Notes for Topic 3: The Columbian Exchange

1 Amateur History and Epidemiology

1. The Columbian exchange refers to the exchange of commodities, people, and ideas between the "Old World" (Africa, Europe, and Asia) and the "New World" (the Americas, Caribbean). Although the Vikings had reached North America in 1001 A.D., those contacts were limited and transitory. The Columbian exchange is thus dated to after 1492 when contacts between extensive and long-lasting.

2. The most significant aspect of the exchange was disease. This exchange was mostly one-sided. The Old World has a higher population and more contact with domesticated animals. This created a richer disease environment that allowed its population to acquire greater immunity. Old world diseases include smallpox, measles, and influenza. Some diseases, like syphilis, did flow in the opposite direction, but their impact was far less.

3. For the indigenous population of North America, the exchange was an unambiguously economic and human catastrophe. Between 20% and 90% of the population was killed by disease. The uncertainty over the exact figure results from the difficulty in estimating the pre-Columbian indigenous population.

4. For the Old World, the Columbian exchange brought massive economic benefits and may have led to, or at least amplified, the industrial revolution that followed in subsequent centuries. New resources became available and existing resources could be used in more effective ways.

2 Core Concepts for this Topic

1. **Supply and Demand in Goods Markets**. We have already seen supply and demand in the context of a labor market where households supply labor and firms (or feudal lords) demand it. The same framework can be applied to markets for goods and services. Given the topic, consider the market for an agricultural good like coffee or sugar.

Unlike labor markets, households demand goods and services. Demand represents households willingness to pay. The key assumption is that as prices fall, households choose to demand more of the good. There may be exceptions, but this fits the vast majority of goods and services.

Suppose that the price of the good is very high. Now, only the people who are most willing to pay (*e.g.* those who value it the most) are willing to pay the high price. As the price falls, however, more households are willing to pay and some households who were already purchasing the good may choose to buy more. If we make a graph, we see an inverse relationship between demand and price.

Firms supply goods and services. Unlike demand, when prices are high, firms usually choose to supply more. This is because more firms find it profitable to produce when the price is high. As the price falls, fewer firms find it profitable to produce and they this choose not to. There is thus a positive relationship between production and price.

Consider the example of a crop. Some producers have the best land and can produce very cheaply. It is thus profitable to produce even if the price is very low. As prices rise, it becomes profitable for firms on increasingly worse farmland to produce. Higher prices bring weaker producers into the market

Suppose that something happens that makes it cheaper for all farmers to produce. for any price, more farmers find it more profitable to produce. Supply increases and, with it,the price falls.

2. **Productivity Shocks** *Productivity* refers to how effective an hour of work is. Productivity makes it less expensive to produce. In the language of supply and demand, it causes firms to increase their supply of goods and services. The effects of increased productivity include higher wages, more production, and lower prices (inflation). Productivity growing faster than population allowed society to finally escape from subsistence.

A number of factors can cause productivity to grow. A non-exhaustive list includes:

i. New or more effectively used resources. Agricultural productivity will improve if farmers are able to use more fertile land or if they discover a new means of making existing land more fertile.

ii. Better technology. This is the most common source of productivity improvements and it overlaps with i).

iii. Health. Illness and disease reduce the effectiveness of labor.

3. Colonialism. Colonialism is when a host country takes political power over another in order to exploit it economically. The economic benefits to the host country may include new land or other resources, the ability to offload surplus population, or the use of the native population for labor. The establishment of colonies is the means to achieve these economic benefits.

Although religious motivations were put forward, economic exploitation was the main driver of the European colonization of the New World. European powers typically claimed political control over newly discovered lands (this was also done in the Old World).

3 Big Questions

1. Inequality can be measured in different ways. We often think of inequality as measured within a given society. We can also, however, think about inequality across societies. In this dimension the Columbian exchange promoted inequality by providing economic benefits to the Old World but disaster to the New World. Why did this happen?

Although military conquest and political domination played a role, the biggest factor was disease. The Old World had man more dangerous pathogens then the New World. There are several reasons why. First, the Old World had been inhabited for much longer and its population was much greater. This provided more opportunities for diseases to evolve. Second, animal domestication was much more widespread. Most of history's worst diseases are zoonotic, meaning that they started in animals. We do not know, for example, where smallpox comes from. I will assume it was with cats. Cats are assholes and unleashing one of history's deadliest illness is exactly the sort of thing they would do. Scheidel writes:

> By the end of the midieval period, the gradual merging of the Old World's disease pools in the wake of commercial and eventual military contacts had ensured maximum coverage, causing many of these killer diseases to become endemic. By contrast, indigenous Americans enjoyed a less severe disease environment and lacked any prior exposure to these Old World scourges. Exploration and conquest opened up what Alfred Crosby called the "Columbian exchange,' transatlantic contacts that swiftly introduced a plethora of lethal infections to the Americas. And although the New world returned the favor by sending syphilis the other way, teh European pathogen contribution to the Americas was much more diverse and vastly more catastrophic.

Scheidel, Chapter 11 page 314

The Old World's long history with smallpox, measles, influenza, bubonic plague, etc. gave its population some immunity. This does not mean that these diseases did not have terrible effects, only that they were not as bad as those experienced by a population new to a disease. This was centuries before the germ theory of disease was understood and medical care for these diseases was primitive. The Old World did have some limited knowledge, however, of how these diseases were transmitted and a small ability to treat them.

In contrast, the indigenous population of the Americas had no immunity and no knowledge of how to treat them. The result was disaster. Although the Black Death may be the most deadly plague caused by a single pathogen, the combination of Old World diseases led to a death rate that at least equaled, and very likely far exceeded that of the Black Death.

> For Mexico alone, cumulative attrition ranging from some 20 percent to some 90 percent has been proposed in the literature. Most estimates put total losses above half. It seems reasonable to conclude that the mortality levels associated with the Black Death should be considered a mere minimum for the New World.

Scheidel, Chapter 11 page 316

2. We saw that workers who survived the Black Death benefited from higher wages that, for Western Europe, lasted for many centuries and which may have led to sustained economic growth. Did this happen in the aftermath of the pandemics that ravaged the New World?

We have already seen how population decline can cause a reduction in labor supply that causes workers' wages to rise. This generally promotes economic equality. These market forces were present in the New World as well. Importantly, however, market forces may be overcome with government interventions. In this case, it was the introduction of forced labor, including slavery.

> This inverted U-curve (see graph on p 317) invites a Malthusian interpretation of changing wages in response to population decline and subsequent recovery, but the lack of progress in the sixteenth century, when epidemic mortality was particularly severe, is in need of explanation. The answer probably relies on Spanish reliance on coercion to secure labor in the face of demographic contraction, a practice rooted in pre-Columbian regimes of forced labor. Government intervention may consequently have suppressed wage bargaining for an extended period of time. This interpretation meshes well with the fact that coercion was at its most intense in the early stages of Spanish rule in Mexico.

Scheidel, Chapter 11 page 316

Scheidel argues that through forced labor, the Spanish suppressed market forces that would have caused higher wages in the aftermath of the pandemics. He also argues, however, that this suppression was temporary and that just as overall mortality exceeded that of the Black Death, so did the eventual rise in wages.

> By far the most striking feature of the increase in real wages in Mexico is its tremendous scale, by a factor of four as to a "mere" doubling in the cities of western Europe after the Black Death. the Mexican surge is logically consistent with, and thus may well imply, much more massive loss of life. The later downturn in real incomes is reminiscent of analogous developments in much of early modern Europe–albeit once again more substantial than in the latter case and indeed stronger than predicted by demographics recovery alone. Even though the observed scale of these changes may raise doubts about the reliability of the record, the overall picture seems clear. Several generations of workers benefited from labor scarcity after it had become so severe that market institutions could no longer be prevented from mediating compensation levels. This phase was followed by a return to the unhappy status quo ante as the population grew and the bargaining power of workers declined.

Scheidel, Chapter 11 page 318

3. The Columbian exchange was a major boost to Old World (especially European) productivity that may have contributed to the industrial Revolution in subsequent centuries. How did it impact productivity.

There are numerous mechanisms. Many European countries had become overpopulated and the removal of some population to New World colonies may have allowed more people to be productive. The Columbian exchange spurred technological innovation, including in navigation. Given that all economies were primarily agricultural, however, we should not overlook the importance of food. The Columbian exchange not only included novel foods but also allowed for the improved cultivation of existing crops. Europe had sugar, for example but geography meant that it could be produced more effectively in New World colonies.

> Historian Alfred Crosby (1989, p 666) describes the significance of the transfer of food crops between the continents, writing" "the coming together of the continents

> was a prerequisite for the population explosion of the past two centuries, and certainly played an important role in the industrial revolution. The transfer across the ocean of the staple food crops of the Old and New Worlds made possible the former.

Dunn and Qian, page 167

A higher population, by itself, is not a sign of improved economic performance. It does, however, suggest that the population was able to pass through additional wealth into larger families. it also suggests that the population was better fed, which also boosts productivity. Dunn and Qian note that the potato, an Old World food from the Andes, was especially important.

> We find that the potato had a significant positive impact on population growth, explaining 12 percent of the increase in average population after the adoption of the potato. We also estimate the effect the potato had on urbanization, a measure that is closely correlated with GDP. We find that 47 percent of the post-adoption increase in urbanization is explained by the potato.

Dunn and Qian, page 170

The potato is an exceptionally nutritious food and people can almost survive on it alone. As we will see later in the semester, by specializing in its production, Ireland was able to experience unprecedented population growth. The dependence on a single crop, however, came with tremendous risk, however, if that cropped failed.

Dunn and Qian summarize the role of the Columbian exchange:

> The New World provided soils that were very suitable for the cultivation of a variety of Old World products, like sugar and coffee. the increased supply lowered the prices of these products significantly making them affordable to the general population for the first time in history. The production of these products also resulted in large inflows of profits back to Europe, which some have argued fueled the industrial revolution and the rise of Europe.

Dunn and Qian, page 283

If we buy the argument that the Columbian exchange promoted the industrial revolution, then it almost surely contributed to the break away from an economy where most people lived near subsistence, to one of sustained growth.