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ECOLOGY *VERSUS* MARKET CAPITALISM: A  
THREAT FOR THE 21<sup>ST</sup> CENTURY?

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## **Abstract**

Market capitalism has been the economic system of the contemporary world economy since the early stages of its formation. However, at the same time, market capitalism has been subject to a number of threats. Some of these threats arise from market failures. Others arise from the development of anti-capitalist ideologies. During the 20<sup>th</sup> century, market failures were most conspicuous during war periods and anti-capitalist ideologies mainly took the form of socialist doctrines. At the beginning of the 21<sup>st</sup> century, a global war seems unlikely, but terrorism presents a threat that may have a number of similar consequences; likewise, socialism (at least in its radical forms) seems obsolete, but anti-globalist movements seem to replace it in a similar role. However, we argue that the main problem that may threaten the role of market capitalism as a global economic system and force it to undergo radical adaptations is the need to preserve natural equilibria.

**Key-words:** economic systems, market failures, anti-capitalist ideologies, ecology.

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## **1. Market capitalism as the economic system of the world economy: why and how <sup>1</sup>**

The Market capitalism has been the economic system of the contemporary world economy since the early stages of its formation (Wallerstein, 1974-1990). A brief explanation of why this was (and is) practically inevitable is important in order to properly contextualize the analysis of the threats to market capitalism, which will occupy most of this paper.

The existence of a world economy means that there are no longer self-sufficient or quasi-closed sets of economic agents corresponding to parts of mankind (from a social perspective) or of planet Earth (from a geographical perspective). In other words, all existing human beings (from a social perspective) and the whole of planet Earth (from a geographical perspective) have become a single global economy, actually an interrelated system, in order to accomplish the economic function of their society, namely providing the material conditions of human life.

Such a situation may be dated back to the late 19<sup>th</sup> century. Before then, several global economies, still meaning self-sufficient or quasi-closed spaces of different sizes and complexity, co-existed alongside one another. Some were world-economies<sup>2</sup>, characterized by the existence of sectorial and regional specialization in a relatively wide range of economic activities, performed with relatively complex means of production and technology and providing goods and services for a large number of human beings<sup>3</sup>. However, a large number of small global economies remained as local

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2 Note that we distinguish world-economies, characterized by the existence of sectorial and regional specialization in economic activities, but usually encompassing only part of mankind, from the world economy, which is the special case of a world-economy that encompasses the whole of mankind.

3 In the 18<sup>th</sup> century, world-economies predominated in a broad belt stretching from Western Europe and the Mediterranean to Japan, and also including the European extensions overseas.

predatory economies (i.e. with a predominance of hunting and gathering activities) or cultivation economies (i.e. with a predominance of agriculture or animal raising)<sup>1</sup>, characterized by the absence of any sectorial and regional specialization in economic activities, which were performed with simple means of production and technology. Most world-economies corresponded to a single political unit, such as the Empires of Qing China, Mogul India, Sefevid Persia, Ottoman Eastern+Southern Mediterranean or Romanov Russia, or the national states of Tokugawa Japan, Chosen Korea, Thai Siam, Saidian Morocco, and many others. One very particular world-economy, the Euro-Atlantic world-economy, embraced different political units.

The coordination of economic plans within these almost self-contained economies evolved in keeping with a certain mix of the schemes of routine, command and market (Hicks, 1969). At the same time, the formation of economic agents and the organization of economic activities evolved in keeping with a certain mix of the schemes of craftsmanship, state or collective initiative and capitalism (Eucken, 1939; Polanyi, 1944). Simpler local economies relied mostly on routine and direct command as coordinating devices, and on craftsmanship and collective initiative as organizational devices. World-economies that corresponded to economically quasi-closed political units had to rely significantly on indirect command as a coordinating device and state initiative as an organizational device. The Euro-Atlantic world-economy relied mostly on the market as a coordinating device and on capitalism as an organizational device.

The Euro-Atlantic world-economy proved historically capable of creating the technological and institutional innovations that triggered the economic and social transformations of modern economic growth (Kuznets, 1966). This happened during the course of the 18<sup>th</sup> and 19<sup>th</sup> centuries. As a consequence, this world-economy was able to integrate all the other global economies – both local and world-economies – into one single world-economy encompassing all the economies in the world: the contemporary world economy. This process was concluded by the beginning of the 20<sup>th</sup> century.

As the contemporary world economy was the result of the gradual planetization of the Euro-Atlantic world-economy<sup>2</sup>, it was only natural that it should inherit the predominance of market capitalism as its economic system, which had already characterized its predecessor<sup>3</sup>.

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1 In the 18<sup>th</sup> century, predatory economies predominated in most of North and South America, Australia, South-Western Africa and Northern Eurasia, and cultivation economies predominated in most of Sub-Saharan Africa, Turkestan, Mongolia and the Pacific Islands.

2 Why was the Euro-Atlantic world-economy the only market capitalist economy to exist between the 16<sup>th</sup> and 19<sup>th</sup> centuries? Why was the only world-economy of the market capitalist type the one that first developed the innovations that led to modern economic growth? These are very important questions, which cannot be dealt with here.

3 In a previous paper (Nunes, Valério, 2001), we referred to the development of market capitalism as the economic system of the Euro-Atlantic world-economy and its later extension to the other local and world-economies that it absorbed during its planetization process as a 'first path to capitalism'.

The reasons why market capitalism became the economic system of the contemporary world economy do, however, go further than a question of mere historical inheritance. Firstly, the dynamic, complex character of the contemporary world economy, including a higher degree of economic integration, implies that routine is not an adequate way of coordinating economic plans. Secondly, the absence of a centralized political authority implies that command, whether direct or indirect, is also not an adequate way of coordinating economic plans. The same thing happens with state initiative as a way of forming and organizing economic agents<sup>1</sup>. Lastly, the technological superiority of large productive units implies that craftsmanship is also not an adequate way of forming and organizing economic agents.

Thus, market capitalism appears in the long run to be the almost inevitable economic system of a global economy that is as large, complex and sophisticated as the contemporary world economy.

## **2. Threats to market capitalism: a theoretical perspective**

In spite of this, market capitalism has been subject to threats since the very beginnings of the contemporary world economy (and even of the Euro-Atlantic world-economy). Some of these threats arise from market failures. These will be the theme of subsection 2.1, which will focus on the question of externalities. Other threats arise from the development of anti-capitalist ideologies. These will be the theme of subsection 2.2, which will sketch out a genealogy of such ideologies.

### **2.1. Market failures**

The history of economic science shows that the idea that the coordination of the economic plans of many economic agents may be left to market mechanisms would always have difficulty in triumphing over others. In other words, there was difficulty in accepting that such coordination could be left to the mechanisms of price fluctuation, as the inter-agent regulator, and budget constraint, as the intra-agent regulator, without resulting in chaos (Schumpeter, 1954). During much of the early existence of the Euro-Atlantic world-economy, dominant economic doctrines, such as mercantilism, called for state

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<sup>1</sup> Recent literature has gone into other – informational and sociological – reasons for the relative inefficiency of command, even in its most sophisticated forms (i.e. socialist centrally planned economies), as an economic system. This subject is beyond the scope of this paper. In relation to this matter, see our discussion of a ‘third path to capitalism’ in Nunes, Valério (2001).

intervention to ensure public prosperity and even guarantee private supplies<sup>1</sup>. That the 'wealth of nations' and 'the adequate revenue of the sovereign or commonwealth' (the expressions are, of course, from Smith, 1776) could be achieved by 'laissez faire, laissez passer' (the expression is, of course, from Gournay, although it was disseminated in the wake of Quesnay, 1758) was the discovery of the physiocrats and Adam Smith in the 18<sup>th</sup> century. Since then, it has been one of the cornerstones of the development of mainstream economics, leading to the formulation and resolution of the general equilibrium problem by Walras in the 19<sup>th</sup> century (Walras, 1874-1877) and Arrow and Debreu in the 20<sup>th</sup> century (Arrow, Debreu, 1954).

The triumph of the 'laissez faire, laissez passer' doctrine has often led people to ignore the inevitability of government intervention wherever market capitalism is the dominant economic system<sup>2</sup>. Thus, it is important to stress that, for technical reasons, market capitalism is nowhere to be seen as the exclusive regulatory economic institution of a human society, even in theoretical terms, and especially not in practical terms. This is the consequence of the existence of external effects, i.e. situations in which either the full cost or the full benefit of some economic behaviour is neither paid for nor enjoyed by the economic agent undertaking such behaviour.

When external effects arise, the market fails to ensure consumers satisfaction with an efficient use of resources and must be supplemented by other forms of coordination for economic plans, namely direct or indirect command, to allow even market capitalism to work<sup>3</sup>. Thus, the state's unavoidable role in formulating and imposing the legal framework of economic life (the most conspicuous example of such a need) must be further supplemented by its role in providing the correction of market failures. This may involve the supply of some public goods (such as internal and external security – justice and defence in traditional terms). Collective choices may lead to a much greater intervention of the state in economic affairs, namely in the provision of a greater or smaller number of private goods socially valued as merit goods, and even in the correction of a distribution of income and wealth that is considered to be socially unjust.

However, it may be argued that this need for government intervention to supplement the market mechanism is not a decisive threat to market capitalism, because its role as the main institutional setting of economic life is not questioned. We will revisit this argument and reconsider it in more detail in subsections 3.1, 4.1 and 4.3, which will deal with the most important cases of state intervention in economic life that are not led by anti-capitalist ideologies.

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1 It should be remembered that, besides being concerned with the abundance of precious metals, mercantilist recommendations, whether of the bullionist, industrialist or commercial type, usually included a concern with the supply of basic commodities, such as foodstuffs.

2 Nevertheless, none of the great mainstream authors, such as those just mentioned, may be accused of such an error.

3 From another perspective, we are facing a non-zero-sum game, where the spontaneous non-cooperative market solution is worse than a cooperative solution (Nash equilibrium). State intervention is needed to enforce cooperation.

## 2.2. Anti-capitalist ideologies

Ideological criticism of market capitalism appeared more or less at the same time as market capitalism itself arose as an economic system. At first, such criticism could be characterized as reactionary, in the sense that it looked forward to the restoration of traditional economic systems that were being disturbed by the dominance of market capitalism. These types of anti-capitalist ideology never threatened the long-term development of market capitalism, because they were systematically defeated by the progress of market capitalism itself.

The take-off of modern economic growth (Kuznets, 1966) brought another type of anti-capitalist ideology: socialism<sup>1</sup>. Socialism appeared as a progressive anti-capitalist ideology in the sense that it looked forward to the creation of a new economic system, which would be able in the long run to fully explore the potentialities of the new technologies, something it argued that market capitalism was unable to do for institutional reasons. The basic idea was to implement a better distribution of wealth and income, compared with the one achieved by market capitalism, to keep on fostering innovations (as the basic fuel of modern economic growth) and, at the same time, to free human beings from the uncertainties caused by unemployment, disease, disability and old age. This would require the transformation of the predominant economic system. The new economic system was conceived of as being based on planning (to overcome the lack of control over market results, often labelled as anarchic or chaotic<sup>2</sup>) and public initiative (to prevent control of the means of production by a privileged few). Such evolution came to be seen by socialists as both necessary, because contradictions arising within market capitalism would become detrimental to progress, and inevitable, because these same contradictions would end up pushing market capitalism to a state of collapse (Marx, Engels, 1848).

Different currents soon developed among socialists. It is necessary to distinguish at least between anarchists and social-democrats and between reformists and revolutionaries. Anarchists were suspicious of any form of centralized state and relied on negotiated coordination between decentralized social organizations to build the framework of a socialist society. Social-democrats trusted the functioning of a (socialist controlled) centralized state as the ideal instrument for building

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1 It is pointless discussing whether primitive socialism was a product of the impoverishment of the proletarian masses, resulting from the early stages of modern economic growth, or a product of the concentration of those proletarian masses in an urban context and the triumph of liberal and egalitarian ideologies in the political field with the rise of the capitalist bourgeoisie. There can be no doubt that later the rise in the living standards of the proletarian masses with the progress of modern economic growth was favourable to the development of the socialist movement.

2 Although often confused in current parlance, these two adjectives have, of course, very different meanings. Anarchic denotes something that has no central authority. Thus, the market or the international system are, technically speaking, anarchic. (Whether or not the whole of a society can be organized as an anarchy is another question that cannot be dealt with here). Chaotic denotes something that maximizes entropy. Of course, no social system may ever be chaotic.



the framework of a socialist society. Reformists believed that socialism could be achieved without violent action, by gradually transforming the framework of the existing social fabric. Revolutionaries believed that socialism could only be achieved by violent action, which would trigger a rapid transformation of the framework of the existing social fabric. Anarchists (who necessarily seem to be revolutionaries) have never had an opportunity to put their ideas to the test (critics may suggest that this means that these ideas are completely unfeasible). Both reformist social-democrats and revolutionary social-democrats (more commonly known as communists) had the opportunity to put their ideas to the test in the aftermath of the First World War. We will consider the results of these experiments in subsection 3.2.

### **3. Threats to market capitalism: a practical perspective of the 20<sup>th</sup> century**

An overall view of the evolution of economic systems during the 20<sup>th</sup> century (Nunes, 1997) shows that the threats to market capitalism, considered from a theoretical point of view in the preceding section, have in fact materialized in some of the national economies embraced by the contemporary world economy. Threats arising from market failures materialized mainly in war situations. These situations will be dealt with in subsection 3.1. Threats arising from anti-capitalist ideologies under the form of socialist doctrines led to the development of more or less radical forms of centrally planned socialism as the dominant economic system. These situations will be dealt with in subsection 3.2.

#### **3.1. War**

The vital and intense economic relations of the different independent political units that coexist within the limits of a market capitalist world-economy do not prevent the possibility of military conflicts occurring between them, particularly among the main powers of such a system.

During the 20<sup>th</sup> century, military conflicts among the main world powers occurred during the first half of the century, corresponding to the two world wars, which lasted for around ten years in total. These years (on the whole, slightly less than 10% of the duration of the contemporary world economy<sup>1</sup>) were characterized by the development of war economies, with extensive state intervention and control of economic life.

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<sup>1</sup> Of course, the existence of the contemporary world economy has been characterized by almost permanent situations of war, often involving great powers (for example the Boer War waged by Great Britain in the early 20<sup>th</sup> century and the Iraqi War waged by the United States of America in the early 21<sup>st</sup> century), and military tension (the arms race) between great,

It is important to stress that war economies had no ideological motivations (apart from the nationalist desire to win the war) and were acknowledged as a brief solution for the exceptional needs resulting from the war situation. War implied a relatively sudden switch in the use of resources between private and social goods in favour of the latter. It proved to be impossible to rely on market incentives to ensure the adequate flow of resources and the adequate provision of public goods needed to achieve victory, a fact that became clearer as hopes for a rapid outcome failed to materialize. Thus, extensive government regulation of economic life in general, especially rationing and the government's management of crucial economic activities through planning schemes, was unavoidable for technical reasons, however primitive and inefficient it might have been, particularly during the First World War (Hardach, 1987). It may be said that, for a while, the economies of the main world powers became mainly centrally planned economies that were subject to state initiative, although only on an expedient and transitory basis<sup>1</sup>.

Postwar periods were usually characterized by efforts to institute a 'return to normalcy', meaning, in terms of the economic system, the predominance of (liberal) market capitalism, as had been the case in prewar periods. In an already-mentioned paper (Nunes, Valério, 2001), we suggested that this may be considered as a second path to capitalism. It is fair to say that such efforts were usually only partially successful. In other words, postwar experiences usually involved a higher degree of state intervention in the economy compared to prewar times, even if only under the form of higher ratios of taxes and state expenditure to national income.

### 3.2. Socialism

As pointed out in subsection 2.2 above, in the aftermath of the First World War, both reformist social-democrats and communists had opportunities to put to the test their plans to build socialist economies. According to what was suggested by previous socialist theoretical analyses, reformist social-democrats came to power in some of the most developed national economies of the world,

medium and small powers. However, direct clashes between great powers have been rather rare, in keeping with what seems to be the norm for human history. It seems that only direct clashes between great powers lead to war economies of the type considered.

<sup>1</sup> A war economy was sometimes described as war socialism, especially during the First World War, as a consequence of its institutional similarities with the economic system aimed at by socialists. This is quite misleading. On the one hand, there were no socialist goals in wartime planning (although wartime planning may have served to amass the experience needed for socialist planning and paved the way for its easier acceptance). On the other hand, wartime planning was often influenced by private capitalist interests, which ended up benefiting from significant war profits and thereby strengthening the structure of their economic groups (the role of the big four companies in the interwar French automobile industry – Citroën, Peugeot, Renault, Simca – is a conspicuous example of this).

both in Europe and in Anglo-Saxon overseas countries. Contrary to those analyses, communists took power in a rather backward national economy: Russia.

When in power, reformist social-democrats respected formal (bourgeois) democracy. Thus, they were always under pressure, facing the possibility of being defeated in the next election. As a consequence, their policies seemed unable to destroy capitalism or to permanently reduce the market to a secondary scheme of economic coordination. Such policies typically included: the nationalization of key firms and sectors, leading to extensive but far from universal state production sectors; the introduction of indicative planning of the economy; the development of social security systems; and efforts to reduce social inequalities by means of the free or low-price supply of several social services, such as education and health, and the implementation of progressive income taxes.

In spite of its apparently fragile character, in the long run the actions of reformist social-democratic governments left their imprint in the form of profound social transformations, such as the growth of government intervention in economic affairs and the development of the welfare state. It may be said that such transformations gradually extended to all highly developed capitalist countries, and even to many medium-developed capitalist countries after the Second World War.

When in power, communists did implement the so-called dictatorship of the proletariat. Their hold on power was meant to be beyond challenge. As a consequence, their policies seemed to be capable of permanently creating a new type of society. These policies typically included: the nationalization of all the non-agricultural sectors of the economy, and even of important parts of the agricultural sector, leading to an almost universal state production sector, and the introduction of imperative central planning of the economy. The fact that the countries where communists took power<sup>1</sup> were not highly developed prevented the development of social security systems and impeded efforts to reduce social inequalities similar to those found in reformist social-democratic experiments. However, there were remarkable processes of economic and social development under the predominance of this economic system, leading to the idea, clearly heterodox to classical socialism, that socialism could be a non-market capitalist alternative way of promoting economic development.

In spite of their apparently solid character, the actions of communist governments proved to be a failure in the long run. Communist governments were unable to proceed from socialism, the lower phase of communism, to communism proper (the expression is from Marx, and was used by the 1961 Congress of the Communist Party of the Soviet Union to characterize the envisaged evolution of the country until 1981), and collapsed in the late 1980s<sup>2</sup>. In an already-mentioned paper

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1 Besides Russia, which later became the Soviet Union, these included Mongolia and Tuva (later absorbed by Russia) after the First World War, China and the so-called popular democracies of Eastern Europe after the Second World War, and a few other countries, such as North Korea, Vietnam and Cuba, in the following decades.

2 Although it is beyond the scope of this paper to go into the causes of this failure (see for instance, Kornai, 1992), it is interesting to suggest that it may be approached in a formally Marxist way: centrally planned economies ended up

(Nunes, Valério, 2001), we suggested that this may be considered as a third path to capitalism. Nowadays, the remaining ruling communist parties look either like more or less efficient non-democratic managers of capitalist economies (as in China and Cuba), or like inefficient non-democratic managers of systems that almost nobody dares to call socialism (as in North Korea).

#### **4. Threats to market capitalism: a practical perspective of the (early) 21<sup>st</sup> century**

As centrally planned economies resulting from war situations and socialism were overcome, market capitalism emerged in the early 21<sup>st</sup> century as the undisputed global economic system. Is it reasonable to expect such a situation to continue into the near and distant future, as a kind of 'end of history' (Fukuyama, 1992)?

To answer this question, it is necessary to assess the likelihood of traditional or new threats to market capitalism materializing in the 21<sup>st</sup> century. Is a global war likely? Even if not, are there other phenomena of a similar type that may have similar consequences for the world economy? These questions will be dealt with in subsection 4.1. Is socialism still an alternative? Even if not, are there other ideologies that may have similar consequences for the world economy? These questions will be dealt with in subsection 4.2. Are there other trends that may also lead to challenges to the role of market capitalism as the global economic system? This question will be dealt with in subsection 4.3.

##### **4.1. Terrorism**

As underlined in subsection 3.1, it is not possible to rule out the possibility of world wars between the main powers in the world economy.

However, a global war seems unlikely at the beginning of the 21<sup>st</sup> century, because by the late 20<sup>th</sup> century the world political system had arrived at a very particular situation: the existence of only one military superpower, the United States of America.

Of course, it is possible to speculate that such a situation is not going to last for ever, and that the emergence of a rival to the hegemony of the United States of America will in due course generate the sort of situation that might lead to a global war (Modelski, Thompson, 1995). Rough

developing increasing contradictions between the social relations of production and the development of productive forces (the expressions are, of course, from Marx, 1857), which became detrimental to progress and thus led to a transformation of the economic system back to market capitalism.

computations suggest that within two or three decades such a situation may arise, as the economic and military growth of China will produce a superpower similar in economic size to the United States of America<sup>1</sup>.

It is possible to argue that a global war is unlikely, even in a context of close competition between two superpowers, because of the mass destruction capabilities of contemporary weapons, as the experience of the so-called Cold War seems to show. However, it is prudent not to trust too much in such arguments, as is proved by the complete failure of the theories that flourished in the late 19<sup>th</sup> and early 20<sup>th</sup> century, arguing that a global war was impossible because of the deep economic interdependence among all the nations of the world.

Anyway, even if a global war seems unlikely at least at the beginning of the 21<sup>st</sup> century, it may be suggested that new types of conflict, namely terrorism, present a threat that may have similar consequences. For the time being, the attack by the terrorist organization Al-Qaeda on the United States of America on 11 September 2001 triggered a series of local wars waged by the United States of America against the so-called 'rogue states' accused of supporting terrorism, and a tightening of security measures all over the world.

However, a balanced assessment of terrorist threats seems to lead to the conclusion that they may bring some changes to the way of life in the world economy, but not a radical modification of its market capitalist character. For instance, it is possible to argue that tighter control of off-shore tax havens might be the most efficient way to restrict the material bases of terrorist organizations. Such an effort would certainly reduce the degree of freedom for capital movements around the world. This same degree of freedom would, however, almost certainly remain much higher than the one that existed during most of the interwar period in the 20<sup>th</sup> century, as a result of the extensive capital controls implemented, especially during the 1930s. Moreover, these kinds of controls would not curtail private property and enterprise or market mechanisms as the basic elements of the global economic system.

To sum up, we believe that terrorism will be unable to shake the market capitalist foundations of the contemporary world economy, because the resources it may command are too tiny to affect the functioning of the global system<sup>2</sup>.

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1 Europe and Russia might seem to be alternative candidates for rivalling the United States of America. Europe already has an economic size that is similar to that of the United States of America, but it is far from achieving the military size or even the degree of political union needed to become a real world superpower. Russia seemed to be a rival to the United States of America during the so-called Cold War period (1940s-1980s), but the collapse of the Soviet Union has greatly reduced its economic and military size, even if it still retains some degree of control over the more or less dubious political unit called the Euro-Asian Community of Independent States.

2 Historical experience shows that even the most efficient and longlasting terrorist organization that ever existed, the Assassins of Alamut, was completely unable to have any deep and lasting effect on the political and social evolution of the Middle East between the late 11<sup>th</sup> and late 13<sup>th</sup> centuries.

## 4.2. Anti-globalism

like war, Just socialism (at least in its radical forms) seems harmless to global market capitalism at the beginning of the 21<sup>st</sup> century. As pointed out above, communist experiments collapsed at the beginning of the 1990s and, with the conspicuous exception of North Korea and Cuba (locally relevant, but globally irrelevant), they embarked on economic transition processes to become market capitalist economies and deepen their integration in the (market capitalist) world economy<sup>1</sup>. This transformation was a fundamental aspect of the recent and rapid process of economic globalisation and was implemented under a very determined neoliberal influence. Even the more resilient results of reformist social-democratic action came under criticism from ultraliberal doctrines.

However, anti-globalist movements may seem able to play a role similar to that of socialist movements throughout most of the 20<sup>th</sup> century (Stiglitz, 2002).

The formation of the contemporary world economy may be considered, from a historical point of view, as the first globalization process (Nunes, 1999). As was to be expected, it triggered the development of anti-globalist movements, particularly ones of a nationalist character. These early anti-globalist movements had a reactionary character, because they sought to restore the isolation of parts of mankind that the planetization of the Euro-Atlantic world-economy had destroyed. As was also to be expected, they failed, as they were systematically defeated by the progress of the contemporary world economy itself<sup>2</sup>.

The deepening of international economic relations within the context of the contemporary world economy has always been subject to two forces, potentially convergent and potentially contradictory (Medina, 2003). One of these forces, technological progress, always pushes towards more intense international economic relations. The other of these forces, institutional developments, may push in the same direction, or act in an opposite manner. During most of the first half of the 20<sup>th</sup> century (the world wars and interwar periods), institutional developments prevented full appropriation of the potential effects of technological progress towards more intense international economic relations. Even during most of the second half of the 20<sup>th</sup> century, evolution towards freer trade among highly developed and even less developed market capitalist economies was

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1 It is beyond the scope of this paper to go into this matter here. The economic reforms inherent in this transition process, their short-term and long-term economic and social impact in different national contexts, as well as the theoretical aspects of transition, have been the subject of abundant literature. See, for instance, Berend (1994), Fisher et al (1996), Blanchard (1996) and Hoen (1998).

2 In this context, it is worth recalling that the socialist movement was very critical of this first globalisation process. However, such criticism was not related to its globalisation character but to its capitalist character (Lenin, 1917), as the socialist movement had always had an internationalist character, which remained undisturbed until the development of the Soviet 'socialism in one country' approach of the late 1920s.

counteracted by the efforts to build a separate socialist bloc, which involved around one third of the world population. Only during the last decade of the 20<sup>th</sup> century and early 21<sup>st</sup> century did institutional developments fully push again in the same direction as technological progress, as had happened during the latter stages of the planetization process in the late 19<sup>th</sup> century (and early 20<sup>th</sup> century). This brought a strong tendency towards a deepening of international economic relations, which is usually called the globalization process.

As might be expected, this (second) globalization process again triggered the development of anti-globalist movements. These new anti-globalist movements may now be described as having a progressive character, because they look forward to exploring the potentialities of the new communication and information technologies, which, because of the way in which it is developing, the globalization process is considered to be unable to explore for institutional reasons. The basic idea is similar to that of socialism: to implement a better distribution of wealth and income and to free human beings from the uncertainties caused by unemployment, poverty, disease, disability and old age. The main difference is that the problem now appears not at the national level in highly developed countries, but at a world level. As a consequence, the institutional changes that appear as necessary must be implemented at a world level. Their direction must be the transformation of the ultraliberal market capitalism that dominates the economic system of the world economy and the introduction of a new concept of world governance.

The decisive issue is the nature of this world governance. Should it be some kind of global planning, or just a tighter collective control over some basic activities that, facing no restrictions whatsoever, have been used in favour of a few beneficiaries? Although no general and definitive answer can be presented, it is possible to suggest that the final result of the action of anti-globalist movements will be of the second type.

A subsidiary question follows concerning how to achieve collective control over world market capitalist forces. It actually involves a technical question and a political (institutional) question. Is it reasonable to expect that the new communication and information technologies which have been extensively used to deepen the market capitalist mechanisms at a global level, may be used efficiently to curtail some of them, again at a global level? Is there a global political will to negotiate and agree upon the implementation of effective global institutions to tighten collective control<sup>1</sup>? Although no general and definitive answer can be presented, it is possible to suggest that technical problems will be easier to tackle compared to political and institutional issues. The existence of one single indisputable, overwhelming superpower has contradictory and dubious effects in terms of the

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<sup>1</sup> It is worth recalling that the recently globalized economic and social processes have not significantly challenged the nation state and its governance (Hirst, Thompson, 1996). Thus, any effective global enforcing mechanism, designed to control or regulate world market capitalist forces, will only be feasible under the political will of at least the national governments of the main countries.

ability to achieve world governance mechanisms. On the one hand, it may be easier to negotiate (probably enforce) a practical institutional solution, yet, on the other hand, such a solution may never be implemented, if the relevant economic interests of the superpower find no benefits from curtailing the world market capitalist forces.

To sum up, we believe that the effect of anti-globalist movements during the 21<sup>st</sup> century will probably be quite similar to the effect of socialist movements during the 20<sup>th</sup> century: they will probably bring significant transformations to the world economy as a whole, but it is quite unlikely that they will change its predominantly market capitalist character.

### 4.3. The need to preserve natural equilibria

We argue that the main problem that may threaten the role of market capitalism as a global economic system, and force it to make radical adaptations, is the need to preserve natural equilibria.

Although the disruption of natural equilibria as a result of human activity<sup>1</sup> is a phenomenon that is already well known in traditional economies<sup>2</sup>, the potential for such disruption greatly increased after the beginning of modern economic growth.

Fuelled by the systematic incidence of innovations<sup>3</sup> on economic processes, modern economic growth has led to significant changes in production and the consumption structures of the world economy, which have resulted in high levels of economic activity, an improvement in economic and social welfare for a significant part of the world population and high rates of population growth. However, at the same time, it has accumulated some deleterious effects on natural equilibria, either as a simple consequence of the size effect or as a result of the introduction and diffusion of new technologies. The problems which may arise from the size effect result from the potential to overcome critical thresholds in the use of natural resources and may be illustrated by the process of desertification<sup>4</sup>. The problems which may arise from the introduction and diffusion of new technologies may take the form of an increased use of some natural resources, or the introduction of a new substance. The problems which may arise from the increased use of some natural resources due to technological innovation may be illustrated by the greenhouse effect<sup>5</sup>, while

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1 Of course, natural equilibria may be disrupted without human interference, as has been proved by the mass extinctions of existing species in the history of the ecosystem.

2 Historians have identified cases of soil exhaustion because of overintensive cultivation or irrigation.

3 Of course, innovations are to be understood in the broader sense of the term, encompassing technological, organizational, institutional and geographical aspects.

4 The result of overintensive cultivation needed to feed the increased population in semi-desert regions such as Sahel.

5 The greenhouse effect illustrates the potential effects of the intensification of some activity that already existed in the natural cycle of one substance. It is the result of an increased use of the carbon existing in the lithosphere (under the form



the problems which may arise from the introduction of a new substance, again resulting from technological progress, may be illustrated by the depletion of the ozone layer<sup>1</sup>, just to mention some of the most conspicuous examples of recent worrying global environmental processes.

Our awareness of the fact that modern economic growth had partly proceeded through the disruption of natural equilibria, which amounts to a destruction of natural resources, may be dated back to the 1960s. The deleterious effects of the widespread use of DDT was the first of many instances of the disruption of natural equilibria by the action of mankind to be denounced (Carson, 1962). Such awareness coincided with the peak and end of the long phase of exceptional economic performance in the world economy, which had started in the aftermath of the Second World War. As explained in Van der Wee (1987), several facts became apparent which drew attention to certain imbalances in the growth model implemented during the postwar period and pointed to the inevitability of environmental management within economic processes: firstly, the demographic transition taking place in the developing countries in the 1950s and 1960s led to a population explosion and a parallel rapid increase in the urban population; secondly, the fall in food production per capita in developing countries and the increasing demand for food even in highly developed economies led to the intensification and extensification of the use of land; thirdly, the diffusion of industrialization processes in developing countries and the growth of mass consumption in the highly developed capitalist economies led to an extremely rapid growth in the world consumption of minerals and energy.

The report published by the Club of Rome in 1972 (Meadows et al. 1972) proved to be decisive in spreading the idea that the existing model of economic growth was too wasteful in terms of natural resources and would lead to their exhaustion, given that the Earth is a closed system<sup>2</sup>.

In spite of significant negative reactions from mainstream economists, such as Nordhaus and Samuelson (Oltmans, 1973), the report of the Club of Rome led to the development of more sophisticated approaches for tackling the specificities of environmental issues within the neoclassical paradigm. From a theoretical point of view, the problem arises from market failures, similar to those already considered in subsection 2.1: most of the services provided by the environment to the economic system – the use of certain natural resources, some renewable, some

of coal and, combined with hydrogen, oil) for combustion purposes, causing too high a concentration of this substance at another point of the natural cycle, namely the atmosphere (under the form of carbon dioxide), an unwarranted increase in its average temperature, and global climatic changes. The solution involves restoring the usual level of the increased activity, and replacing it by some other means of obtaining its economic supply (in this case energy).

- 1 The depletion of the ozone layer illustrates the potential effects of the introduction of a new substance. It is the result of the use of chloro-fluor-carbons, an innovation of the 1920s, which interact with the pre-existing ozone layer in the upper atmosphere that has played an important role in protecting living beings from excessive ultra-violet radiation from the Sun. The solution involves replacing the deleterious substance by some surrogate that (hopefully) has no negative side effects.
- 2 To be more precise, the Earth as a natural system receives energy from the Sun. The amounts and forms of the energy that the Earth receives from the Sun are more or less constant and cannot, of course, be changed by human action.

non-renewable, and the recycling of the waste produced by economic activities – are free from a private point of view, although they are scarce from a social point of view. Thus, individual economic agents, operating under market mechanisms, tend to shift certain elements of social costs onto nature (Kapp, 1964). From a practical point of view, this calls for some kind of state intervention. Such intervention may take two different forms: internalization of the social costs of using the services of the environment; enforcement of command-and-control (CAC) rules.

Mainstream economists naturally favour the implementation of indirect economic instruments designed to internalize the social costs of using the services of the environment. Ideally, this leads the private decision-making agent (e.g. polluter) to make their decisions by acknowledging all the costs and benefits involved and induces adequate choices in terms of productive methods and consumption options. The instruments for such an internalization of costs are basically monetary incentives, such as charges, taxes, subsidies and deposit-refund schemes, which do not curtail individual decision-making and still rely on information about prices and budget constraints for decision-making. The creation of artificial markets where economic agents may buy or sell their rights to use environmental services (e.g. rights for actual or potential pollution) is also often presented as a valuable instrument for fostering the efficient use of those environmental services<sup>1</sup>.

This approach optimistically concludes that, within the strict scope of the economic process, market capitalism is able to create institutions equipped with effective instruments, tackle environmental problems and reach socially desirable environmental objectives.

While internalization of the social costs of using the services of the environment, albeit involving some measure of state intervention, still respects the schemes of market capitalism as closely as possible, the enforcement of command-and-control procedures clearly implies the use of command schemes, which replace market capitalism. Thus, the issue of how deeply the need to preserve natural equilibria will force market capitalism to change begs the question of the relative efficiency of internalization of the social costs of using the services of the environment versus enforcement of command-and-control procedures<sup>2</sup>, as well as the question of the real importance of the disruption of natural equilibria as a result of economic activity<sup>3</sup>.

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1 More radical perspectives even suggest that private property of all natural resources may solve all environmental problems.

2 For an evaluation of the use of different instruments in environmental policy see OECD (1989).

3 It may be said that the pessimistic view on the matter is based upon the inevitability of exceeding the planet's carrying capacity as both population and the level of economic activity grow: the only solution is to place an immediate limit on population and pollution levels, as well as to impose a cessation of economic growth (Meadows et al, 1992). The optimistic view sees initial scarcity triggering sufficiently powerful reductions in population growth and increases in technological progress that bring future abundance, without deepening scarcity (Simon, 1981).

None of these questions can receive a clear answer given the present state of knowledge. Nonetheless, a few further comments on the role of scientific and technological research and development and the contribution of ecological economics would seem relevant<sup>1</sup>.

Scientific and technological research and development is often seen as the way to solve environmental problems, as it is expected to find ways both to reduce the consumption of natural resources and to reduce waste and pollution emissions (and allow natural recycling processes to evolve). It is true that the systematic use of science as a basis for innovations in the economic processes represents the epochal innovation of modern economic growth, as Kuznets (1966) pointed out. However, the profitability of research and development in this field is far from certain. This corresponds to another situation of market failure: social costs and benefits do not coincide with private costs and benefits. Thus, a certain amount of state intervention, in the form of incentives for research and development, must be implemented. Moreover, it is likely that the new technologies are dearer than the old ones from a private point of view. Again, some state intervention, now in the form of incentives to use nature-friendly technology, is called for.

Ecological economics has tried to provide an alternative approach to the relationship between the economic system and the natural system. The basic perspective of ecological economics underlines the 'biophysical foundation of economics'. Economic processes are seen in their physical dimension, meaning that they evolve in a biophysical context. Thus, the economic system has to be analysed as an open subsystem of "a finite, nongrowing, materially closed ecosystem" (Daly, 1973) and must accept the biophysical constraints on economic growth (Jackson et al, 1993). Such constraints arise from the fact that the economic system, having a biophysical nature, is subject to the inexorable laws of thermodynamics, namely the conservation law and the entropy law (Georgescu-Roegen, 1971)<sup>2</sup>. Thus, in the long run, economic processes will tend towards a thermodynamic equilibrium, i.e. they will stop as a result of the lack of any 'available' energy. Now, the relevant question is how to retard this fading out process. Which policies may induce effective anti-entropic processes to sustain the ecosystem? One basic aspect is that environmental management must rely on preventive actions implemented in keeping with the precautionary

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1 Although perhaps less relevant, it is impossible to ignore some facts related to the past performance of economic systems in the field of environmental protection. As market capitalism is the economic system that has prevailed in the development of modern economic growth both at the national and world level, it cannot escape serious criticisms for neglecting the environmental problems arising from the economic processes it regulates. However, socialist centrally planned national economies (for instance the Soviet Union) do not fare any better when seen from this perspective. They also fostered high levels of economic growth and social welfare based on strong industrialization processes and showed no significant concern for the impact of their economic and technological choices on the environment (Comolet, 1999).

2 The conservation law refers to the fact that, whatever the form of energy used and produced during the transformation process, the total quantity is conserved. The entropy law concerns the 'quality' or 'availability' of energy during any process of transformation, which degenerates from a state of low entropy, high quality, high availability and low dissipative energy to a state of high entropy, low quality, low availability and high dissipative energy. Thus, the transformation process is irreversible (unless some additional energy is provided).

principle<sup>1</sup>, since the efforts to treat waste and pollutant emissions themselves involve entropic processes. On the other hand, this perspective is also much less optimistic regarding the role of technological progress in overcoming environmental problems. Technological progress may improve 'environmental efficiency' and may lead to new regulatory mechanisms, but the same physical limits apply to technological processes.

This perspective accepts the concept of sustainability inherent in the Hicksian definition of income (Hicks, 1946), namely the constancy of capital, but applies it to total capital, meaning produced capital plus natural capital. Moreover, it tends to look at the two types of capital not as substitutes but as complements; consequently, each part must be kept intact (strong sustainability) in order to guarantee sustainability (Daly, 1994).

As a consequence, this approach tends to support direct regulation and enforcement mechanisms, rather than indirect economic instruments to develop an economic system of production and consumption whose material inputs and outputs not only provide for the needs of human society, but are also compatible with the natural material recycling capabilities of the global ecosystem (Jackson et al, 1993).

## 5. Conclusion

Which economic system is capable of providing an adequate response to the potential contradiction between the need to preserve natural equilibria and the desire to improve the well being of mankind (especially its less fortunate part) ?

As pointed out above, it may be argued that market capitalism is unavoidable as the basic economic system of a complex and dynamic world economy through its being the one that came to exist as the consequence of modern economic growth. On the other hand, it may be argued that the problems caused by environmental disruption and depletion are no different from those arising from the need to supply public goods already found in subsections 2.1, 3.1 and 4.1.

However, it may also be argued that the degree of state intervention needed to achieve the synthesis between natural equilibria and market capitalism may be more intense than the one that has usually existed in peacetime, more permanent than the one that has exceptionally existed

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<sup>1</sup> This concept was introduced to deal with marine pollution in the early 1980s, but, as the areas in which there is irreversible environmental harm are increasing, its importance in terms of ecological policy has also increased (Dethlefsen et al, 1993). Preventive approaches rely on attempts to reduce pollution by reducing the production of waste at the source, rather than attempting to treat pollutant emissions after they have been generated.

during wartime, and more global than ever before<sup>1</sup>. Hence the title that we have chosen for our paper.

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<sup>1</sup> Moreover, it may be argued that the combination of increased security preoccupations arising from terrorist activities, increased global governance resulting from anti-globalization movements, and the increased government intervention in economic life needed to promote the cooperation that may solve the ecological problems, may significantly reduce the role of market capitalism in the global economic system.