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Agriculture and Rural Development

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Agriculture plays a central role in economic history for at least two reasons. First, around 12,000 years ago the Neolithic Revolution transformed human society perhaps more than any other event: with the invention of agriculture permanent settlements could form and population began to grow. Second, since the Neolithic Revolution, the vast majority of human activity has been primarily concerned with agriculture. In fact, it is only within the last couple of decades that the rural population of the world was overtaken by that of the cities. Thus, any economist working with economic history needs to take agriculture seriously.

Agriculture and Comparative Development

In terms of thinking about the very long run, there have been a number of studies which attribute a key role to agriculture in determining the relative development of different parts of the world. The most famous hypothesis is that of Diamond (1997) who argued that Eurasia enjoyed a number of environmental advantages, including plants and animals available for domestication and its East-West orientation, which made it easier for agricultural innovations to spread after the Neolithic Revolution. The technological and other advantages which followed meant that Europeans came to enjoy economic and later political dominance over the world. Other authors have considered other genetic and cultural factors, some of which are due to agriculture (see the survey by Spolaore and Wacziarg 2013).

Moving forward to more modern times, early economists also focused on the importance of the land: understandably, of course, given the background against which they were writing. Thus, for example, during the Enlightenment, the French Physiocrats believed that the wealth of nations derived exclusively from the value of “land agriculture”. Influentially, both at the time and today, Malthus argued that limitations to the amount of land would mean that economic growth would ultimately be choked off as population expanded and food became scarce. His theory forms the backbone of our understanding of the modest or zero levels of economic growth in the world before around 1800, and even in present day developing countries, for example, among practitioners of Unified Growth Theory (see, e.g. Galor 2005). The Malthusian interpretation of history has been debated by many economic historians, who often prefer to argue for what they see as a more gradual movement to modern economic growth. For example, Persson was a long-standing opponent of Malthus (Persson and Sharp 2015). Much of his critique relies on calculations made by economic historians of productivity increases in agriculture, with estimates of total factor productivity (TFP) growth in agriculture of up to 0.1 or 0.2 per cent per year in pre-industrial times if resources were efficiently exploited (which required the possibility to trade or the presence of large urban centres), as well as more recent reconstructions of historical GDP/capita. He explains how land is not necessarily a limiting resource in the Malthusian sense. Crop ratios (the number of crops per year per unit of land) increased from 0.05 in primitive agriculture to close to one per year in Europe and higher for other regions producing rice. Moreover, yields per unit of land also increased, for example, through the use of manure as fertiliser, or the introduction of clover, even before soil chemistry gave a scientific understanding of why this worked. In fact, even today only between 80 and 90 per cent of all cultivable land is now used (Federico 2005).

Agriculture and Technological Change

Economists have recently focused on measuring the impact of specific examples of technological change in agriculture. Two examples will suffice. First, the introduction of the potato to the Old World from the Americas has been found to explain a large proportion, around one quarter, of the population and urbanisation increases of the eighteenth and nineteenth centuries (Nunn and Qian 2011). Second, the introduction of the heavy plough to Europe in the Middle Ages allowed farmers to make more efficient use of heavy clay soils, also leading to greater rates of urbanisation in these areas (Andersen

et al. 2016), although this was not without costs, since it also seems that societies which made more use of the plough, since it required physical strength to employ, also developed gender norms less favourable to women (Alesina et al. 2013).

The Malthusian model suggests, however, that productivity increases in agriculture will simply be matched by population increases, leading to greater population density but moderate or no improvement in standards of living—hence the use of population density or urbanisation rates in the aforementioned studies. Urbanisation, which is often easier to measure than population density before modern censuses, also presents a useful proxy for the productivity of agriculture, since a larger fraction of people living in cities can be taken to imply that agriculture is generating a surplus which is able to feed the urban population—although this might be due to imported food from other surplus regions rather than domestic productivity.

An Active or a Passive Role for Agriculture?

This discussion about urbanisation gives the impression that a decline in the share of the population in agriculture is fundamental to the process of development. In fact, much of the debate about agriculture and development does indeed give it a rather passive role. For example, the two-sector classical growth model by Lewis (1954) simply sees agriculture as a sector where labour is employed very inefficiently and can be moved into more dynamic economic activities without affecting agricultural production. Indeed, somewhat based on the experiences of developed countries, the consensus in the 1950s was that agriculture should shrink for agriculture to develop. This was because the demand elasticity for agricultural produce is below one, traditional agriculture does not use its resources efficiently, and besides, the sectors with the greatest potential for productivity gains lay outside agriculture. With this way of thinking, agriculture simply had to decline gracefully—and in the meantime produce the food needed for industry and services to thrive, save so as to allow investment elsewhere, provide domestic markets for manufactures, and generate export income so that modern technology can be imported (Johnston and Mellor 1961). Moreover, specialisation in agriculture might be dangerous if the terms of trade turned against primary product producers, as happened after the Second World War and was noted by Prebisch (1950) and Singer (1950)—see also the discussion in Williamson (2011).

Recent work has disputed this pessimistic point of view, however. Overton (1996) describes the Agricultural Revolution which took place in England

after 1750, both preceding and alongside the Industrial Revolution. Olmstead and Rhode (2008) present a story of an extremely dynamic American agriculture for the two centuries prior to the Second World War. Lampe and Sharp (2018) document the remarkable transformation of Danish agriculture from an absolutist, quasi-feudal system in the 1700s to a leading agricultural exporter by the end of the nineteenth century. Common to the massive productivity increases which these countries experienced were a string of biological and technological innovations, and, for example, improved use of the land through better crop rotation systems—all of which built upon an increasingly enlightened or scientific approach to agriculture, including accurate book-keeping, the foundation of agricultural societies, agricultural schools and extension services, and scholarly debate in agricultural journals. These innovations in turn laid a solid scientific basis for the subsequent Green and Genetic Revolutions. Thus, from around 1960, international research centres and national research programmes helped develop many new varieties of crops and big productivity gains, although these have been uneven across crops and regions (Evenson and Gollin 2003).

Institutions and the Spread of Agricultural Innovations

The context within which agricultural innovations spread to new countries differs of course hugely over time and space. While the Green Revolution was the result in part of a conscious international effort to spread knowledge to developing countries, Lampe and Sharp (2018) describe how an elite group of enterprising landowners helped to spread proto-modern dairying into Denmark, laying the foundation upon which subsequent advances would be made, and ultimately seeing its spread beyond the realm of the large estates to the peasantry, who founded cooperative creameries. These empowered the peasantry but disempowered women, who were not welcome to work at the butter factories, despite their traditional role in dairying. At the same time, the process of taking food production out of the farmhouse and into factories began to blur the distinction between agriculture and industry, and modern employment classifications would put industrial dairying within the manufacturing sector.

Land inequality is often also seen as a barrier to progress within agriculture, with the literature usually explaining it based on geographic and political factors—for example, it is higher where soils support “plantation-friendly” crops

like sugar or cotton—the so-called Engerman-Sokoloff thesis (see Engerman and Sokolof 2000). Many developed countries today had to go through extensive land reform, abolishing institutions such as serfdom, share cropping, the open field system, and common land—although developing countries today often struggle with many of the issues that European countries had to deal with centuries ago. Other nominally communist countries, such as China struggle with reforming their collective agriculture.

Cooperatives, both producer cooperatives such as the aforementioned butter factories, and cooperative banks are often seen as the answer to the issues confronting poor peasant farmers, both, for example, in terms of giving access to credit to make the necessary investments, allowing peasants to enjoy economies of scale and giving better opportunities for marketing their product. Attempts to impose them from above through government regulation have, however, proved rather unsuccessful, and modern development economists (see, e.g. Birchall 2003) look more to enabling peasants to allow the sort of bottom up process seen, for example, in Denmark.

Outside the establishment of cooperatives, governments have regulated agriculture for centuries. Before the First World War, complex systems of import tariffs and export subsidies sought to maintain prices, but these were gradually liberalised, with predictable effects on market integration (see, e.g. O'Rourke and Williamson 2001). However, in the interwar period, and especially after the Second World War, new tariffs were joined by national support programmes, offering subsidies, governing prices, and buying up produce. Few believe that these help increase the productivity of farmers, and US and EU agricultural support surely has the unfortunate consequence that developing countries with large agricultural sectors do not have the opportunity to enjoy the benefits of exporting to rich markets—although China in particular seems to be offering new opportunities.

Avenues for Future Research

The economic history of agriculture is a large topic, and this chapter only touches briefly on a selection of interesting research that has recently been carried out in this area. The above discussion will hopefully, apart from providing an overview of some of the paths already trodden in the literature, also provide inspiration for new work on agriculture and economic history. In particular, it seems that we can learn a lot from history when trying to answer the challenges of agriculture in the twenty-first century.

Future research might therefore seek to understand how agriculture in once poor but now rich countries was improved, the role of policymakers or others in society had in facilitating this, and how this improvement contributed in turn to economic development. Economic history is surely filled with illustrative examples, beyond those which have already been studied, which can help guide our thinking about the situation of developing countries today. Moreover, a comparative approach looking at the differences and similarities across countries and regions might also yield interesting findings.

One issue which certainly deserves more focus in the historical literature, and is a massive issue for agriculture today, is the impact on the environment. Agriculture has generally become more intensive, with arable agriculture placing greater burdens on the soil. Although this has been offset with, for example, pesticides and fertilisers, these themselves present additional challenges. Moreover, as countries have become richer, so too have they demanded more animal products. Livestock itself also needs to be fed from the land, and beef and dairy production in particular has recently been associated with climate change due to the methane the cattle produce. The intensification of agriculture is something which has been going on for centuries, and a longer perspective on the current issues might be extremely valuable.

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