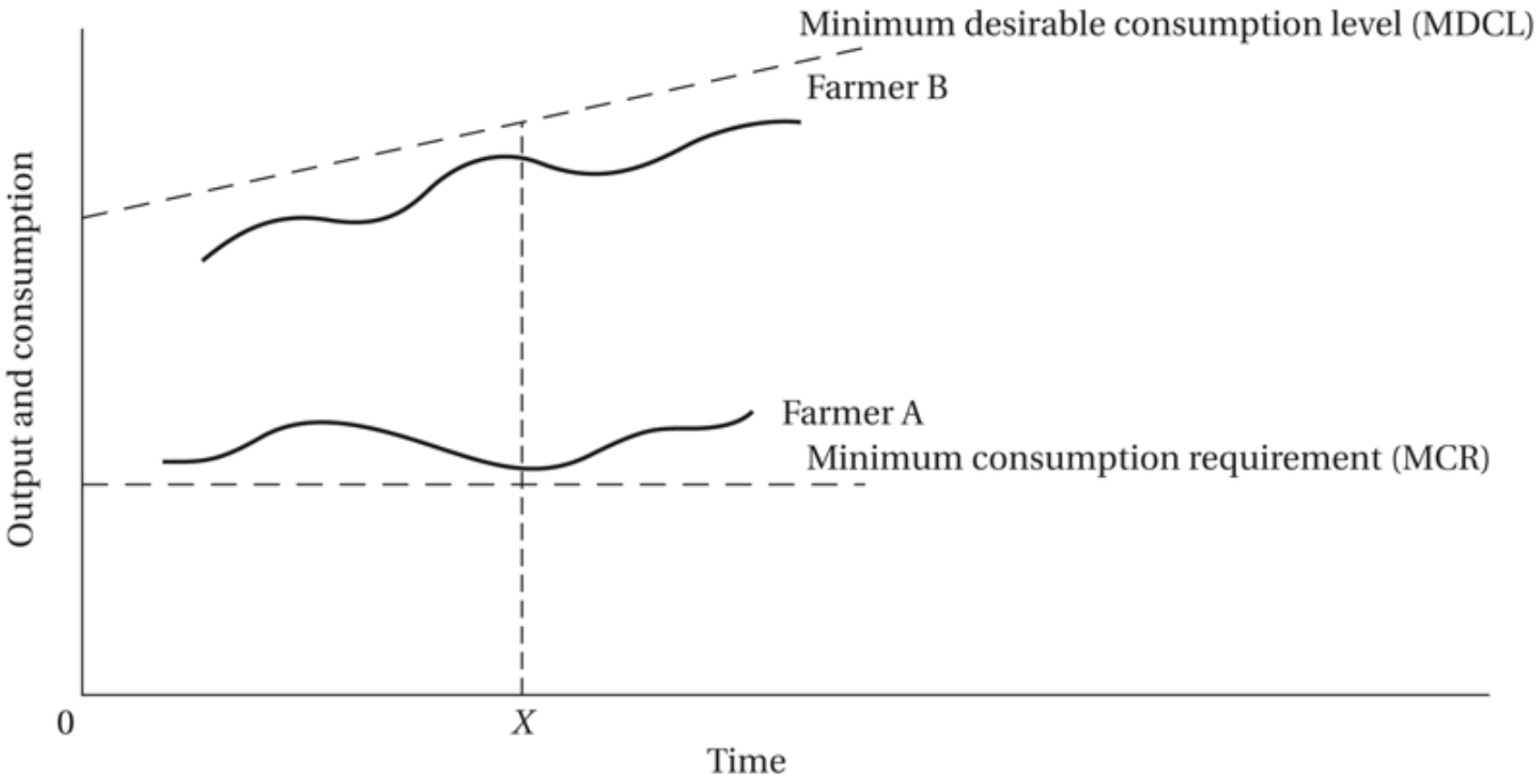
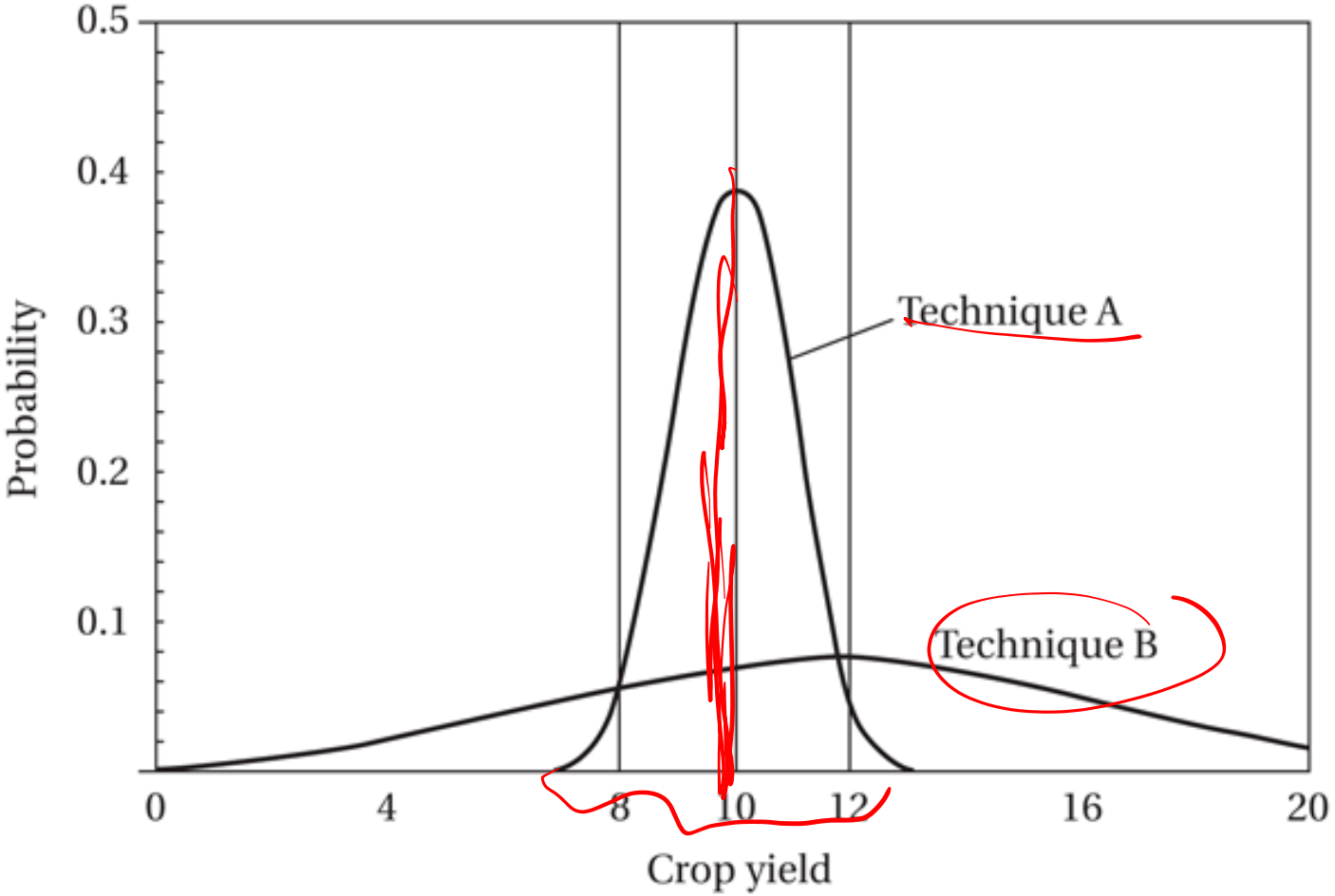


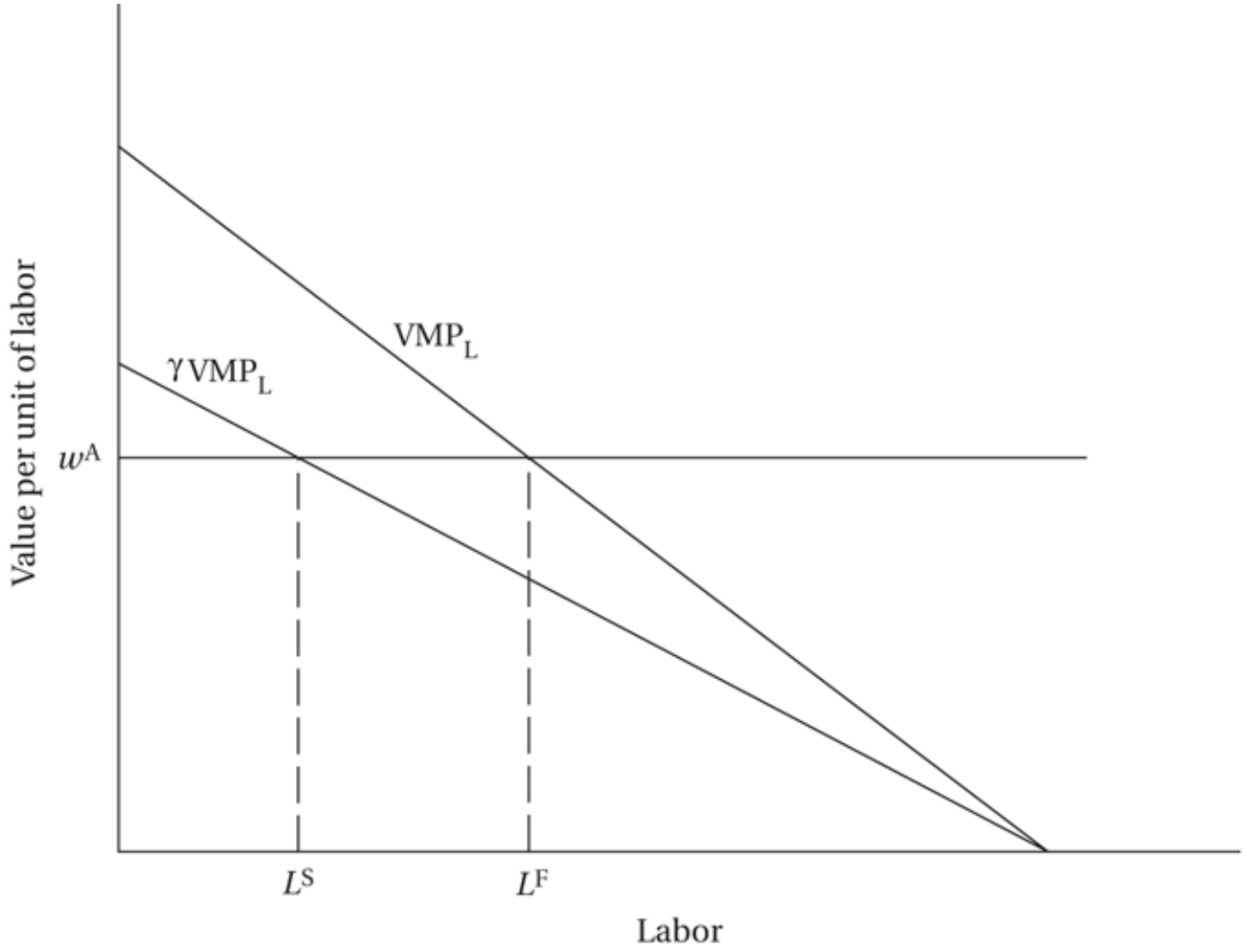
Figure 9.7 Crop Yield Probability Densities of Two Different Farming Techniques



9.5 The Microeconomics of Farmer Behavior and Agricultural Development (cont'd)

- Issues in sharecropping: a long debate
  - Intrinsically Inefficient due to poor incentives (Marshall)
  - Monitoring approach (Cheung)
  - Compromise between two types of risk (Stiglitz, others)
  - Screening argument (if high ability then take pure rental)
  - Empirical evidence for inefficiency from Ali Shaban (comparing same farmer, controlling for soil)
  - Giving sharecroppers a larger share of the produce and security of tenure on land can increase efficiency
- Issues in interlocking factor markets

Figure 9.8 Incentives under Sharecropping



9.5 The Microeconomics of Farmer Behavior and Agricultural Development (cont'd)

- The Transition to Mixed and Diversified Farming
- From Divergence to Specialization: Modern Commercial Farming

9.6 Core Requirements of a Strategy of Agricultural and Rural Development

- Improving Small-Scale Agriculture
  - Technology and innovation
  - Institutional and pricing policies: Providing necessary economic incentives
  - Adapting to new opportunities and new constraints
- Conditions for Rural Development
  - Land reform
  - Supportive polices
  - Integrated development objectives

Concepts for Review

- Agrarian systems
- Cash crops
- Diversified farming
- Family farms
- Green revolution
- Integrated rural development
- Interlocking factor markets
- Landlord
- Land reform
- *Latifundio*
- Medium-sized farms
- *Minifundio*
- Mixed farming
- Moneylender
- Scale-neutral
- Sharecropper
- Shifting cultivation
- Specialized farming
- Staple foods
- Subsistence farming
- Tenant farmer
- Transactions costs