The 21st Century: Is There An Alternative (to Socialism)?

MINQI LI

ABSTRACT: In the light of the great capitalist failures over the past two decades, it is necessary to reevaluate both the historical performance of, and historical justification for, socialism. Even if one follows the logic of mainstream economic theory, there is no clear theoretical case why socialism is necessarily inferior to capitalism. There is no clear evidence that the socialist economies performed worse than the capitalist economies in term of economic growth. But there is evidence that the socialist economies met the population’s basic needs better than the capitalist economies, especially with countries in the periphery and semi-periphery included in the comparison. In the 21st century, the historical task of socialism is no longer about how to successfully compete against capitalism in the capitalist world system. Instead, as capitalism ceases to be a viable historical system, socialism may prove to be the only viable solution to the fundamental crisis confronting humanity.

AFTER 1989, IN THE MOOD OF the “End of History,” a consensus was formed among mainstream economists that socialism as an economic system was fatally flawed. The failure of the 20th-century socialist models was the definitive proof that capitalism, with all of its problems, was the best among all possible social systems. There was no alternative to capitalism. This conclusion was shared not only among intellectual advocates of the existing system but also among a large section of the western intellectual left.¹

¹ For a collection of views of leading West European leftist intellectuals on the demise of the Soviet and East European socialism, see Blackburn, 1991a. For a typical critique of centrally planned socialism and a proposal of market socialism, see Roemer, 1994. For debates between market socialism and participatory planned socialism, see Weisskopf, 1992; Schweickart,
The fall of the Berlin Wall was followed by massive declines of living standards for large sections of the world population. The disintegration of the socialist economies contributed to the weakening of the global working classes. National income has been redistributed from labor to capital in nearly every part of the world (Chossudovsky, 2003; Li, 2004).

Over the past two decades, the global economy has been constantly threatened by devastating financial crises. As much of the world suffered from insufficient domestic demand, the global economic expansion had to be led by debt-financed consumption in the United States, and the U. S. economy itself was driven by successive asset bubbles. As these trends could no longer be sustained, the global economy sank into the deepest recession since the 1930s.

As capitalist industries relocate to the non-western world (especially China and India), global resource depletion and environmental degradation have accelerated. The relentless growth of fossil fuel consumption is threatening to bring about climate catastrophes in the 21st century and beyond. The global ecological system is now literally on the verge of collapse and the survival of human civilization is at stake.

In the light of these great capitalist failures over the past two decades, it is necessary to reevaluate both the historical performance of, and justification for, socialism. The 20th century socialist economies were essentially models of national development within the general historical framework of the capitalist world system, and were fundamentally constrained by that system’s basic laws of motion. The 20th-century socialist economies were required to compete against capitalist economies based on capitalist historical criteria.

By contrast, by the early 21st century, the capitalist world system has entered into a structural crisis which can no longer be resolved within the historical framework of capitalism (Wallerstein, 1998; 2003; Li, 2008). Because of the climate change crisis, relentless capitalist accumulation on a global scale is now in fundamental conflict with the survival of human civilization. In this context, the historical task of socialism is no longer about how to successfully compete against...
capitalism within the capitalist world system. Instead, as capitalism ceases to be a viable historical system, socialism may prove to be the only viable solution to the fundamental crisis confronting humanity in the 21st century.

The next section (section 1) reviews the mainstream economic critique of the socialist economic system. Section 2 argues that even if one follows the logic of mainstream economic theory, there is no clear theoretical reason why socialism is necessarily inferior to capitalism. Section 3 compares the relative performance of socialist and capitalist economies in term of economic growth. Section 4 compares the relative performance of socialist and capitalist economies in term of life expectancy as a proxy for living standards. There is no clear evidence that the socialist economies performed worse than the capitalist economies in term of economic growth. But there is evidence that the socialist economies met the population’s basic needs better than did the capitalist economies, especially when the experiences of the periphery and semi-periphery are included.

Section 5 argues that the dramatic expansion of the semi-periphery in recent years has led to a new set of world historical conditions that would result in the demise of the capitalist world system. Section 6 argues that the climate change crisis is threatening the survival of human civilization, but it is impossible for the crisis to be resolved within the historical framework of capitalism. Section 7 concludes, arguing that only with socialism (based on public ownership of the means of production and society-wide planning) can a solution to the climate change crisis be found, and human civilization preserved.

1. Economic Theory: Why Socialism Has Failed

In the classical Marxist conception, socialism is the economic system based on social and collective ownership of the means of production, workers’ democratic control over economic resources and economic decisions, and society-wide planning which coordinates economic decisions at all levels based on democratically determined criteria of economic rationality.

These institutional arrangements, in the Marxist analysis, are required not only to abolish capitalist exploitation but also to overcome the capitalist contradiction between “socialized production and
private appropriation.” Society-wide planning, by eliminating capitalist “anarchy of production,” would ensure a more rational allocation of economic resources, do away with economic crisis, and develop productive forces in accordance with the free development of all individuals (Engels, 1978 [1880]).

There were important differences between the 20th-century socialist economic models and the socialist system conceptualized by classical Marxism. In particular, none of the socialist states had developed formal institutions for the workers to exercise democratic control over economic resources and economic decisions. However, some of the most important institutions of 20th-century socialism, such as state and collective ownership of the means of production and centralized economic planning, were consistent with the basic principles of socialism and their operations provided important lessons regarding the viability and desirability of socialism (Laibman, 1992; Kotz, 2000).

It should be pointed out that while the 20th-century socialist states generally failed to develop formal economic and political democracy, their internal class relations were nevertheless relatively favorable to the working classes, and the workers and peasants made substantial material and non-material gains during the socialist historical period. This was especially the case when the 20th-century socialist states are compared with capitalist states that had similar structural positions in the capitalist world system. In this sense, the 20th-century socialist states also deserve to be characterized as a particular historical form of socialism (Li, 2008, 24–66).

According to mainstream economic theory, both public (state or collective) ownership of the means of production and centralized economic planning were fatally flawed. The problem with central planning was that given the complexity of the modern economy, it was impossible for the central planner to collect and process the enormous amount of economic information required for rational economic decisions. As economic complexity grew over time, the

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2 Both Engels (1978 [1880]) and Lenin (1968 [1916]) argued that the objective tendency for socialization of production had forced capitalism to recognize the “social character” of the modern productive forces by adopting progressively more socialized forms of business organization. Capitalist monopolistic corporations, by organizing production according to detailed plan within particular industries, had prepared the material and organizational foundation for the future socialist planning.
information problem became more and more overwhelming and the performance of central planning inevitably deteriorated, leading to the downfall of the socialist economies.3

In reality, the socialist economies were never organized in such a way that the central planning authority would have to collect and process all necessary information. There were practical divisions of labor between the central planning bodies and various lower-level planning committees. Only the production levels and prices of the most important industrial and agricultural products were decided by the central planners. Authority over less important products was delegated to progressively lower levels, and factories and farms had certain autonomy in choosing production inputs and technologies.

Thus, in principle, each level of the planning system only needed to have the information that was relevant for its own activity. The planning committee of a higher level would be responsible for coordinating the decisions of lower-level committees by taking into account information that was available to itself and could not be effectively utilized at the lower level (such as information concerning the interdependence among different industries). At the factory or farm level, all relevant local information would be utilized. If this arrangement worked according to principle, the information problem would not be particularly difficult to resolve.

But then there was the incentive (or principal–agent) problem. Given public ownership of the means of production, no individual owned productive property and no one could benefit from the productive use of property. As a result, there was no incentive for people (who were rational economic beings motivated by self-interest) to work hard or efficiently. Moreover, the higher-level planning committee would have to rely upon lower-level committees to provide the required information, and the lower-level committees would have to rely upon factories and farms to provide the required information. Because an individual’s income was based on his or her perceived performance, which in turn depended on the information provided

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3 In this paper, by “mainstream economic theory” I am referring to not only the neoclassical economic theory but also various “heterodox” bourgeois economic theories such as the Austrian and Keynesian approaches. These are “mainstream” in the sense that they all assume the historical eternity of capitalism and regard capitalism as the best among all conceivable economic systems. For the mainstream critique of socialism discussed in this section, I mostly rely upon the arguments summarized by Stiglitz, 1994. For a classic critique of centrally planned socialism, see Hayek, 1996 (1948).
to the planning committees, there was no incentive for the individual to provide adequate and correct information.

Thus, the information problem was really the incentive problem. Without solving the incentive problem, the various levels of planning committees would not have the information required for rational economic decisions. On the other hand, without correct information, it would be impossible for the planning committees to design appropriate “incentive mechanisms” to effectively motivate the individuals (again based on the assumption that individuals are motivated by self-interest and need to be induced to behave in a rational manner). Thus, the incentive problem was also the information problem.

Related to the information problem and the incentive problem, according to mainstream theory, socialism failed to promote technological progress and innovation. Without rewards for private property and risks, there was no incentive to innovate. While the central planner might use certain incentive mechanisms to motivate individuals, given the fundamental uncertainty of the innovation problem, it was inherently impossible for the central planner to assess success or failure, as well as potential benefits and potential costs of innovation. Thus, the central planner’s effort to promote innovation would inevitably fail or lead to unintended undesirable results (Blackburn, 1991b; Roemer, 1994, 37–45; Stiglitz, 1994, 197–206).

However, the critics acknowledged that under socialism substantial technical change and innovation did take place. In certain areas (such as in military industry), where there was a clear social priority, socialism could even match the technological achievements of western capitalism. In general, however, mainstream economists argue that socialism failed to achieve broadly based technological progress to sustain rapid increases in “living standards.”

If socialism has failed because it was unable to solve the information problem and the incentive problem effectively, is capitalism any better than socialism in solving these problems?

2. Economic Theory: Why Capitalism Has Succeeded — Or Has It?

Conventional neoclassical economics argues that in a competitive capitalist economy, as long as the price mechanism is allowed to operate freely, information regarding costs and benefits of millions of different goods is efficiently transmitted through prices, thus
effectively solving the information problem. Moreover, all individuals are motivated to maximize individual utility. So long as private property rights are secured by the government, individuals’ pursuit of self-interest will lead to socially optimal results with the guidance of competitive market prices.

This crude version of the neoclassical understanding of the capitalist economic system, even though still widely taught in universities and colleges, has long been recognized by more enlightened mainstream economists to be far from realistic. In the real world, market failures are pervasive. Capitalist economies suffer from monopolies, moral hazards, asymmetric information, lack of complete futures markets, externalities, and the problem of public goods.

Recognizing these market failures, enlightened mainstream economists maintain that despite these market failures, a capitalist economy based on private ownership of the means of production and market competition remains superior to socialism. Competition, even though it can be wasteful, provides the necessary incentive for workers to work hard and capitalists to lower costs and raise efficiency. Moreover, competition helps to deliver valuable information concerning quality and performance. Competition also provides powerful motivation for individuals and firms to innovate and develop new technologies (Stiglitz, 1994, 109–152).

It is clear that capitalism as an economic system tends to deliver rapid economic growth (compared to all previous historical systems). It is also clear that capitalism is capable of generating rapid technological progress as a part of growth. However, how do we know that capitalism is generating the right kind of technological progress? How do we know that the overall social costs of capitalist economic growth are necessarily smaller than the benefits? In fact, is it possible that we have already passed a critical turning point, beyond which any further economic growth only leads to increasingly larger net social loss?

It is accepted by modern microeconomics that both the labor market and the capital market suffer from serious failures. Both markets suffer from problems of asymmetric information and moral hazards. Moreover, the capital market also suffers from the lack of complete futures markets — or what John Maynard Keynes called “the extreme precariousness of the basis of knowledge” on which capitalists expect future rates of return; see Keynes, 1964 (1936), 147–164. The recent asset bubbles and financial crises suggest that prices of capital assets
can be wrong by large margins and that these very wrong prices can be sustained for a long period of time.

If both factor prices are wrong, by large margins and for long periods of time, what about the prices of goods and services? Since the prices of goods and services are based on factor prices, does it not follow that the prices of goods and services must also be wrong, to the same degree?

Now let us consider the problem of externalities. The production of all goods and services consumes material resources and generates material wastes. It follows that all production and consumption activities have environmental costs. Moreover, given the current state of global ecological crisis, it is safe to say that the costs are very large and that prices of goods and services in real markets must be very wrong, again by large margins.

Can capitalist governments intervene to correct the environmental externalities? There are two insurmountable problems for this solution. First, if the capitalist government were to intervene, presumably the government needs to know the right prices or the right quantities (if the government chooses to sell pollution permits to private firms in the market, it needs to know the right quantities). If this is the case, how could the capitalist government perform any better than the socialist government? Moreover, since environmental externalities are pervasive, to really get the prices right, the capitalist government really needs to know the right price (or the right quantity) for every kind of goods and services. If this is the case, how does capitalism solve the information problem any better than socialism?

There is a more fundamental problem which has to do with global capitalist “market failure.” The capitalist world system is an inter-state system. National capitalist governments thus suffer from a global “prisoners’ dilemma.” The operation of the global capitalist market imposes relentless pressure on every national government to maximize economic growth while minimizing the costs of social and environmental regulation. This does not mean that national governments would not undertake any social and environmental regulation; moreover, states that belong to the “core” of the capitalist world system can afford more regulation costs than the states of the periphery. But it does mean that in reality, the global capitalist efforts to control environmental costs fall far short of what would be required to achieve global ecological sustainability.
If we compare capitalist (market) failures with socialist failures, what tentative conclusions can we draw? The socialist economy obviously suffers from many incomplete and wrong input–output tables. The capitalist economy relies upon prices as a supposedly superior substitute for input–output tables. But the above arguments make it clear that in a capitalist economy of the real world, virtually all prices appear to be wrong, wrong by large margins, and wrong for long periods of time. Thus, on the information problem, it is not at all clear that capitalism is any better than socialism.

Advocates of capitalism would nevertheless contend that capitalism remains superior because capitalism solves the incentive problem better than socialism. With competition and the threat of unemployment, workers in capitalism are forced to work hard. Most importantly, with the reward of private property and the threat of bankruptcy, all capitalists are constantly motivated to increase efficiency and promote innovation.

Is there a socialist solution to the incentive problem? In a socialist economy based on public ownership of the means of production, ultimately the so-called incentive problem will have to be resolved through general willingness and desire on the part of working people to work for the social interest. This presupposes establishment and consolidation of a well-functioning socialist democracy and requires the gradual transformation of people’s consciousness.

In the practice of 20th-century socialism, this standard obviously was not fully achieved. In reality, the socialist economies had resorted to various combinations of “moral incentives” (appealing to people’s desire to serve the collective or social interest) and “material incentives” (appealing to people’s pursuit of self-interest). For the moment, let us suppose that a future socialism can solve the incentive problem about as effectively as did 20th-century socialism. How would it compare to capitalism?

Assuming that socialism fails to motivate people as effectively and strongly as capitalism, does it follow that socialism as an economic system is inferior to capitalism? It has been established by the above arguments that in both systems, economic decisions are based on a large amount of seriously wrong information. Thus, if we were to evaluate the two systems based on how they perform in achieving certain generally accepted goals of social welfare (such as quality of life, social equity, and ecological sustainability), both systems must be
heading towards the wrong target. One system, socialism, has got an inferior incentive system, and presumably moves towards the wrong target comparatively slowly. The other system, capitalism, because of its superior incentive system, moves towards the wrong target more rapidly.

Is the system that moves towards the wrong target more rapidly and more efficiently any better than the other system? And, what if the wrong target is the collapse of the global ecological system and the end of human civilization?

3. 20th-Century Socialist Performance: Economic Growth

The general consensus among mainstream economists, a consensus still shared by many intellectual leftists, is that the 20th-century socialist economies failed to solve the information problem, failed to motivate workers and managers, and failed to promote technological progress. As a result, the socialist economies performed worse than the capitalist economies in economic growth. Is this perception consistent with empirical evidence?

Figure 1 compares the long-term movements of the income gap between Russia/the former Soviet Union, “Eastern Europe,” and China on the one hand; and the United States on the other hand. The United States is the most advanced capitalist country and sets the “standards of wealth” in the capitalist world system (Arrighi, 1991). “Eastern Europe” refers to the average of seven Eastern European countries (Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia). GDP per capita for all countries is measured in 1990 international dollars. U. S. GDP per capita is taken as 100. The GDP per capita for other countries is shown as a percentage of U. S. GDP per capita.4

Before the First World War, the Russian Empire experienced a small decline relative to the United States. Its index fell from 30 in 1900 to 28 in 1913. The Russian/Soviet index suffered a large decline from 1913 to 1928, reflecting the devastation of the First World War and the post-revolutionary civil war.

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4 For an earlier study that compared the economic growth records of socialist and capitalist economies taking into account different economies’ positions in the capitalist world system, see Arrighi (1991), though Arrighi had to rely upon relatively limited historical data.
In 1928, the Soviet Union started the First Five Year Plan. The Soviet index jumped from 20 in 1928 to 35 in 1938. During the Second World War, the Soviet Union sustained massive losses in human and material resources. By 1945, the Soviet index fell back to where it was in 1928. During the 1950s and the 1960s, the Soviet Union experienced comparatively rapid economic growth. By 1975, the Soviet per capita GDP rose to about 38% of the U. S. level.

After 1975, the Soviet relative economic fortune went into steady decline. By 1990, the last year when the Soviet socialist planning system was in operation, the Soviet per capita GDP stood at about 30% of the U. S. level, comparable to the Russian index in 1900. It was only after the disintegration of the Soviet Union that the successor states within the former Soviet Union experienced dramatic economic collapses, as a result of the “shock therapy” strategy of capitalist transition.
Before the socialist period, Eastern Europe experienced large, sustained declines in its position relative to the United States. The Eastern European average index declined from 35 in 1900 to 22 in 1950.

During the 1950s and 1960s, the Eastern European socialist states enjoyed relative economic success. By 1975, the Eastern European average per capita GDP stood at 33 percent of the U. S. level. Like the Soviet Union, Eastern Europe experienced relative decline after 1975. By 1989, the last year when the Eastern European socialist system operated, the Eastern European index fell to 26, still better than in 1950.

China’s per capita GDP stood at 13% of the U. S. level in 1900. By 1950, China’s per capita GDP was only 4.7% of the U. S. level and China was reduced to one of the poorest countries in the world. After 1950, Maoist socialist planning laid down the foundation for China’s industrialization. In 1978, on the eve of the market-oriented reform that led to the transition to capitalism in China, China’s per capita GDP was 5.3% of the U. S. level, only slightly better than in 1950.

If one compares a country’s (or a country group’s) per capita GDP index at the beginning of the socialist period with that at the end of the socialist period, then for the Soviet Union there was a slight improvement from 1913 to 1990 (from 28 to 30), for Eastern Europe there was a small improvement from 1950 to 1989 (from 22 to 26), and for China there was a slight improvement from 1950 to 1978 (from 4.7 to 5.3).

For the Soviet performance, one needs to take into account that the Soviet economy was first devastated by three years of bloody civil war after the October Revolution and then devastated again in the Second World War. Chinese and Eastern European performance in the socialist period compare quite favorably with the pre-socialist period when both regions suffered sustained, large declines in their positions relative to the United States.

Nevertheless, one could argue that the socialist experiment failed, in the sense that it failed to deliver its promise to develop material productive forces more rapidly than capitalism and to catch up with the most advanced capitalist economy. However, as will be shown, this failure tended to be the rule rather than the exception in the capitalist world system.
The capitalist world system is an unequal hierarchical system, in which states are divided into three structural positions: core, semi-periphery, and periphery. Historically, the wealth of the system has been concentrated in the core. As Giovanni Arrighi (1991) explained, the wealth concentrated in the core had become a kind of “oligarchic wealth” denied to the non-core states. Within the core, there has been a long-term tendency of convergence. By contrast, for the world system as a whole, there has been a long-term tendency for the gap between the core, the semi-periphery, and the periphery to widen until the 1980s. Japan, the only significant historical exception, succeeded in moving upwards from the periphery, to the semi-periphery, and eventually into the core.

Figure 2 compares the per capita GDP of Russia/Soviet Union, Eastern Europe, and Latin America. The per capita GDP of each

Figure 2. Index of Per Capita GDP (1990 International Dollars, World Average = 100, 1900–2000).

country or country group is shown as a percentage of the world average. By this measure, the performance of Soviet and Eastern European socialism was quite impressive.

The Soviet Union made significant gains in the first half of the 20th century. Russian per capita GDP was about the same as the world average in 1913 (98%). By 1950, Soviet per capita GDP rose to 135% of the world average. Both the Soviet Union and Eastern Europe grew more rapidly than the world average from 1950 to 1975. Even though both experienced some declines in the 1980s, by 1989, Soviet per capita GDP was 39% higher than the world average and Eastern European per capita GDP was 15% higher than the world average. Both made significant gains relative to the pre-socialist period.

By comparison, from 1913 to 1940, Latin America had about the same levels of per capita GDP as Russia or Eastern Europe. From 1950 to 1980, Latin America actually did not make any gain in its relative position in the capitalist world system. In the 1980s, Latin America suffered greater declines in its relative position than the Soviet Union or Eastern Europe. From 1980 to 1990, the Latin American per capita GDP fell from 121% of the world average to 98%.

Figure 3 compares the per capita GDP of China, East and South Asia, and Africa. “East and South Asia” refers to the average of 14 East and South Asian countries (excluding China and Japan).

From 1950 to 1980, China’s per capita GDP increased slightly from 21% of the world average to 24%. During the same period, the East and South Asian average per capita GDP fell slightly from 33% to 31%, and the African per capita GDP fell from 42% to 34%. Thus, in relative terms, China grew slightly more rapidly than the Asian average and much more rapidly than Africa.

Thus, when the socialist economies are compared to the world average or compared to capitalist economies at similar levels of economic development (comparing the Soviet Union and Eastern Europe with Latin America, and comparing China with the rest of Asia and Africa), the socialist growth record seems to be rather favorable.

It is true that by the 1980s, both the Soviet Union and Eastern Europe suffered relative declines. But the declines were modest relative to those experienced by Latin America and Africa. The Soviet and Eastern European economies did not collapse until capitalist shock therapies were implemented.
4. 20th Century Socialist Performance: Life Expectancy

As a measure of living standard, GDP per capita has many limitations. It does not correct for social and environmental costs, does not take into account income and wealth inequality, and does not indicate people’s actual physical and mental well-being.

Amartya Sen (1999) made a distinction between human achievements or “functionings” and the ownership of commodities. While the command over commodities is a means to the end of well-being, it should not be confused with the end itself. Sen proposed using indicators of capabilities rather than money income or wealth as the measure of well-being or living standard.

The population’s life expectancy is a direct measure of people’s physical well-being. It not only reflects the population’s conditions...
of health, but also indirectly reflects general social, economic, and political conditions (Navarro, 1993).

Figure 4 compares the life expectancy at birth in the former Soviet Union and Eastern Europe with that in Western Europe. Western Europe is represented by the average of the countries in today’s Euro Area. Eastern Europe is represented by Poland, the Czech Republic, and Hungary. The former Soviet Union is represented by the Russian Federation, Belarus, and Ukraine.

In the 1960s, Eastern Europe and the European part of the Soviet Union had life expectancies roughly comparable to those in Western Europe. The Czech Republic and Belarus in certain years even had life expectancies slightly better than the Western European average. Considering that Western European per capita income was about twice as high as the Eastern European level, this approximate parity

Figure 4. Life Expectancy at Birth (Years, Selected European Countries, 1960–2008).

in life expectancy must be seen as a great achievement on the part of Soviet and Eastern European socialism.

However, during the 1970s and 1980s, life expectancies in Eastern Europe and the Soviet Union stagnated, stuck at around 70 years, and an increasingly wider gap was opened up with Western Europe. After 1990, there was a divergence between Eastern Europe and the former Soviet Union. While the Eastern European countries have enjoyed steady improvement in life expectancy since the early 1990s, the former Soviet republics have suffered significant declines. While the Russian Federation and Belarus have had some recovery since about 2005, there has been no improvement in Ukraine.

Figure 5 compares the life expectancy performance of two Asian socialist states (China and North Korea) with India and the East Asian average. In the 1960s, China managed to steadily increase its lead over

**Figure 5. Life Expectancy at Birth (Years, Selected Asian Countries, 1960–2008).**
India with respect to life expectancy. By 1975, China’s life expectancy at birth was 14 years ahead of India, despite the similar levels of per capita income in the two countries. China’s life expectancy in 1975 was also about three years higher than the East Asian average.

Since China started to pursue market oriented reform, China’s improvement in life expectancy has slowed down and the gap with India has been narrowed rapidly.

The North Korean experience has been a complicated one. Throughout the 1960s and 1970s, North Korea enjoyed steady increases in life expectancy. By the late 1980s, life expectancy at birth in North Korea reached about 70 years, comparable to the life expectancy in the advanced capitalist countries in the early 1960s.

After the disintegration of the Soviet Union, North Korea suffered from dramatic declines in oil supply. Its highly modernized, oil-based agriculture collapsed (Pfeiffer, 2006, 42–51). Life expectancy in North Korea declined through the 1990s but has stabilized since about 2000.

By contrast, Cuba dealt with the post-Soviet energy crisis more effectively by actively promoting organic agriculture (Pfeiffer, 2006, 53–66). Figure 6 compares life expectancy at birth in Cuba, Latin America, and the United States. From 1960 to 2008, Cuba enjoyed considerable advantages in life expectancy relative to the average of Latin America. By the 1970s, Cuba had caught up with the United States in life expectancy. Since 2003, Cuba’s life expectancy has stayed slightly above that in the United States. This must be seen both as a great achievement of Cuban socialism, and as a failure of American capitalism.

These data suggest that there is no convincing evidence that the socialist economies fared worse than capitalist economies in overall economic and social performance.

The 20th-century socialist economies failed to catch up with the most advanced capitalist economy, but neither did the majority of the peripheral and semi-peripheral capitalist states. The Soviet and Eastern European socialist economies suffered relative declines after the 1970s and failed to improve life expectancy for about two decades. On the other hand, the Soviet and Eastern European economic declines were relatively modest in comparison with Latin America and Africa in the 1980s.

For the entire socialist period, both the Soviet Union and Eastern Europe managed to significantly improve their relative positions in
the capitalist world system (in terms of per capita GDP relative to the world average). China stabilized its relative position under Maoist socialism in comparison with the long-term, sustained declines China suffered in the pre-revolutionary period.

Life expectancies in the Soviet Union and Eastern Europe, while falling behind those in Western Europe, had been consistently better than those in Latin America. China enjoyed large leads in life expectancy over India in the late socialist period and Cuba’s life expectancy has caught up with the United States. These achievements suggest that in the context of periphery and semi-periphery (low- and middle-income countries), socialism was able to meet the population’s basic needs better than capitalism. While North Korea was a notable failure (though it performed well until the 1980s), its experience needs to be considered in the proper historical context, taking into account

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Figure 6. Life Expectancy at Birth (Years, Selected American Countries, 1960–2008).

both its unique internal political dynamics and extremely unfavorable external environment.

In comparing the historical capitalist and socialist performance, Arrighi (1991, 57) made the following comments:

In addition, closure [socialism] versus openness [capitalism] has made a big difference in the status and welfare of the lower social strata of the regions in question — strata that in the middle- and low-income regions constitute anything between one-half and two-thirds of the population. As argued above, the USSR has probably done no better (and may have done worse) than Latin America in the “race” to catch up with the standards of wealth set by the West. Yet, the lower social strata of its population have done incomparably better than the lower social strata of the population of Latin America (Brazil included) in improving their nutritional, health and education standards. And the improvement has been even greater for the lower social strata of China in comparison with those of South Asia or Southeast Asia.

5. The Rise of the Semi-Periphery and the Demise of the Capitalist World System

If the actual economic and social performance of the 20th-century socialist economies was relatively successful, or at least a mixture of successes and failures, what caused their demise? It is beyond the purpose of this paper to examine this question in detail. But much of the answer can be found from the internal class struggle that took place within the historical socialist states.

Kotz (1997; 2000) argues that in the late Soviet years, a pro-capitalist alliance that included the majority of the Soviet party and state bureaucracy, neoliberal intellectuals, and emerging private capitalists was formed. Despite the fact that the majority of the Soviet population continued to prefer some form of socialism to capitalism, the pro-capitalist alliance took advantage of the opportunity of what was a relatively mild economic crisis to impose a capitalist agenda on the general population. Li (2008, 24–66) argued that with the defeat of the “Cultural Revolution,” the capitalist roaders within the Chinese Communist Party won a decisive political victory against the revolutionary socialists, paving the way for China’s capitalist transition.

The failure of 20th-century socialism reconfirmed the fundamental laws of motion of the capitalist world system. Up until the late 20th
century, there had been a long-term tendency for the income gap between the core, the semi-periphery, and the periphery to widen, a tendency that had operated for centuries.

The capitalist world system is divided into three structural positions. Historically, the periphery tended to include the greatest geographical area and the majority of the population in the world system. By mid-20th century, the population ratios between the core (Western Europe and North America), the semi-periphery (the Soviet Union, Eastern Europe, and Latin America), and the periphery (Asia and Africa) were roughly 20:20:60. The income ratios between the three regions were roughly 100:25:5. By the 1970s, these income ratios were seriously challenged by the rise of the 20th-century socialist economies. With the disintegration of the socialist states, these income ratios were largely restored to the mid–20th-century levels by around 1995.

However, less than a quarter of a century after the fall of the Berlin Wall, the world geopolitical map has again been greatly transformed. With the economic rise of China and India as well as the revival of Russia and Latin America, the economic and geopolitical influence of the “west” has been dramatically reduced and both the United States and Western Europe seem to have embarked on a long-term trajectory of irreversible decline. What does this dramatic world historical turn indicate about the long-term future of the capitalist world system?

The transfer of world surplus value (through direct plunder and unequal exchange) from the periphery to the core has been a basic operational mechanism of the capitalist world system. Its concentration in the core states has allowed these states to maintain large, monopolistic profits and provide the necessary incentives for capital accumulation in the indispensable “leading industries” that have comparatively high risks and require large, long-term capital investment.

This large surplus value concentrated in the core has also been necessary as it allows the core states to offer comparatively high wages to the system’s “cadres,” such as skilled workers, engineers, scientists, ideological advocates (“intellectuals”), economic managers, and military officers (in control of the “high tech” military forces). These “cadres” have tended to be concentrated in the core and their “services” and loyalties are indispensable for the normal operation of the capitalist world system.

As capitalist accumulation proceeded in the core, from time to time, there had been a tendency for wage, taxation, and environmental
costs to rise, depressing the profit rate at the system’s centers of accumulation. As the core states developed new leading industries to regenerate large profits, the old industries where the profits had declined to intermediate levels needed to be relocated to other geographical areas. Historically, it was the semi-periphery that had played the role of receiving the relocated industries (or segments of “commodity chains”) and had played an indispensable political and economic stabilizing role for the capitalist world system (Wallerstein, 1979, 20–23; 69–71).

Over the past century and a half, the long-term tendency towards rising wage, taxation, and environmental costs seems to have accelerated. The rising wage and taxation costs have reflected the long-term challenges from the “anti-systemic movements” (social democracy, national liberation movements, and “communism”), which forced the system’s ruling elites to make major concessions by mid-20th century. The rising environmental costs have resulted from the relentless capital accumulation, which has greatly accelerated the depletion of natural resources and degradation of the global environment (Wallerstein, 2003, 57–66).

As a result, the capitalist world system has been under great pressure to accelerate the pace of global industrial relocation. This has led to dramatic expansion in the geographic zone of the semi-periphery over the past 25 years. Most importantly, China and India, by serving as the centers of the latest round of global industrial relocation, have joined the ranks of the semi-periphery. China’s per capita GDP has by now risen to about one-seventh of the U. S. level and India could reach a similar relative level in about a decade. Given the enormous size of the Chinese and Indian population, by around 2020, the world semi-periphery (defined as the geographical areas with per capita GDP around one-fifth of the level in the most advanced capitalist state) may well have expanded to include about 60% of the world population. Can the capitalist world system survive such a massive expansion of the semi-periphery?

This expansion will inevitably involve a major redistribution of world surplus value. As less of this is concentrated in the core, it will become increasingly difficult for the core states to finance capital accumulation in the leading industries. The core states will also have growing difficulty in maintaining a large pool of “cadres,” the system’s skilled and managerial labor force or the “middle class.”
Already, virtually all core capitalist countries are now confronted with insurmountable fiscal crises. Fiscal crisis, in essence, is the sign that capitalism in the core zone can no longer simultaneously provide favorable conditions of capitalist accumulation while maintaining “social peace” (that is, to secure the political loyalty of the middle classes) at home.5

It is widely recognized that U. S. hegemonic power is in irreversible decline, both in the sense that the relative economic position of the United States has been falling in the capitalist world system and in the more important sense that the United States is less willing and less able to regulate the system for the system’s long-term, common interest.

The current expansion of the semi-periphery has obviously accelerated the decline of U. S. hegemonic power. More ominously for the capitalist world system, the great expansion of the semi-periphery has also made it much less likely and even impossible for a new hegemonic power to emerge by dramatically increasing the number of states that is relevant in system-wide politics. This is shown by the expansion of the most high-profiled global policy making body from the so-called “G7” group to the so-called “G20” group.

The capitalist world system is an inter-state system. The arrangement of the inter-state system is necessary for maintaining a balance of power between the state and capital in terms that are favorable for capital accumulation. However, the system also has a fatal flaw. As the system does not have a “world government,” there is no effective mechanism to secure and promote the system’s long-term, common interest (such as global peace, global macroeconomic management, construction of global social compromise, and global environmental management) and unrestrained inter-state competition could lead to the system’s self-destruction.

Historically, the capitalist world system has relied upon the periodic hegemonic powers (the Netherlands in the 17th century, the United Kingdom in the 19th century, and the United States in the 20th century) as a proxy for the world government to regulate the system’s long-term, common interest. With the massive expansion of the semi-periphery, this historical mechanism required for the normal

5 For a fuller elaboration of the argument that the rise of the semi-periphery is incompatible with the continuing operation of the capitalist world system, see Li, 2008, 93–112.
functioning of the capitalist world system begins to break down (Li,

Thus, the massive expansion of the semi-periphery is leading to a set of fundamentally new world historical conditions. These new conditions are undermining several basic mechanisms required for the normal operation and reproduction of the capitalist world system.

But it is the climate change crisis that offers the most clear, unequivocal evidence that capitalism has ceased to be a viable historical system.

6. The 21st-Century Crisis: Climate Catastrophe

Historically, the core states (Western Europe and North America) have been responsible for most of the cumulative greenhouse gas emissions into the atmosphere. However, in recent years, as a result of the rapid economic expansion and growing energy demand of semi-peripheral states, most of the new emissions now come from the so-called “emerging economies.” In fact, China has already overtaken the United States to become the world’s largest greenhouse gas emitter and India has overtaken Japan to become the world’s third largest emitter (see BP, 2010).

The global average surface temperature is now about 0.8°C (degree Celsius) higher than in pre-industrial times, and rising at a rate of about 0.2°C per decade. At the current rate, by the end of the 21st century, global warming (relative to the pre-industrial time) will be around 3°C.

A 3°C warming would destroy the Amazon rainforest, leading to a further warming of 1.5°C. Southern Africa, Australia, Mediterranean Europe, and the western United States would turn into deserts. The sea level could rise by 25 meters and billions of people could become environmental refugees.

With a 4°C warming, the melting of the Arctic permafrost could release massive amounts of carbon dioxide and methane. Algae, the main carbon sinker in the ocean, would die out. The world is set for runaway global warming that could lead to additional temperature rises by several degrees.

If global warming rises to 5°C and above, the world would be hotter than any time over the past fifty million years. Much of the world would cease to be inhabitable and global human population
could decline catastrophically. Nothing less than the very survival of human civilization is at stake (Spratt and Sutton, 2008; Guardian, 2009; Hansen, 2009).

Figure 7 compares three possible future trajectories of carbon dioxide emissions from fossil fuels with the historical emissions in the global economy. The world currently emits about 31 billion metric tons of carbon dioxide from burning of fossil fuels. If the world commits to a stabilization of carbon dioxide emissions at the current level, without any further increase, then the cumulative carbon dioxide emissions over the 21st century will amount to about three trillion metric tons. This is likely to lead to a 4°C warming by the end of the

Figure 7. World Carbon Dioxide Emissions from Fossil Fuels (Billion Metric Tons, 2000–2100).

Sources: IPCC, 2007; BP, 2010; and the author’s calculations. These scenarios assume zero net emissions from land use change. The lower ends of the long-term equilibrium temperatures are based on IPCC, 2007. The higher ends of the long-term equilibrium temperatures are based on Hansen, 2009, 140–171.
21st century and a long-term equilibrium warming (over a period of several centuries) of about 8°C.

If the world starts to immediately reduce carbon dioxide emissions and maintains an average annual reduction rate of one percent for the rest of the 21st century, then the cumulative carbon dioxide emissions over the 21st century will amount to about two trillion metric tons. This is likely to lead to a 3°C warming by the end of the 21st century and a long-term equilibrium warming of about 6°C. Global warming of this level would destroy the Amazon rainforest, lead to a sea level rise by 25–75 meters, turn much of the world into uninhabitable deserts, and cause catastrophic declines of global population.

Finally, suppose the world starts to immediately reduce carbon dioxide emissions and maintains an average annual reduction rate of four percent for the rest of the 21st century. Then the cumulative carbon dioxide emissions over the 21st century will amount to about one trillion metric tons. This is likely to lead to a 2°C warming by the end of the 21st century and a long-term equilibrium warming of about 4°C. Even though this scenario would still carry some significant risk of runaway global warming, under the current circumstances this is the only scenario that promises the preservation of human civilization as we know it.

Is it at all possible for a climate stabilization that is consistent with the preservation of human civilization (the scenario that corresponds to 2–4°C long-term warming) to be achieved within the historical framework of capitalism?

The relationship between carbon dioxide emissions, economic output (GDP), and technology is determined by the following formula:

\[
\text{Emission Intensity} = \frac{\text{Carbon Dioxide Emissions}}{\text{GDP}}
\]

Or,

\[
\text{Carbon Dioxide Emissions} = \text{Emission Intensity} \times \text{GDP}
\]

Emission intensity is determined by technological factors, such as energy efficiency and the share of fossil fuels in total energy consumption. It follows that:

The growth rate of carbon dioxide emissions = the growth rate of emission intensity + the economic growth rate
When the same formula is stated in term of reduction rate:

The reduction rate of carbon dioxide emissions = the reduction rate of emission intensity – the economic growth rate

Thus, other things being equal, any reduction in emission intensity (resulting from rising energy efficiency or substitution of carbon-free energies, such as nuclear and renewable energies, for fossil fuels) leads to reduction of carbon dioxide emissions. But any increase in economic growth rate would offset reductions of carbon dioxide emissions.

Both mainstream and Marxist economists agree that the capitalist economic system is based on private ownership of the means of production and market competition. Moreover, both groups of economists agree that with relentless competition, capitalists are under powerful and constant pressure to increase efficiency and promote innovation, leading to sustained and rapid economic growth over the long run. Until now, this tendency towards unlimited growth is still seen by the mainstream economists as a major virtue of the capitalist system.

By contrast, is there an equally powerful tendency for the capitalist system to reduce carbon dioxide emissions from fossil fuels? In fact, what is needed is for the emission intensity to fall much more rapidly than the growth of the economy.

Over the decade 1999–2009, the world economy grew at an average annual rate of 3.5%, emission intensity fell at an average annual rate of 1.1%, and carbon dioxide emissions from fossil fuels burning had increased at an average annual rate of 2.4%. In the “Great Recession” of 2009, world emissions fell by 1.3%. If the world were to repeat the experience of the Great Recession every year for the rest of the 21st century, the world would be roughly on track to achieve the scenario of 3–6°C long-term warming.

Is it possible for the capitalist world economy to greatly accelerate the pace of emission intensity reduction through a combination of government intervention and technological innovation?

Under the current capitalist system, the world economy needs to grow by at least three percent a year just to prevent unemployment rates from rising (assuming that labor productivity grows by about two percent a year and world population grows by about one percent a year). If the goal is to reduce carbon dioxide emissions by four percent a year, emission intensity must fall at an annual
rate of seven percent! Even if the goal is to reduce emissions by one percent a year, emission intensity would still need to fall by four percent a year.

Leave aside many other institutional and technical difficulties, the inherent slow pace of infrastructure transformation imposes fundamental limits on how rapidly emission intensity can fall. The world’s entire current energy and industrial infrastructure is based on fossil fuels. This infrastructure can only be transformed slowly. If each year about five percent of the world’s capital infrastructure is replaced, and supposing the new capital stock reduces emission intensity by 50% compared to the old capital stock (this is roughly equivalent to assuming that all of the world’s new power plants and new cars are emission free), this would only reduce the world average emission intensity by 2.5%.

Imagine that in the future the emission intensity reduction rate can be increased to three percent a year; then to achieve a four percent annual reduction of carbon dioxide emissions, the world economy still needs to contract at an annual rate of one percent.6

7. The 21st Century: Is There An Alternative (to Socialism)?

In the 20th century, the socialist economies remained a part of the capitalist world system and had to compete against the capitalist economies based on the criteria imposed by the capitalist world system. The socialist economies managed to hold and by some measure, even somewhat improved their relative position in the capitalist world system while meeting the population’s basic needs better than did capitalist economies at similar levels of development. But ultimately, the socialist economies failed to overcome the basic laws of motion of the capitalist world system.

In the 21st century, the world historical conditions have been fundamentally transformed. Capitalism has ceased to be a viable historical system to the extent its existence is no longer compatible with the long-term survival of human civilization. This is most clearly demonstrated by the climate change crisis.

The above analysis makes it clear that only an economic system that is able to operate stably with zero economic growth while meeting

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6 In a recent scientific paper, Anderson and Bows (2011) conclude that without questioning the primacy of economic growth, there is little or no chance to prevent global warming of 2°C, beyond which climate change becomes extremely dangerous.
the population’s basic needs could have any chance to address the climate change crisis, ensure global ecological sustainability, and preserve human civilization. All other economic and social objectives are secondary to this objective.

Only with zero economic growth (and if necessary, negative economic growth) can reductions in emission intensity through higher energy efficiency and substitution of carbon-free energies be directly translated into absolute reductions of carbon dioxide emissions. Only with a combination of zero economic growth and rapid reduction of emission intensity (which in turn requires massive infrastructure transformation), does humanity have a realistic chance to achieve a level of climate stabilization consistent with the preservation of civilization.7

Can capitalism be transformed to operate stably with zero economic growth? So long as capitalism is based on private ownership of the means of production and market competition (what else is capitalism?), it is impossible to conceive how capitalists, under the motivations of profit and the pressure of competition, will not pursue increasingly large scales of production and increasingly higher profits.

There are some additional reasons why capitalism cannot operate with zero economic growth. First, under capitalism there is a tendency for labor productivity to grow over time. Zero economic growth in combination with rising labor productivity would lead to increasingly higher unemployment rates.

Second, under capitalism there is a tendency for income and wealth inequality to rise over time. Zero economic growth in combination with rising labor productivity would lead to increasingly higher unemployment rates.

7 In this paper, terms such as “economic growth” and “economic growth rate” refer to conventionally measured economic growth, that is, growth of “real GDP.” This conventional measure of economic growth is a meaningful concept to the extent one regards it as a rough measure of the pace of capitalist accumulation rather than as a true measure of improvement in quality of life. In the future post-capitalist society, “zero economic growth” required for ecological sustainability refers to zero growth in society’s total material production and consumption. Thus, zero economic growth does not need to mean the end of the improvement in quality of life or the end of the development of productive forces, to the extent “productive forces” are understood to mean human physical and mental development. Some Marxist writers believe that future socialism needs to be based on both ecological sustainability and economic growth (Schwartzman, 2008; 2009). I believe, however, that unlimited economic growth is fundamentally incompatible with ecological sustainability, for reasons partly discussed in this paper. See also Li, 2008, 139–173; Speth, 2008; Foster, 2010.
with rising inequality would lead to absolute declines of living standards for the great majority of the population.

Third, capitalist ruling elites have relied upon economic growth and the illusory promise of increasingly higher living standards as their main ideological justification. Without economic growth, why would the great majority of the population continue to tolerate capitalist exploitation and the enormous inequality in income and wealth? What would be the basis of capitalist legitimacy?

The requirement of zero economic growth rules out not only capitalism, but any other conceivable market-based economic system as a viable historical option in the 21st century. This is because any market-based system, no matter how the means of production are initially distributed, will inevitably generate the same kinds of economic and social dynamics as capitalism, forcing all economic players to strive for production on increasingly larger scales. In fact, if market competition does not lead to material production on increasingly larger scales, what is the social benefit of having an economic system based on market competition with all of its negative social consequences (such as rising inequality, unemployment, relentless individualism, social alienation, and environmental degradation)?

If humanity were not to return to some form of precapitalist class system, what options do we have other than a socialist economic system based on public ownership of the means of production and society-wide planning?

The historical socialist states were committed to the pursuit of economic growth. But this was because these states were a part of the capitalist world system and had to compete against capitalist states in economic and military terms. Sustained economic growth is an essential condition for any nation state to survive in the capitalist world system. In a future post-capitalist world, there is no reason why socialist society-wide planning cannot be used to organize an economic system committed to zero economic growth.

For readers with some Marxist background, it is easy to understand that economic growth takes place when a society’s surplus product is used for expanded reproduction (through greater labor inputs, greater quantities of means of production, and rising labor productivity). Thus, to have an economy with zero economic growth, society as a whole must, first, be able to decide collectively how the surplus product is to be used and, second, decide to use it for purposes other
than growth. Capitalism or any market-based system cannot satisfy either of the two conditions.\(^8\)

Only with an economic system based on public ownership of the means of production and society-wide planning could society exercise direct control over the use of the surplus product and make sure that the surplus product is not used for economic growth but for other purposes, such as public consumption, reduction of labor time, or other uses that contribute to the development of individuals’ physical and mental potential.\(^9\)

Only with public ownership and society-wide planning, could society undertake the massive infrastructure transformation within the relatively short period of time required for rapid reductions of emission intensity. The historical experience of 20th-century socialism suggests that socialist planned economies could be particularly effective in mobilizing resources for certain dedicated social purposes and in promoting certain types of technological innovation, when there is a clear social priority.

\(^8\) Schweickart (1992) proposed a socialist model in which daily production and consumption would be carried out through a market system, but investment would be under social control. This hybrid market–planned system raises many questions regarding the compatibility between the market part and the planning part of the economy. For example, how large would the society-controlled investment fund be relative to the society’s total surplus product? If it is not large enough, then the same kind of economic dynamics as under capitalism would take place, as market players use profits for capital accumulation. If it is too large, then there would be insufficient incentives for market players to pursue economic efficiency, and then why do we need to have a hybrid market–planned system? Why not just have a straightforward socialist planned economy?

\(^9\) In his Critique of the Gotha Program, Marx envisioned that “in a higher phase of communist society,” “the springs of cooperative wealth” would flow abundantly and social distribution would be based on “from each according to his ability, to each according to his needs” (Marx, 1978 [1875]). Marx and Engels probably did envision a future communist society based on a material wealth much more abundant than that found in 19th-century capitalism. But it is quite doubtful that they would celebrate the extremely wasteful “mass consumption” in the western capitalist economies, were they alive today. For both Marx and Engels, the key question was the “shortening of working day,” which was the essential condition both for the free development of individual physical and mental potentials and for the transition from capitalism to communism. In the future, if society’s total material production is set at a level consistent with both ecological sustainability and the population’s basic needs but technological improvement continues to deliver rising labor productivity over time, then it is conceivable that society’s total production will be sufficient to meet the requirement of “to each according to his or her needs,” while rising labor productivity translates into increasingly shorter working time for the general population, allowing for growing space for individual development (and rising living standards in this sense) as well as the gradual abolition of the division between physical and mental labor (and thus abolition of the material basis for the division of society into antagonistic classes). See Marx, 1967 (1894), 820; Engels, 1978 (1880); Li, 2008, 188–192.
Only with public ownership and society-wide planning could society achieve ecological sustainability without sacrificing the basic needs of the great majority of the population. Historical experience suggests that the socialist economies were more successful than capitalism in meeting the populations’ basic needs at comparatively low levels of material consumption.

How about the information problem and the incentive problem? First of all, these problems were probably not as serious as the mainstream economic literature has led us to believe. This is demonstrated by the actual performance of the socialist economies in comparison with the capitalist economies. In any case, can these problems be more important than the preservation of human civilization?

For humanity in the 21st century, is there an alternative — to socialism?

Department of Economics
University of Utah
Salt Lake City, Utah 84112
minqi.li@economics.utah.edu

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