Toward a Theory of the Malthusian Trap. Part 1

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Abstract

Economic historians nowadays argue that economic growth in the world was extremely slow and unsustainable until the beginning of the Industrial Revolution in the late eighteenth century. This article traces how the efforts of many economists and historians have gradually developed the concept of the "Malthusian trap" to explain the centuries-long relative stagnation of agrarian society. In the case of traditional economies, cliometric studies generally confirm Thomas Malthus's ideas about the compensation of the positive impact of technological progress on per capita income by population growth. Modern scholars supplement them by analyzing the social structure of the society in the Malthusian trap, as well as its inherent institutions of redistribution, and the periodic flourishings and declines of proto-industry and trade that took place in those times. The article shows the logical interrelation of these elements within the Malthusian dynastic cycle. The concept of Malthusian trap is compared with the Marxist vision of the historical process. It is shown that positive insights of the Marxist approach can be implanted in the modern theory.

Introduction

For now-living individuals, economic growth is not merely a figure of speech; it is a tangible phenomenon. People perceive a consistent increase in their incomes not merely as a desirable outcome but rather as a natural process. In case of a deviation from this norm, they are inclined to make claims to those in power. Moreover, over medium-term intervals (20-30 years), not just an increase in the level of income, but also a change in the way of life itself, which is facilitated by technological innovations, takes place. The absence of such changes is considered to be a sign of stagnation.

Hence the understandable temptation to extend this perception of present reality to the past and to view the entire history of mankind as a sequence of progressive changes. It is obvious that such views have taken root more firmly in Russia than in any other country, due to the long-standing influence of Marxist ideology on the collective consciousness. As is well known, the Marxist paradigm distinguishes a number of successive stages (socio-economic formations) in history. These stages are characterized by shifts in technology (productive forces) that cause transformation of institutions (production relations). This ultimately leads society to a qualitatively higher level and does so by means of social revolution, which is defined as a transition to a more advanced state of affairs (new formation). It is argued that such changes of formations have occurred several times in history.

It should be noted, however, that modern economic history, in general, does not support such claims. In recent decades, this field of knowledge has become no less mathematical than other branches of economic science. Thanks to the efforts of economic historians and, above all, A. Maddison, we now have a retrospective dynamic series of macroeconomic indicators for the period starting from 1 AD. These findings do not support the hypothesis of linear progressive movement with sharp accelerations, which could be indicative of multiple changes in development stages.

1. A research agenda

Maddison's calculations indicate that from 1 to 1500 AD, the absolute GDP's growth rate in most countries of sedentary, agricultural civilization did not exceed 0.2-0.3% per year on average. Moreover, in the period between 1 and 1000 AD, the global growth rate was only 0.01% per year, and in Western Europe it was negative. The population growth was proceeding by a mere hundredth of a percent, with the world population increasing insignificantly from 225.8 million to 267.3 million between 1 and 1000 AD.

In other words, the gross output of a country and the number of people living there grew at almost the same rate. Consequently, per capita GDP increased at a slow pace. It should be recalled, that the dynamics of economic growth are determined by changes in this indicator, not in the absolute value of GDP. In 1–1000 AD, there was no growth in per capita GDP globally. In 1000–1500, the growth rate in some countries reached at best 0.1% per year. Differences between countries in per capita GDPs (and, consequently, in living standards) have always existed. However, up to 1500, they were not particularly pronounced.

Thus, the common feature of traditional agrarian economies throughout the world was a relative stagnation, rather than a consistent ascent from the lowest to the highest stages of development. J. Mokyr, an authoritative expert on the history of technology, observes that in the context of the entire history of humanity, episodes of scientific and technological progress do not appear to be frequent. Rather, they emerge as exceptions when, as a result of a rare coincidence of circumstances, the usual tendency of societies to slide into a stagnant equilibrium is broken [Mokyr 1992].

The contrast with the events of the last two and a half centuries is striking. While some acceleration of economic growth in Western Europe began around 1000, according to Maddison's data, it was purely gradual over the next eight centuries.[1] GDP growth rates in this region began to exceed the 1% per year only after 1820. This is usually attributed to structural changes in economies, commonly referred to as the "Industrial Revolution." A fundamentally new situation emerged since the rate of GDP growth started to steadily and noticeably exceed the rate of population growth. As a result, there was a steady increase in per capita GDP (or, as it is also called, per capita income). Such a process is commonly referred to as "modern economic growth" (MEG).

The first area of MEG emerged in the zone of Euro-Atlantic civilization, but then its impulses began to spread around the world. The growth of prosperity achieved by many countries on this basis is noteworthy in light of the dramatic acceleration in world population growth during the 18th and 19th centuries. In 1700, the world population stood at 603.2 million, increasing to 1.04 billion in 1820 and 1.79 billion in 1913. By 2003, this figure had risen to 6.28 billion. If we do not examine the specific dynamics of demographic processes within individual countries, but rather consider the global population as a whole, it can be argued that the population has grown to a greater extent not due to an increase in birth rates, but due to a decrease in mortality. Consequently, in Western countries, the life expectancy of a newborn increased from 36 years in 1820 to 76 years in 2003, while in the rest of the world, it increased from 24 to 63 years during that period [Maddison 2007].

Nevertheless, the MEG was conducive to the Great Divergence, which meant the world split into successful and underdeveloped countries. Inequality of per capita GDPs and differences in living standards reached unprecedented levels. According to O. Galor, the ratio of per capita incomes in the richest and poorest regions of the world was only 1.1:1 in 1000, and it was 2:1 in 1500. By 1820, it had increased to 3:1. By 1870, it had reached 5:1. By 1950, it had risen to 15:1, and by 2001 it had grown to 18:1 [Galor 2005]. Consequently, some MEG-impacted individuals experienced an improvement in their economic status, while it was not the case for many others.

The mechanism of transition from a stagnant equilibrium to the MEG is one of the most discussed topics in the theory of economic development, also known as development

[1] According to Maddison's estimates, England and some other European countries had already surpassed China, the former leader of the world economy, in terms of per capita GDP by 1500. But there are other points of view. Historians of the "Californian school" argue that technological and institutional changes similar to the European ones in the late Middle Ages and the Modern Age took place in the East as well. For example, K. Pomeranz believes that even in the middle of the 18th century the levels of prosperity in England and the Yangtze Delta (the most developed part of China) were approximately equal. The divergence between them became noticeable only by 1800 [Pomeranz 2000].

economics. This branch of economic theory was born after the Second World War. Generalizing the experience of both the developed countries and modern developing countries, the theory is supposed to offer recommendations for the latter on the implementation of economic policy.

However, due to the unresolved fundamental issues, development economics is still a science without a paradigm. It has a number of schools that argue with each other, which makes very difficult for it to fulfill its practical function. This article traces the evolution of a concept describing the regularities inherent in traditional, pre-industrial societies in the framework of development economics. It also reveals the differences between this concept and the Marxist paradigm.

2. In the labyrinth of traditional society

The founder of Marxism and his followers were vehement in their condemnation of the views of T. Malthus, which they regarded as not only pseudoscientific but also misanthropic. But it should be acknowledged that in the modern realm of economic science, the attitude towards Malthus is one of respect. It is believed that he correctly described the basic regularities inherent in traditional societies, although he did so at a historical time at the turn of the 18th and 19th centuries when the trends outlined by him began to fade into the past.

The stagnation that preceded the MEG period is, for this reason, usually called "Malthusian trap." Yet this does not mean that Malthus's ideas are accepted by modern science as absolute truth. His original model has undergone significant modifications, and it has been repeatedly tested on actual materials by econometric methods.

Malthus proceeded from the realities of a stratified, predominantly agrarian society, where the majority of the population lived in poverty. The logic of his reasoning was based on the fact that human beings have a natural tendency to procreate (for survival in the biological sense) and to derive material and psychological utility from children, who are perceived as one of the values of life. Hence, there is always a tendency to maintain a high birth rate in society. However, this tendency is limited by the amount of available resources (in rural societies, these are primarily land resources).

Furthermore, due to pervasive poverty and inadequate healthcare, mortality rates are high in such societies. Nevertheless, population growth will persist until the intensification of resource constraints results in a decline in per capita income alongside demographic expansion. Ultimately, incomes reach a subsistence level, thereby creating risks of increased mortality and extinction. Yet the overpopulation can be mitigated by the "positive checks" identified by Malthus. That implies a competition for resources, which gives rise to social conflicts, internal and external wars, and uprisings. Additionally, the crowding of people in limited territories facilitates the spread of diseases, which will, in turn, lead to population decline.

The situation may undergo a temporary change due to the utilization of additional land and/or the emergence of new, more effective technologies. Such positive shocks may indeed lead to an increase in per capita income and living standards. However, fertility will increase, per capita land endowment will decline again, and population growth

will eventually devalue the gains in wages and other incomes of the unprivileged social strata. Per capita income will return to a long-run equilibrium level close to subsistence, although this will occur at a higher level of technology than before.

It is also possible that the increase in mortality (for example, as a result of an epidemic) will result in a growth of per capita income. But it will disappear as the population aggrandizes after the epidemic. In essence, the original, so called absolute version of the Malthusian model posited that fertility and mortality would eventually reach equilibrium, resulting in minimal population growth once all available land areas in the country were occupied. Despite potential fluctuations, society would ultimately survive near a subsistence level [Malthus 2022].

This hypothesis aligns with the long-term macroeconomic trends identified by Maddison. The logic of the Malthusian model helps to understand the differences in the demographic potential of individual countries, both in the past and in the present. It implies that a technologically more developed country will not enjoy a higher standard of living than other countries, but will have a larger population than theirs. Accordingly, China's primacy in the number of inhabitants, which dates back to the Middle Ages, confirms that this country was long holding the world's technological leadership. But the disparities in living standards between countries prior to 1800 were relatively minor, despite significant technological gaps.

The Malthusian perspective, when applied to agrarian societies, is also consistent with the tenets of modern microeconomic theory, which posits that when the stock of some factor of production is fixed in volume, the returns to scale when other factors are employed will tend to diminish. It is evident that if the cultivated agricultural area is constrained, the marginal product of labor will diminish over time, resulting in a decline of per capita income as the population expands. Consequently, the concentration of labor and other resources in agriculture was a primary reason contributing to the fragility and instability of economic growth in traditional societies.

In response to Malthus's predictions about the periodic emergence of a "surplus" population, numerous scholars of modern development economics have identified the chronic underutilization of labor resources in traditional economies. W.A. Lewis attributed this phenomenon to the fact that, in villages, overpopulation results in land plots being too small to support the cultivation of a plot by a full peasant family. Moreover, in urban areas, a significant proportion of individuals employed in the service sector receive casual wages or remain idle for the bulk of their working day (such as small traders who conduct only a few transactions per day) [Lewis 1954].

R. Nelson, who was the first to formalize the Malthusian trap as a system of equations, wrote that economies in this trap were characterized by underutilization not only of labor but also of capital stocks (to which he also included a land). The volume of production in such economies could be increased simply by a fuller utilization of available resources, even without the use of new technologies [Nelson 1956].

J. Mokyr emphasized that underemployment in traditional agrarian societies could not be equated with involuntary unemployment in capitalist economies. In the latter, a sufficient number of jobs are not created for those willing to work due to a lack of aggregate demand for goods and services. The causes of underemployment in

traditional economies are different. Large seasonal variations in labor demand and high transportation costs made labor migration difficult. Thus, it is more akin to frictional unemployment [Mokyr 1977].

Nevertheless, the results of more comprehensive econometric tests of the relevance of the Malthusian model are inconclusive. The majority of economic historians confirm that population growth in traditional societies followed the increase in income. However, there is no consensus about the extent to which population growth (i.e., the growth of household demand for children) was income-elastic.

J. Madsen, P. Robertson, and Ye Lunfen calculated data on 16 European countries and Japan for the period between 900 and 1870 and concluded that the "absolute" version of the Malthusian model was realistic. The increase in wages due to technological innovations or the expansion of arable land, within 10–30 years (i.e., during the active life of one generation), was being dampened by reciprocal demographic processes, and per capita income was returning to the level of long-term equilibrium [Madsen, Robertson, and Ye 2019].

However, plenty of other works argue that the population response to income growth was weak. It could take several centuries (up to three ones) for wages to converge back to the equilibrium level predicted by Malthus [Crafts and Mills 2009; Lee and Anderson 2002]. In other words, the Malthusian regularities did take place but with deviations and over very long time only.

What's more, if we consider the statistics presented by Maddison and his colleagues, which indicate that both per capita GDP and population were growing over time, albeit at a slow pace, it becomes evident that the "relative" version of the Malthusian model is a more realistic assumption. This implies that in traditional societies, there are certain mechanisms of equilibrium (i.e., the trends of income growth are balanced by countertrends, and the results of their interaction are not predetermined), and the reduction of per capita income to the subsistence level is only a marginal case, rarely observed in reality.

T. Lueger, a researcher and proponent of Malthus's views, asserts that this is how the classical economist himself understood it: he regarded the periodic return of per capita income to the level of physical survival as a probability, not as a rigid regularity. This was merely a deductively derived logical connection upon which an analysis of reality could be based. In the actual world, this connection may or may not be realized. Malthus himself outlined what could prevent it: he wrote not only about "positive checks," i.e., increasing mortality, but also about "preventive checks," i.e., birth control [Lueger 2018].

Economic historians have proved that such practices did exist in medieval societies. N. Voightlander and H.J. Voth posit that a consistent growth in per capita income is indeed feasible under the Malthusian framework. Specifically, they argue that this phenomenon occurred in Western Europe between the 14th and 18th centuries [Voightlander and Voth 2009]. The loss of lives due to the plague epidemic (Black Death) of the late 1340s in some countries was significant, with estimates ranging from one-third to one-half of the total population. This decline in population led to an increase in incomes, which, in turn, stimulated the growth of an urban craft production. Additionally, the political

fragmentation of Europe resulted in frequent wars, while urban growth created opportunities for monarchs to raise revenues through taxation.

Consequently, the mortality rate was persistently elevated, not only due to direct war losses, but also due to war-related epidemics and the destruction of the agricultural production base.[2] In other words, wars and pestilence were themselves largely consequences of the income growth. However, they, in turn, generated high mortality rates, which eased anthropogenic pressure on limited land resources. The per capita income was maintained at a higher level than before the Black Death. So, Voigtlander and Voth offer an explanation for this phenomenon that is Malthusian in nature.

The most frequently cited example of "preventive check" is the marriage practice that emerged in Western Europe during the late Middle Ages. It can be demonstrated that in the territories west of the conditional line "St. Petersburg—Trieste," women entered their first marriage relatively late (usually at the age of 24-26). Furthermore, a significant proportion of women (ranging from 10 to 25%) remained unmarried throughout their lives, and the number of out-of-wedlock births was very small (ranging from 3 to 4% of all children born) [Cambridge Economic History of Europe in the New and Modern Times 2014].

There are various explanations of this model of marriage. J. de Vries attributes its formation to the fact that social security in Western Europe during the Middle Ages was provided by the church and community, rather than by the extended family [de Vries 2008]. N. Voigtlander and H.J. Voth posit that this model unfolded in the mid-15th century, following the Black Death epidemic, since incomes increased and the demand for goods such as meat, cheese, wool, and urban craft products began to grow. With a relative scarcity of labor, more women were hired in the industries that produced these goods, and they began to postpone marriage [Voightlander and Voth 2009].

Therefore, regardless of the number of children born into families, certain constraints on fertility were in effect in Western European societies. According to G. Clark, the result of indirect birth control was that in economies that were in the Malthusian trap, per capita income was significantly higher than the level of physical survival, simply because fertility did not rise to biologically possible values [Clark 2007].[3] Counting on this idea, N. Voightlander and H.J. Voth state that "preventive checks" allowed for the stabilization of per capita income without destructive consequences for the potential of economic growth. In contrast, "positive checks" (famine, natural disasters, and social upheavals) were prone to irrecoverable losses of resources, including human ones [Voightlander and Voth 2005].

Hence, those "relative" versions of the Malthusian model that have been created in the first decades of the 21st century posit the possibility of an upward shift in the equilibrium points of per capita GDP and volume of population due to technological

[2] Voigtlander and Voth as well as G. Clark note that the development of long-distance trade also contributed to the widespread pestilence. Poor sanitary conditions in European cities also contributed to the spread of epidemics, due to the crowding of the population inside the city walls in cases of frequent wars [Clark 2007].

[3] Clark and historians of the "Californian school" generally tend to believe that birth control was characteristic of all Malthusian societies, not only of Western European ones. But, in China and other East Asian countries, where early marriages prevailed, it was carried out in a different way, in particular, through infanticide of newborn girls. Yet this thesis still looks very controversial, it is criticized by many specialists [Bryant 2006].

progress [Madsen, Robertson and Ye 2019] or of reaching equilibrium when births exceed deaths and wages rise from their previous levels in the absence of technological innovation [Crafts and Mills 2009].

However, a common shortcoming of many models is that they describe traditional society using the concepts typically employed in the studies of modern market economies, without defining institutional specifics of the former. O. Galor's concept is noteworthy in this regard. He set himself the laudable task of demonstrating that both the Malthusian state and the MEG were successive stages of a single process of economic growth. Galor incorporates into the model the observation that, at a certain point, per capita income begins to exceed the "Malthusian frontier," or the level of physical survival. Thus, surplus product emerges. But Galor deliberately abstracts from land property rights and assumes a zero land rent.

Otherwise saying, he does not address the problems of the social structure of traditional society and the distribution of income between its "tops" and "bottoms" (or redistribution, to use K. Polanyi's term) at all. Consequently, Galor's description of the Malthusian world reminds either a protracted primitive commune or a world of atomized rural households, where individuals think about such stuff as "salaries," "educational opportunities," etc. [Galor 2005].

But there are researchers who contemplate differently. K. Tisdell and S. Svizzero regard traditional society as one where the peasant majority lived at a subsistence level (as Malthus' theory suggests), and the surplus product in the form of rent was taken from the peasants by a small number of aristocratic elites who specialized in managerial and power functions. Tisdell and Svizzero emphasize that for a society in a Malthusian trap, deep social inequality is a necessary attribute. It is evident that the cessation of rent withdrawals and a corresponding increase in peasant incomes would have led to an increase in birth rate and population growth. This would subsequently result in a new decline in peasant incomes to a stationary level. The surplus product would then simply disappear as such, dissipating among the increased population.

In Malthusian society, the very technological innovations and economic progress were enabled by the seizure of surplus product. This was evidenced by the construction of irrigation and other complex infrastructural facilities, urbanization, and the accumulation of scientific knowledge. It appeared that the ruling stratum, having satisfied its consumer appetites and defense needs, directed a portion of rent income towards investment, with the expectation of incremental growth of a surplus product in the future.[4] Thus, social inequality was not merely a consequence of differences in

[4] M. Elvin showed how the mechanisms of scientific and technological progress in traditional society looked like in China during the Song Dynasty (10-13th centuries). The demand for new medical technologies and replenishment of pharmacopoeia was created by the growth of morbidity in the cities and detection of new diseases due to the development of the southern regions of the country. The use of coal in metallurgy was expanding as forests were leveled off in the northern provinces. New methods of mining iron ore and copper emerged due to the increased demand for weapons and metallic money. The invention and spread of printing was facilitated by the missionary activities of the Buddhists. The compass appeared initially as a tool of geomancy, i.e., the art of placing buildings in harmony with the wishes of supernatural forces. The needs of government and the expansion of commercial calculations accelerated research in mathematics. Astronomy progressed under the influence of the state policy of establishing a regular calendar [Elvin 1973].

individuals' abilities (to manage, to specialize in violence, etc.), it was also a source of steady, albeit slow, development of the traditional economy.[5]

The precondition for the normal functioning of such a redistributive system is to maintain a balance between population and land resources by means of "positive and preventive checks." Tisdell and Svizzero argue that the functions of both were fulfilled by the very land rent seizure. The magnitude of the elites was maintained at a manageable level due to the fact that the "ruling class" deprived the "lower classes" of opportunities to enhance their standard of living. This led not only to high infant mortality but also to the extinction of the elderly and all those who were deprived of the means of subsistence by the elites [Tisdell and Svizzero 2015].

The imbalance between labor resources and the land ones, i.e., the emergence of severe overpopulation, was the fundamental cause of periodic crises of the society based on redistribution. The land holdings were shrinking, the peasants' incomes were falling, and the collection of taxes and private landlord rents pushed the peasants to the brink of physical survival. In the event of crop failure, famine struck the country. A significant portion of the population was unable to find work in agriculture or to feed themselves from the land.[6] However, the crisis also had an impact on non-agricultural sectors of the economy and the sphere of monetary relations connected with them.

In general, the analytical scheme that takes the separation of crafts from agriculture as a root cause of trade and money to emerge may be a suitable conceptual framework, but it requires numerous caveats. K. Polanyi demonstrated that commodity exchange emerged initially as long-distance trade (interstate or interregional), rather than a commerce within individual communities. The motivation for trade was not a profit-making but an interest in goods that could only be obtained from afar, it was an interest in imports [Polanyi 1957]. Tisdell and Svizzero clarify that those were primarily goods for prestige consumption of elites, their importation was supposed to emphasize the high status and sacral role of potentates [Tisdell and Svizzero 2015].

Such trade was primarily the work not of individuals but of groups or corporations authorized by the rulers. The exports that balanced the imports were the goods that the "upper classes" of society received from their subjects in forms of taxes or private land rents. Thus, foreign trade was essentially conducted only with those goods that were designated for this purpose by the government.

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[5] D. Acemoglu and J. Robinson divided economic and political institutions of all times and nations into "inclusive" (protecting property rights, ensuring impartiality of justice, guaranteeing equal opportunities to enter markets and choose a profession) and "extractive" (aimed at squeezing maximum income from one part of society and directing it to enrich another part). Acemoglu and Robinson argue that "extractive" institutions cannot ensure long-term, sustainable economic development [Acemoglu and Robinson 2012]. The logic of Tisdell and Svizzero's model adds arguments to those who believe that Acemoglu and Robinson's concept is extra-historical and suffers from strong simplifications.

[6] E. Boserup showed that the acute phase of the crisis could be postponed if there was a transition to more intensive land use. Land allocation for fallow (which was also used for grazing) was stopped, it increased the area of simultaneously cultivated land and for some time created a counterbalance to the decline in crop yields. At the same time, the risks of soil erosion increased, and, therefore, more labor was needed for weed and vermin control and irrigation. Specialized cultivation of fodder crops for livestock was also needed. Employment grew, agriculture was becoming more labor-intensive [Boserup 1975].

As for money, the maturation of its separate functions took place at different speeds. The emergence of money as a measure of value was driven by the necessity to regulate the utilization of food stocks and other natural products collected during the redistribution process, as well as to quantify the value of various products taken as taxes. This created a vehicle for financing public projects, including irrigation, through both in-kind and cash payments.

The evolution of money as a means of circulation was shaped by the need to facilitate a series of unrelated transactions. However, this need did not manifest itself in the spontaneous barter exchange of individual private counterparties. Rather, it emerged in foreign trade organized by states. Money as a means of payment emerged only when long chains of mutual settlements were formed, as otherwise mutual obligations could be repaid by in-kind payments. Such obligations could arise not only from commodity transactions but from the payment of taxes and private land rent as well [Polanyi 1957].

In turn, handicrafts and internal trade did not originate simply because the natural process of specialization unfolded sooner or later; rather, it was itself largely a consequence of demographic processes. In modern literature, it is almost universally recognized that centers of non-agrarian activity were formed primarily in overpopulated areas.

Since the 1970s, historians have been using the term "proto-industry" to describe pre-factory forms of industrial organization. It should be noted that F. Mendels, who introduced the concept, defined it in a relatively narrow manner. He considered proto-industry to be the job of rural homeworkers, which was organized by an urban merchant. The entrepreneur provided the homeworkers not only with orders but also with raw materials for their fulfillment. This is usually referred to in Russian literature as a "scattered manufacture."

Mendels argues that the subordination to urban commercial capital and the marketing of products outside the region of production, and often even beyond national borders, distinguished proto-industry from traditional rural handicrafts that catered to local needs. He also notes the specific relationship between proto-industry and commercial agriculture. Within regions, each village had households that specialized in industrial products, on the one hand, and farms that produced surplus food, which they sold on the market, on the other. Moreover, there was also a specialization of regions. In some of them, peasants who were unable to feed themselves from small plots of land made industrial products or were hired for seasonal labor on large farms. In other regions, farming was the primary economic activity.

Mendels draws from the archetypes of proto-industry that proliferated in the countries of Western Europe in the 16th-17th centuries. However, he considers their emergence as the beginning of a special stage of development ("proto-industrialization"), which was inherent in all parts of the world. According to Mendels, the conditions for the subsequent Industrial Revolution were prepared by proto-industrialization through the accumulation of capital, as well as of technological and managerial knowledge, the formation of markets, and other such processes [Mendels 1972].

The concept of Mendels and his followers is vulnerable to criticism due to the very combination of universalist claims and a high degree of specificity. The concept is tautological because, in the basic definitions of proto-industry, there are in fact references

to the subsequent mature state of the economy: proto-industrialization is deliberately attributed with features of industrialization. These include symbiosis of proto-industry with commercial agriculture, its connection with urban business, regional specialization, and access to foreign markets.

Even the chronological framework of proto-industrialization in Europe established by Mendels can be questioned at the empirical level. By and large, the experience of England would have provided the most compelling evidence to support Mendels's claims. However, historical sources indicate that rural textile production in England, which was oriented towards foreign markets, emerged as early as in the 13th century and thereafter it experienced periods of growth and decline over the six centuries. These facts demonstrate that there was no automatic transition from proto-industrialization to industrialization. Some European regions where rural proto-industries were prevalent then experienced deindustrialization after the Industrial Revolution [Coleman 1983].

Mendels's understanding of rural cottage manufacturing as proto-industry excluded urban centralized manufactories entirely, and the relationship between these two phenomena was not even addressed. In contrast, if we consider the economic history of China, we will find that both rural commodity crafts and urban guilds, as well as a diverse sector of centralized manufactures, existed for thousands of years, but overthere it did not lead to an Industrial Revolution.

One potential solution to these epistemological difficulties is the reinterpretation of the very term "proto-industry" to include urban craft and manufactures, at least those that were oriented at market. This approach acknowledges the evolution of pre-factory industry from simple craft forms to more complex manufactory ones. In fact, this understanding of proto-industrialization has already spontaneously unfolded in the literature.

Indeed, the connection between crafts and trade was not an immediate phenomenon. Rather, it intensified over time. T. Lueger, in explaining how different types of industrial activities historically sprang from agriculture, draws analogies between the world of humans and the realm of animals. If overpopulation existed, individuals who felt themselves superfluous went into new spheres in order to provide themselves with niches for survival. Not all such attempts were successful, but those that were lucky increased the productive potential of society. Innovators who prospered had many children, it made new attempts at specialization not just likely, but even inevitable [Lueger 2018].

K. Pomeranz's interpretation of proto-industry simply points to the fact that in areas with high population density and low incomes caused by it, people needed part-time jobs. They worked not only on the land but also in crafts. However, counter-arguments to this explanation were presented as early as in the 1980s by D. Coleman, who highlighted that the rise of proto-industry in England during the 13th to 17th centuries occurred concurrently with both rising and declining peasant incomes [Coleman 1983].

K. Tisdell and S. Svizzero clarify that the unfolding of crafts and their concentration in cities did not lead to a rapid surge of trade because craftsmen mainly served the powerful. The more pronounced the specialization of craft was, the more its participants depended

on vertical rather than horizontal social ties. However, over time, market exchanges developed [Tisdell and Svizzero 2015].

E. Boserup attributed this to the fact that as the transition to labor-intensive farming (reduction and then elimination of fallow periods and, consequently, the filling of spaces between villages) occurred, the conditions for the emergence of small market towns appeared. Previously, food deliveries to the cities were irrational because of the high transportation costs involved. Yet, as population density increased, commercial agriculture with sales in urban markets became profitable. In other words, for a portion of the population, the issue of food supply was resolved in a novel manner: these individuals were employed in handicrafts, did not cultivate food crops themselves, but received them as part of a commodity exchange. The conditions for this were created by reducing the "transportation bridge" between food production and consumption [Boserup 1975].

F. Mendels himself identified the root cause of proto-industrialization as the seasonality of agricultural work. In his view, the function of proto-industry was to smooth out the imbalances in peasant employment throughout the year. Still, he acknowledged that those working in proto-industry were the most disadvantaged part of the peasantry. This was because they were often people who did not have enough land to support their families after paying rent and taxes.

In general, the cause-and-effect relations in Mendels' interpretation can be described as follows. Proto-industry emerged in response to seasonal fluctuations in the demand for labor in agriculture, as a means of utilizing the redundant labor force. Its development was, therefore, especially likely in overpopulated areas, where there was also a relatively high demand for manufactured goods. In the short term, the receipt of wages by workers in proto-industry could result in an increase in per capita income. However, after this initial increase, the birth rate grew, which subsequently led to a decline in per capita income to its previous level. What's more, the additional growth of the population necessitated a new expansion of proto-industry, and the cheap labor, in turn, created favorable environment for this [Mendels 1972].

The advancement of proto-industry in Malthusian societies was sometimes very remarkable. Crafts became diversified, manufactories with thousands of workers were established, market relations permeated almost the entire society, and the commutation of taxes and rents took place. On this basis, economies could experience episodes of Smithian growth, when the benefits of specialization ensure higher productivity and lower costs, and per capita income increases with population growth.

M. Kelly elucidated why such growth was explosive rather than gradual. Until a high density of horizontal ties was achieved, the economy was fragmented into numerous isolated regional markets. Yet, when those were integrated, the opportunities for specialization increased dramatically, leading to a significant acceleration of economic growth. This explanation is contrary to the common sense logic that suggests the establishment of market links to be gradual, and, therefore, Smithian growth to be slow by definition [Kelly 1997].

J. Goldstone refers to such periods of economic growth in traditional societies as "efflorescences." However, he specifies that Smithian growth was pulsating and

asymptotic. It was not associated with fundamental technological improvements, so its benefits were modest.[7] These were soon offset by population growth, and Smithian growth itself was relatively brief, ceasing when the potential for trade expansion was exhausted [Goldstone 2002].

K. Pomeranz argues that the Malthusian economy ultimately tended to reach a "proto-industrial crux." The rationale behind this assertion is as follows. Proto-industrialization primarily occurred in areas with high population density, and the boom of proto-industry led to an increase in demand for agricultural raw materials for the production of industrial goods. Consequently, competition for land resources within agriculture intensified between food crop production, the cultivation of technical crops for processing in proto-industry, and forestry (wood in those times was used both as a material for processing and as an energy resource). The intensification of land use and deforestation quickly led to severe environmental consequences, further reducing agricultural productivity, aggravating food shortages and problems with the nutritional structure and health of people as well.

At the same time, earning wages in non-agrarian activities contributed to a temporary increase in population growth in rural areas, which subsequently reinforced the downward trend in per capita income. As the demand for raw materials for the proto-industry expanded or the demand for food for the growing population increased, the dynamics of prices for food and other agricultural commodities surpassed those of wages, resulting in further impoverishment.

Eventually, as a consequence of the shortage of natural resources, the terms of trade (the ratio of prices for the products of the agrarian sector, on the one hand, and for the goods of proto-industry, on the other) were changing in favor of agriculture, and non-agrarian industries were becoming unprofitable. Handicraft and manufactory activities declined and were being curtailed [Pomeranz 2000].

Thus, the processes of proto-industrialization and marketization of the economy did not result in resolving the periodic crises of the redistributive society; rather, they served to exacerbate them.[8] Fluctuations in population size, land endowment, and per

[7] Quite in the tradition of the "Californian school," looking for parallels everywhere and anywhere, J. Goldstone argues that the "efflorescences" could have reasons unrelated to the development of proto-industry and trade, such as the construction of irrigation facilities and pyramids in the course of public works organized by the state; reconstruction of the economy after social cataclysms; intensification of international contacts, etc. The "efflorescences" themselves are interpreted by him as an escape from Malthusian constraints, although his own analysis rather suggests that the "efflorescences" were parts of the Malthusian dynamics.

[8] However, there is no shortage of those willing to prove the contrary and thus provide a simple explanation of the exit from the Malthusian trap. According to T. Lueger, the Industrial Revolution happened because demographic pressure required further deepening of specialization, it was a logical continuation of the processes that were going on within the traditional society. The difference between the Industrial Revolution and the Neolithic Revolution (the transition from hunting and gathering to settled agriculture) is only quantitative—in the speed of change [Lueger 2018]. M. Kelly deduces the Industrial Revolution from the progress of specialization under the influence of the establishment of more and more horizontal connections and thereby exploiting the potential capacity of the market [Kelly 1997]. T. Kogel and A. Prskawetz explain the beginning of industrialization by the Engel effect (low income elasticity of demand for food). According to their logic, with the increase in household incomes, nutritional needs are saturated, the demand shifts towards non-food products, and this creates conditions for the movement of labor and other resources to non-agrarian spheres of activity [Kogel and Prskawets 2001].

capita income were accompanied by "pulsating" expansions and contractions of proto-industry and commerce. Although it seems that the conditions for the formation of an industrialized, market economy were being prepared, in fact, the economy and society were not transformed into a qualitatively new state of affairs.[9]

K. Tisdell and S. Svizzero argue that the socio-ecological crisis of Malthusian society usually transformed into a socio-political one when another condition of systemic equilibrium was violated. The number of elites was typically constrained from increasing by endogenous (the principle of nobility) and exogenous (wars, state repressions) restrictions. But as the size of the "ruling class" expanded and its members became accustomed to luxury and wastefulness, rent incomes were redistributed in favor of their prestigious consumption. This resulted in an underinvestment in the economy, the exhaustion of potential for increasing productivity, and a reduction in the possibilities of extracting surplus product.

In attempts to stabilize fiscal incomes, the elites increased taxes on peasants, who were already on the verge of survival. However, the ruling stratum was also experiencing a depletion of resources for maintaining its power. This was due to the growth of its prestige consumption, which was affecting the financing of the army. As the elite grew in size, the struggle for drying up rents intensified [Tisdell and Svizzero 2015].

Eventually, when desperate peasants revolted, they were usually joined by parts of the ruling class, hoping to remove their rivals in this way. The state's descent into chaos, and turmoil could be exploited by neighboring enemies. This could result not only in the collapse of the ruling dynasty but also in the disintegration of the country.

Yet, in the course of rebellions, wars, starvations, and epidemics, a significant proportion of the population was dying, and some land was becoming vacant. Consequently, when one of the contending forces emerged triumphant, i.e., a new dynasty ascended to the throne or a new state was established in place of an ousted one, then the population and per capita income exhibited a concurrent growth for a period of time due to the exploiting of uninhabited lands. But when a certain demographic density was reached, the per capita income declined once more, and proto-industry and trade were on rise again. So, the process of societal evolution was characterized by the repetition of similar patterns.

By and large, in traditional societies, economic growth, which can be described as "Malthusian," did occur. It was driven primarily by extensive factors, such as population growth and the expansion of cultivated land. However, the tendency for per capita GDP to increase was limited and unsustainable. Malthusian growth was slow and intermittent, punctuated by severe crises. The intermissions of Smithian growth did not result in a qualitative leap in economic development; in fact, they served to exacerbate the Malthusian crises. The social dynamics exhibited a clear circular movement.[10]

[9] N. Voightlander and H.J. Voth write about the "false starts" of the Industrial Revolution that took place many times before 1750 in different countries: economic growth accelerated due to the development of proto-industry, the standard of living increased for a while, but such growth did not become sustainable [Voightlander and Voth 2005].

[10] The description of traditional (dynastic) cycles in the history of China, which can be called classical, was given by A. Mugruzin. But he interpreted such dynamics as a specific feature of this country and tried to fit his findings into the framework of the Marxist paradigm [Mugruzin 1986]. S. Nefedov provides a review of the literature on the Malthusian regularities in the economic history of Europe and offers his own model of the cycle inherent in traditional societies [Nefedov 2012].

W. Rostow defined the psychological expectations of people living in traditional societies as "long-term fatalism" [Rostow 1971], and R. Nelson called them a "sociocultural inertia" [Nelson 1956]. G. Clark observed that the communities of the Malthusian era were "spendthrift, violent, impulsive and leisure loving" [Clark 2007]. However, K. Polanyi contended that the conduct of individuals in traditional societies was, in fact, quite rational. It was merely based on a distinct logic, shaped by the skills required to navigate the redistributive system [Polanyi 1944].

In a more contemporary manner, C. Azariadis and J. Stachurski used the term "path dependency." They observed that the Malthusian trap could be attributed to the incomplete rationality of individuals' behavior, resulting from institutional inertia. Individuals may reject innovations, even if those promise greater welfare, merely because they risk finding themselves in a situation they have never been in before. They don't have relevant experience and, therefore, lack the knowledge to behave in a way that is beneficial to them. In other words, inadequate expectations are formed because getting out of stagnation is a journey towards the unknown [Azariadis and Stachurski 2005]. That is why it is additionally challenging to elucidate how, despite millennia of relative stagnation, the normality of change associated with MEG has become the norm. The theory of economic development offers alternative explanations for this phenomenon, though it is beyond the scope of this article to discuss them.

The article continues in the next issue of Contemporary World Economy.

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