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Manageable and Unmanageable World Crises (Climate and Economy)

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This study examines the two world crises, climate change and the financial meltdown, followed by an economic depression, and compares how they can be managed. Climate change has set in and to most probability it will cause immensly big damage, human suffer and loss. Still, for the time being international community is not suited to avoid it. In contrast to this, huge efforts, including international co-ordination, are made to combat the financial and economic crisis. This comparison is astonishing: why is there a sudden solution for the one, and why there is not for the other?

As concerns climate stabilization the main question is whether present mainstream economics, interest relations, moral patterns and international institutions give an adequate framework for the solution. The economic crisis also raises basic questions concerning mainstream economics and economic policy: Can bankers' greed be tamed or it is part of the system? Are crises inevitable? Can better co-ordnation on the international level solve the problem? The combination of the management of the two crises is also examined: whether is there a green way out from the crisis. But to save the world economy via a green energy revolution also seems to be a questionable enterprise.

Keywords: financial crisis, climate crisis, manageable, unmanageable, green way out, regulated capitalism, temporary taming

Was the Earth a bank, it has been
already bailed out long ago.
(the Greens)

1. Climate crisis

In the Intergovernmental Panel on Cimate Change of the UN experts of almost all countries participate on an equal parity. The credibility of the reports is underlined by the fact that they are published when unanimity was reached. Reports of the year 2006, and especially that of Feruary 2007 contain very depressing statements. The most importants ones are as follows (IPCC 2007):

- Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations

- The observed widespread warming of the atmosphere and ocean, together with ice mass loss, support the conclusion that it is extremely unlikely that global climate change of the past fifty years can be explained without external forcing, and very likely that it is not due to known natural causes alone.
- Anthropogenic warming and sea level rise would continue for centuries due to the timescales associated with climate processes and feedbacks, even if greenhouse gas concentrations were to be stabilized.
- Both past and future anthropogenic carbon dioxide emissions will continue to contribute to warming and sea level rise for more than a millennium, due to the timescales required for removal of this gas from the atmosphere.

The expressions *very likely* and *extremely unlikely* have not yet been occured in the IPCC reports; they express a new stage of scientific conviction. A figure from the referred IPCC report demonstrates temperature variations in function of the world economy development. What does matter here is that even without any antropogenic green house gas emission surface temperature slightly increases, by 0,3 centigrade in this century. Warming up has already become „self-sustaining". Temperature increase due antropogenic emissions may vary from minimum 1 to maximum 6,5 centigrades.

We have started a natural process what we cannot stop anymore. Positve feedbacks emerge: with warming up ice cover is melting, the albedo of the Earth decreases, warming up further increases. The melting of permafrost also has begun which results in escaping to the air of an immensly big volume of methane from the frozen swamps. Its green house gas effect is many times more than that from antropogenic activity. With the slow warming up of the seas methane is also coming up from the organic residuals on the bottom of the seas.

What is at stake now is the measure of warming up. Scientists should like to stabilize temperature increase at 2 centigrade. Above that the damage of ecosystems becomes irreparable and warming up unhaltable. We must have in mind that average surface temperature during the ice age was only 5 centigrade lower. Let us imagine, what could happen with a similar change in the opposite direction. (And forecasts for the end of the century vary between 1,5 and 6,5 centigrade.)

The Stern Review on Climate Change (Stern 2006) in October 2006 revealed completely new facts concerning the costs and benefits of climate stabilization. Earlier, leading politicians and economists thought that mitigation should not have two much sense because there would be winners of the climate change as well and costs of avoidance should be extremely high in contrast to gains. The report proved that even Nordic countries would be losers after an initial gain and benefits of mitigation far overtake costs. Namely,while prevention should claim for roughly 1 per cent of World Gross Product yearly, in the lack of it 5 to 20 per cent of WGP would be lost in every year for ever. (For illustration: the costs of prevention of a

world epidemic should be roughly l per cent of WGP, or world wide advertisement costs make up the same amount.)

Observing the principle of auditur et altera pars, let us mention some opposing views[1]. These views are forming three groups: those which question the fact of climate change itself, others object to its antropogenic character (Hans Labohm, Fred Singer), and, thirdly, which do not deny the antropogenic climate change but not rank it as first priority for mankind. Björn Lomborg Danish environmentalist lately emphasises that the the envisaged costs of climate stabilization should be spent on supporting poor countries, combatting famine or AIDS in Eastern Africa (Lomborg 2007).

For many, like myself, James Lovelock is the author number one in climate affairs. He evaluates the possible consequences even more heavily than the Stern Review. While the latter says that consequences might equal as those of a world war, Lovelock adds that as a global nuclear war. According to him half a billion, but maximum one billion people could survive climate change by the end of our century. In an interview given by him to Rollingsotne.com, he explained that even if mitigation measures will have a high profile, the warming up could not be stopped (Goodell 2007). Earlier, Lovelock thought that the massive use of nuclear energy, replacing the fossils may save mankind but in this interview he saw no solution.

At last, the question of adaptation should be mentioned. As concerns nature and species, many think that it is possible, but the process of climate change will accelerate and all this will take place in such a short time, that genetic adaptation would be absolutely impossible. As concerns people and nations, the richest will have better chances to survive but the poor will vanish.

1.1. The theoretical framework of analysis[2]

We should examine whether economics and social sciences in their present form are apt to manage the problem. The climate change raises serious challanges in the following aspects:

- intra and intergenerational unequities,
- intertemporal unequities,
- regional and inter-national unequities,
- incertainties,
- risks.

The centrepiece of mainstream economics is welfare economics. Welfare economics is designed to be implemented within one country, supposing one

[1] This is based even if we only want to follow the criteria of science by Karl Popper (namely, it is scientific, what can be questioned).

[2] This point roughly follows the argument exposed in the Stern Review.

jurisdiction and one decision maker (government) and it is not apt to examine climate change, due to its global character. Its most important criterion is the social welfare function, meaning that welfare is maximal when the volume of goods and services sonsumed by households is maximum. The welfare function also can be interpreted only within one country, besides, it has a serious shortcoming from the point of view of the examined question. Namely, the social welfare function can be maximized at any (!) income distribution pattern. But implementing the social welfare function for the effects of climate change it would be unacceptable to defend mankind from the natural catastrophe in the way that only global effect matters, the differences in damages suffered by the single countries were neglected.

The ruling economic paradigm is equally unapt to manage uncertainties and risks. To the contrary, it is embedded in positivism, trying to quantify everithing, not taking account that economics is not a discipline without values. But analysing the effects of climate change, uncertainties and risks have an enormous importance. In most cases effects and damages to come can be fixed only within wide limits and given with a high coefficient of uncertainty.

The concepts which can bring us to our purpuse, to find the proper framework for the analysis, are externalities, public goods and free riding. It is because,

- the climate itself is a huge, global common good, the service of ecosystems,
- climate change is the world's biggest externality so far (never has been seen something similar),
- but climate stabilization policy is also a public good (as nobody could be excluded to enjoy its benefits),
- and free riding emerges with an all decisive weight: countries that make no effort will also enjoy the benefits of climate mitigation policies.

As a result, these concepts should be reinterpreted, implemented in global dimensions:

- The climate change as a global externality means that we should cover not only damages caused to others in our country and now, but we are responsible for damages caused in other countries and other continents, to other generations and in the future as well.
- Climate mitigation as global externality means that success can be achieved only by international co-operation, and the free-riders are the countries who do not participate in it. The international community has not any enforcing powers so far on the dissident countries and efforts will be fruitless while institutional solution will be born to include all the countries.

One of the many theoretical problems appears in the field of discounting. According to the well known method used in business calculations comparing and unifying costs and benefits accruing not in the same time are made through

discounting. Future benefits and/or expenses are expressed in present value with the help of discount rate and they can be compared this way. It seems to be evident that this method should be used in case of climate change as well, if we want to compare damages accruing in different places and times and costs and benefits of a climate stabilization policy which similarly appear in different times and places. But heavy methodological problems appear because the traditional discounting is apt only for comparing small scale differences by one trayectory, while in case of climate issues there are separate trayectories (countries, regions, affected by the climate change in a very different way) and separate time dimensions (present and future generations) and differences are huge.

All this is raising underlying moral and ethical problems: how to evaluate in the present damages caused unintentionally to other countries in the future; are we fully responsible or each country, each generation and each age should solve its own problem. The discount rate chosen depends on the moral answer given to this question. If it is high, it delivers a message that today's value of the damages accruing in the future is low, and as a result, it has not too much sense to make high sacrifice today to avoid it in the future and other places. And vice versa: if the discount rate is low, today's efforts should be increased to avoid big damages in the future.

Surveying the moral facade of our age we can state that consequentionalism, the background ethics of welfare economics has become the ruling orientation: it is the result, which does matter, the way through which it is achieved, is not important. The concept based on rights, truth and freedom, embracing the moral side of the processes as well (see at Amartya Sen), remains in minority. From the point of view of our topic the moral concept of sustainability and stewardship should rule that everybody should take into consideration the effects of decisions on others, the nature and future, this way enabling us to follow a successful climate stabilization policy.

1.2. International climate agreements

Climate stabilization can be pursued on international, regional, national and company levels, but individuals also can make a lot in favour. With a view on the above mentioned conditions, the most efficient instrument is the conclusion of international agreement. All we know the Kyoto Protocol and its shortcomings. If there is not a binding and general international agreement, which comprises all the important countries with high emissions, the phenomenon of free riding appears, the system is „leaking" and is inefficient[3]. Countries with obligation in the Kyoto

[3] To illustrate this: if Great Britain unilaterally stopped all its energy power plants from one day to the other, after 13 months world emission of CO_2 would be on the same level as before, because it would be eliminated by the growing emission of China. But if Great Britain ceased to emit any CO_2, it would take 2 years for the world to reach the same level by the same reasons.

process undertook a 5,2 per cent average reduction. And those with the biggest emissions did not subscribe it. According to a general position, held by all countries a 50-80 per cent reduction is needed by the middle of the centrury. As a result, the situation is very gloomy.

The mitigation measures may be of economic, administrative, technological or other character (e.g. an economic policy supporting local development vis-á-vis globalization; such a policy would yield in lower transport intensity and hence, lower CO2 emission).

Within the frames of an international agreement the best instrument for achieveing the mitigation targets would be the emission trading scheme. It can be realized both within the Kyoto Protocol and the EU has also created its own quota system. However, the international implementation is doomed, because there is no agreement, on what principle the qoutas should be distributed between the different states. (There are many principles, and each represent different interests which widely contrast. E.g., qoutas should be distributed proportianal to the former emissions, or the number of inhabitants or the energy intensity of GDP, etc.)

The main frontline is between the US and the emerging countries, headed by China and India. (By now, China has reached the total emission of America.) China and India rightly argue that their CO2 per capita emission is only a fraction of the US. (Namely, 3,3 and 1,1 tonne respectively, vis-á-vis the 23 tonne per capita of the US.)[4]. Besides, they emphasize the historical responsibility of the developed nations in forming the present situation[5]. In contrast to this, America argues that obligations should be equally shared. What has been achieved during the negotiations within the UN is the principle of shared but differentiated responsibility (although not equal). A special case is Poland, which, on the one hand, has huge coal deposits, on the other, due to historical reasons, it does not want to be depending on Russian oil and gas.

The all-decisive climate negotiations will take place in Kopenhagen, end of 2009. Many call it as the most important negotiation in history so far. Perspectives are a bit better as in the USA itself there is a definite progress towards climate protection. As concerns the US and West-European attitudes, the main difference is that while West Europe seems to consider possibilities in consumption reduction as well, the USA follows an active climate policy; it wants to defend climate by doing something, not by doing nothing (or less).

A new element in the mitigation policy is the suggestion to implement game theory in the climate discussions. A conclusion which underlines this is that climate agreements for long periods are not productive because countries which do not sign

[4] It should be mentioned that Malaysia, Indonesia and Brazil belong to the countries with highest emission, if land use is taken into consideration.

[5] USA is responsible for 29,3% of the total CO_2 emissions since 1850, the European Union for 26,9% and the G8 for two thirds. The respective figures for other countries are: China 8,3%, India 2,3%, Brazil 0,8%. See: Schwägerl, 2009.

the agreement become fixed in the position of free riders. In the spirit of game theories during the continuous negotiations the dissidents should be kept under permanent pressure and renegotiations may yield the result.

1.3. The energy sector and climate change

At last, some interrelations between energy and climate change should be highlighted. If scarecity was a real danger, environmentalists would have nothing to do just sitting and waiting how the market settles the problem. It should price fossil fuels according to scarecity and no enforcing measures should be needed. But this is not happening. New discoveries of large deposits make expected exploitation periods longer and longer. Besides, coal deposits seem to be enough for centuries, and the worst option for environmentalists would be, if China and India changed for coal, using it directly, without liquifying. Oil prices are sometimes soaring, but this is not a manifest of scarecity. (Take e.g. the two decades between 1980 and 2000, when oil prices gradually sank from 65 to 15 dollars, while the world permanently chatted about scarecity.)

However, the solution lies in price increase. Final consumption prices of energy and raw materials should be increased in each year in the same measure as the productivity of these resources improved in the previous year[6]. This could limit the increase of energy use and promote its productivity. A good example of the viability of the idea is pricing labour in welfare states: price and costs of labour gradually increased during decades, parallel with labour productivity. As a result, demand for labour decreased, and the case of structural unemployment appeared in the developed countries.

The frequent reference to low price elasticity of energy holds true only in the short run. In the long run the demand adjusts to prices, energy and fuel usage decreases, travel and transport habits change, demand for environmental friendly infrastructures increases.

Another basic problem is the production of renewable energies: whether they could replace fossil fuels and on what prices. Theoretically, renewables are undepletable and the only limit of their implementation is their price[7]. And their pricing depends on the actual price of oil and whether externalities caused by fossil fuels are internalized. And this brings us to the issue of social cost of carbon. From among the many calculations and variations let me refer to those I have herd recently in the concluding conference of the so called petrE research of the English-German Foundation (petrE 2009). To comply with the 20 per cent GHG reduction target up to 2020 in the European Union, a €53-68 per tonne of carbon price would be needed, but the 30 per cent reduction would necessitate a €180-200 price.

[6] This is an idea by Ulrich von Weizsäcker.

[7] In chapter 4. of this study I shall refer to the practical obstacles of the unlimited use of renewables.

We know the many (environmental and food market) problems of the biomass as well. As a result, the question seems to be more complex as it appeared at the beginning.

Investment bankers
may have nothing to gain
but their chains
(Karl Marx, inverted)

2. Financial and economic crisis

Alternative economists have been warning at least since 20 years that stock exchanges and international money markets are blowing ever increasing bubbles which are not covered by real values, bond and stock prices are artificially inflated and the bubbles can burst out at any time. Well, this happened.

The volume of derivatives grew to an uninmaginable huge sum, $596 trillion, which was only 142 billion in 2002. Gross World Product is a tiny sum compared to this, 54,3 trillion in 2007, only tenth part. Another base for comparison: total capitalization of firms on the New York stock exchange was $25.000 bn[8]. Warren Buffet, the richest investor of America calls derivatives as weapons of mass distructions. Besides derivatives, hedge funds also contributed to blowing the bubbles.

A substantial part of derivatives is made of CDSs (credit-default swaps). These instruments „allow investors to separate the risk of interest-rate movements from the risk that a borrower will not repay. For a premium, one party to a CDS can insure against default." The Economist rightly calls this financial „innovation" gambling on ruin. Since 2001 their volume grew above $60 trilllion[9]. Derivatives increased the weight of banks and financial institutions in an immense proportion; their share of the American stock market climbed from 5,2 per cent in 1980 to 23,5 per cent in 2007 and makes ¼ of all profits[10].

As concerns the concrete causes of the financial meltdown, securitisation of the mortgages played a key role in it. The big mortgage banks, to share risk, securitized loans, bundling them into packages and then sold them to outside investors. These investors got the monthly payments as interest payments on their bonds. Both sides gained: the mortgage bank could write the obligations off its balance and the investors got assets that yielded more than government bonds.

[8] Der Spiegel, 40/2008, p. 28. (In the original article: $596.000 milliard; in this paper I translate German milliard into English-American billion.)
[9] The Economist, October 18th 2008, p.76.
[10] I.e.

Besides, commercial banks could raise money by securitizing mortgages, instead of the slow, costly business of attracting retail deposits.

The driving force of the housing estate boom was the beleif that the real estate market will continuously enlarge, with increasing prices and occasional individual defaults do not endanger stable repay. But the decline in demand and mass bankruptcies lowered real estate prices and this triggered off a chain reaction of defaults in the money markets.

On 29 September the Dow Jones sank by 776,68 points, an unprecedented decline since its existing. The MSCI World Index fell 840 points between 29 August and 29 September. The total value of papers traded on the stock exchanges of the world devaluated by $10.900 bn in the four weeks preceding 10 October. In the Gulf states stock exchanges suffered a $158 bn loss. Many of the big financial institutions and banks went bankrupt[11].

And that was the beginning of the world's economic crisis. The financial losses were followed by a credit crunch and a mass loss of confidence. Credit squeeze resulted in consequences similar to heart attack in the economy: low demand, massive bankruptcies and high unemployment.

2.1. The visible hand takes over the rule

In the past decades, economics taught that a world crisis like that of 1929-32 could not happen again because national economies co-ordinate business cycles and international financial institutions guard over the safe of international finances. As the melt down began, governments of the leading countries started to help the economy and bail out the banks and financial institutions with an unprecedented haste: they have bought out the shares of banks in trouble, provided them with capital and credit sources, purchased their claims, raised state guarantees for small shareholders, etc. Central banks lowered interest rates to around 1 per cent in a quick and co-ordinated way. Still, the crisis burst out in its full scale with deep economic depression and high unemployment.

The situation is absurd. In the past three decades the ruling paradigm of economics, starting from the Anglo-Saxon countries[12], has been preaching the superiority of market above the state. It has attributed balancing and efficiency increasing character to the market in contrast to the low effficiency and perilous character of state intervention... And now, it is the scolded state, the visible hand that saves the market, tries to improve what went astray due to the market. What is even more, the state becomes owner of the banks that went bankrupt.

In the six months following the burst out of the crisis, $3000 bn has been allocated by the governments worldwide for stabilization and economic

[11] Der Spiegel, 42/1980, p. 114.

[12] Developed by Milton Friedman and the Chicago School and first implemented by Ronald Reagan in the United States and Margaret Thatcher in the UK.

stimulation[13]. To characterize this, the Nobel laureate Stiglitz coined the expression „American socialism", meaning socializing the losses and privatizing the profits. The American governement, besides the $700 bn stimulus package, assumed liability for the $5.400 bn mortgages of Fannie Mae and Freddie Mac and expended further $200 bn for taking under state control the two financial institutions.

On October 8 2008, to start credit flow, the leading central banks of the world took on an unprecedentedly quick, co-ordinated action: decreased interest rates. The Fed increased short term money supply to banks to $900 bn and began to buy the liabilities of commercial banks what never happened before.

2.2. Gambling and greed, or is this the nature of capitalism?

The first comments criticized greed and gambling, dominating the world of finances. Rightly done, as all derivative deals are based on which of the parties reckon better future events. It is natural, that Alan Greenspan, the main financial guru of the past decades also has been seriously criticised.

Greenspan presided the Fed for two decades (1987-2006) and not only accepted but openly encouraged those financial market developments and innovations which led to blowing of the bubbles and then to crush. He viewd derivatives as necessary instruments to spread risk. In 2000 he persuaded congressmen to deprive the Securities and Exchange Commission of its right to control the market of derivatives. In 2003 he instructed the Senate that a more severe control of these papers would be a mistake: „Nothing is in favour of that state control would be superior to the self-control of markets"[14]. His main political aim was to provide the American economy with abundant money, he realized the policy of cheap money supply. (In some years under his presidency the leading interest rate was 1-2-3 per cent.) Analysts mention as main causes of meltdown as follows:

- Deregulation and market liberalization: since the beginning of the '80s this was more than a ruling economic dogma; it was even intellectually fashionable.
- Cheap money, cheap credit: this was the official policy of Fed.
- Asian savings: the Asian (mainly Chinese) goods floded the American markets; this was made possible by the huge deficit of trade balance; beside this, the Asian savings appeared on the money markets.
- The culture of gambling (Stiglitz) and irresponsibility became general; they were supported by the financial innovations as „intellectual background"; the system was called „cowboy capitalism" as well (Fukuyama).
- The endeavour to spreading and sharing risk played a decisive role. Greenspan frequently argued with this. The problem is that even if risks are spread, their volume remains unchanged and it is still in the system.

[13] Der Spiegel, 43/2008, p. 29.
[14] Der Spiegel 42/2008, p. 28.

It is worth to consider the case from the point of view of the banking and financial sector. Their strive for independence is an evident motive; to be more than the mere financing agents of the real economy. Let us see, e.g., the background of securitization of real estate mortgages. The classical bank collects private savings by a tiresome work and uses them as backing credit loans. When the bank sold the securitized mortgages to the investor, freed its balance from a negative load and, at the same time, could get income. According to the 1988 Basel agreement, banks are obliged to form reserves for the case if their big borrowers go bankrupt. So it could be understood that they wanted to get rid of the negative items on their balance.

With the passing of time analysis appeared that searched for the basic rules and shortcomings of the system. „Each step on the long deregulatory road seemed wise at the time and was usually the answer to some flaw in the system" – The Economist explains[15]. In 1971 the gold-standard world economy was put an end. Since then, floating currences appeared and to avoid exchange rate risks, they were hedged by currency futures (first in the Chicago Stock Exchange). Today's complex derivatives are direct descendents of those early currency trades[16]. The abolishment of capital controls was a consequence of floating exchange rates. From the late '70s pension funds were allowed to act as institutional investors and began to roam over national borders. In 1999 the separation of commercial and investment banking was abolished. The SEC allowed for commercial banks and insurance institutions to trade in CDSs. These were the main steps on the long deregulatory road which led to the present situation.

A further system-specific cause was the social preference of conservative ideologies. Both Ronald Reagan and Margaret Thatcher favoured the nation of property owners, and on liberalised financial markets it was easier for homebuyers to get mortgages. The American Government backed the borrowing activity of Fannie Mae and Freddie Mac, what is more, in 1977 the US Congress passed the Community Reinvestment Act which disposed that banks should meet the credit needs of the „entire community".

And, at last, the digital techniques and the web created the possibility for the multiplication of financial deals.

2.3. Regulated capitalism or temporary taming?

Many of the critiques began to bury free market capitalism and forecasted a future with accentuated state intervention. However, the French model of state dirigism is not so successful as suggested by some politicians[17]. And what is embarrasing, the

[15] The Economist October 18th, 2008.

[16] It is not an accident that the Chicago School appeared in the vicinity of Chicago Mercantile Exchange.

[17] See e.g. The Economist, October 25th 2008. The state as owner. Re-bonjour, Monsieur Colbert.

political left, all over Europe, does not want to overthrow capitalism, despite economic decline and unemployment around 10 per cent. (What is more, in the 2009 European Parliament elections the Left has been defetead in most countries.)

Most leading economists and heads of international financial organisations emphasize the need of better international co-ordination, arguing that the world economy has become global, while management remained mainly in the competence of nation states. No doubt, this is right. As concerns mainstream thinking, a revitalisation of Keynesianism is spreading. But it does not seem probable that state intervention goes beyond the bailing outs and buying outs of the shares and liabilities of bankrupted banks and financial isntitutions. I am inclined to accept the above analysis of The Economist and a very similar analysis by the Newsweek[18] that the crisis stems from the very nature and logics of functioning of capitalism. Free market logics realy needed those steps on the long road of deregulation. But it should also be admitted that the principles of the Chicago School have frozen into dogmas and lived as intellectual fashion.

A ruling opinion seems to appear from the turmoil: since the Thatcherite revolution and Reaganomics the Western world has experienced a lasting upswing of almost 30 years. This ended with a deep recession, high unemployment and huge stimulus packages of taxpayer money. This is irritating because the bankers, whose greed was one of the causes of the meltdown, now are bailed out. However, all this seems to be a fair price for the past three decades.

My forecast is that of course, we shall have a period of accentuated state regulation, the visible hand may dominate for a while, as the confidence in the invisible hand has weakened. But if world economy was restaured and a new upswing began, we shall tread on the same or similar way as before. It is a misbelief that growth and stability were the normal state of the economy.The cyclical character of capitalist economy is unavoidable.

The most characteristic feature of capitalism is the permanent growth of productivity and supply. The problem lies in the lagging demand. In the 70's an originally thinking Hungarian economist, named Ferenc Jánossy illustrated this with the analogy of a well, which abundantly pours water without stop and cannot be closed (Jánossy 1975). (This stands for the ever-increasing productivity.) The main concern is to find the proper vessels to contain the water. I think, this will not be different in the future. The biggest problem will always be how to increase demand. To stop, choke down and retrain production are contrary to the very nature of capitalism. Hence, regulation and limits cannot have a longlasting role.

[18] Newsweek, October 13th, 2008.

3. Lessons from and conclusions of managing the two crises

The time scale. No doubt, this is the major difference. What happens here and now and with us, is more important than that with others, later and there. Economics calls this time-preference and to compare effects taking place later and in other places uses discounting, counts present value. A similar effect is expressed by the law of decreasing marginal benefit: the more we consume something, the less will be the use of the additionally consumed units.

It is our moral pattern, hidden behind these rules. The idleness and lameness against climate change is a moral issue. In contrast to this, the sudden reaction and activity to combat financial and economic crisis is not a moral issue; decision makers and leaders are not driven by the anxiety towards the fate of small people but they are concerned mostly of their own power and wealth. But in climate policy decisions not realized today do not mean a threat to their power and influence.

Natural and financial capitals. We have still not accostumed to attribute a financial value to natural capital. Notwithstanding that the life supporting services of natural eco-systems make possible our life on the earth. Ecological economists have already long calculated that only the value of the water-cleaning service of the oceans approaches the Gross World Product[19]. According to an actual calculation, the yearly loss in natural capital is 2-3 times higher than the total capital loss due to the financial meltdown (Black 2009).

Asymmetry of interests. Climate change will affect the poorest countries first of all, that are the less capable to protect against it. But the costs of climate stabilization today should charge, first of all, the richest countries (the biggest energy users) and the most powerful industries (energy, car manufacturing, chemicals, road building). The latter make an uncomparably srtonger coalition than the former ones.

Unlike climate change, the finacial crisis affects rather the most developed countries (where the centres of international banks and money markets are located), and the drying out of credits affects everybody. To avoid climate change it is the United States that should make the biggest sacrifices (change in lifestyles, modest housing conditions, less luxurious travels and energy use), therefore the US is the less interested in climate stabilization. In contrast to this, in combatting financial crisis the US is the most interested country, being the mostly concerned one[20].

State intervention. The comparison of the two crises serves as an interesting field for discussing on the character and necessity of state intervention. The standard welfare economics suggests state intervention in two cases: in case of market failure

[19] Evaporation – the formation of clouds – precipitation makes, as a matter of fact, a huge distillation system; this is how nature cleans the dirty water of rivers discharged to the seas and replaces it with clean water, delivered back to the continents.

[20] This held true for the beginning of the financial crisis. After, less developed countries were more affected.

or if politics wants to achieve an income redistribution. Market failure appears in case of monopoly, lack of information or externalities. Climate change is caused by global externalities! According to the theory, externalities should be internalized, namely, if they are negative, the casual agents must bear the damage caused. Due to intervention, the volume of polluting/damaging activity will reduce and social-economic optimum will be reached. All this will be the result of state intervention. Hence, according to the standard theory, to avoid climate change, state intervention is needed, but there is not enough of it.

And what grounds does economic theory give for state intervention in case of financial crisis? To qualify financial damage and loss as externality would be evidently a nonsense, as they emerged as a result of regular market operations, derivatives do have their markets (alas, what a big market!), unlikely the emission of green house gases (because if there were a market of GHG emissions, the emitter should pay the total cost and in that case sould not be there a climate change)[21]. Nor can we speak about monopolies, as the financial cruntch was caused by the cheap credits, available for everybody. And if we dared to be involved in a discussion about the income-redistributive functions of the financial and credit systems, we would be lost in the terminology of a neo-Marxist discussion[22]. The lack of information – in contrast to the previous items – is something to ponder. On the one hand, the digital techniques and informatics create such an abundance of information – especially in finances - , which is inconceivable for human brains. On the other hand, there must be still lack of information, otherwise the crises could not come, there would be foresight. This seems to be a paradox, but it is not difficult to answer it: the capitalism, originating from its nature, is still a system, operated by uncontrollable and unforeseenable market forces in the last instance[23].

As a result, in the case of financial crisis state intervention does not have the theoretical economic grounds, but it happens.

Institutions. The financial crisis has also a global character, like climate change, and the international financial network functions as a hydraulic system: may the pressure change at any point of the system, it can be felt at any other point[24]. Still, it is manageable because the proper international institutions do exist. But the international institutions which are inevitable for an effective climate policy, are missing. Their creation is mostly hindered by the United States which has a counter-

[21] When speaking about externalities, instead of using the regular criteria, it is more simple and suitable to refer to that of Samuelson: an external effect is what the market cannot manage.

[22] Probably there are not many, especially among the young people who know, how the classical Soviet political economy defined inflation: a process, during which incomes are redistributed through price increases in favour of the capitalists. (And this is true!)

[23] A question can be asked retrospectively: could the former socialist central planning be improved by the abundance of information delivered by IT of our age? The answer is probly no: the main deficiency of central planning was not the lack of information but the lack of proper material incentives for good management, technological development and labour productivity via high profits, wages and payments.

[24] An analogy by László Bogár.

interest in this. According to some experts, the lack of institutions can be replaced by the implementation of some elements of the game theory.

Does environmental crisis correlate with financial and economic crisis? Of course, the answer cannot be negative in the age of globalization. But the real question is whether does one of them aggravate the other, or how the solution of one helps the other.

It is evident that in time of economic recession resource use and pollution are less, but this could be considered as postponed demand, which will be satisfied during the coming take off. The question that really does matter is that how an acute, unmanageable and prolonged climate crisis does affect the economy and finances. This is the case we are having now. If environmental degradation will be further worsening, biodiversity suffering further damages, the life supporting capacity of the bioshere will further weakening. The apparent result of these processes will be the worsening of human health and decline in human production and activity. Let us refer again to the statements of the Stern review. In case of BAU 5-20 per cent of the Gross World Product will be lost, in every year, until the endless future. We cannot exlude that such a development could favour financial markets. Namely, one of the most important effects of climate change will be the immensely growing risks and uncertainties. (Financial markets have already acquired experience in implementing CDSs to share risks.) On the other hand, risks and uncertainties (due to increased and more frequent weather irregularities) will be reflected in the large volatility of exchange rates and prices.

But let us ask the other question too: How a successful and effective climate policy should affect the economy and the financial system? In practical terms, such a policy would mean the squeeze of the supply of energy and natural resources (or replacement of the fossil fuels with renewables). A switch off of the market mechanism is hailed only by biassed and badly informed environmentalists. The changed conditons could be imagined as a further limitation of the business sphere. In the welfare state public education and public health are out of the reach of the competitive sectors (and evidently, the traditional state adminsitration and services too). From that time on, part of the resource management and use of the environment will also be out of the competitive sector. (The share of this part is decided by the carrying capacity of the ecosystems.)

Rosa Luxemburg said at that time that the natural character of the capital is expansion. And when all the white spots will disappear on the world map, namely the expansion will be limited, something must be happened. And the first world war broke out. Wars, time by time unleashed by the Americans can be viewed as susch expansions, but this holds true for the enlargements of the European Union as well (which are by no means expressions of sympathy of the citizens of Northern and Western Europe towards the newly acceeding countries). (But the above mentioned analogy of water containing vessels by Jánossy also can be adopted to this situation.)

Theoretically there is a possibility for the capital to expand not in an extensive way (occupying new territories and resources), but increasing output from the same amount of inputs, developing technology and improving efficiency. But in this case it is the new consumer markets which are lacking... (Life is so complicated, but everything would be simple if the Say dogma was viable. Namely: that every production creates its market.)

The US objects to any element of a climate policy which involves in some way or another a kind of limitation (in resource use, pollution emission, consumption decrease). The Americans want to do something in favour of the climate and not not-doing: plant forests, improve resources efficiency by technological development, replace fossil fuels by renewables, etc[25].

In principle, the economy may develop dinamically even at stable or decreasing energy and resource supply[26]. But there are too many escapes. (Let us take the case of the new oil deposits to be exploited soon under the ice of the Nordic See; it is made possible by the climate change itself!) If scarecity occured in fossil fuels, with oil prices permanently increasing and costs of substitutes remained very high (including the different, environment frinedly uses of coal), it would be easy to take global climate stabilization measures. But amidst of energy abundancy it is practically impossible.

4. Is there a green way out of the crisis?

Soon after the financial crisis had broken out, a new idea appeared, how to save capitalism: the idea of Green Rescue, green energy revolution. UN Secretary General Ban Ki-moon called the cause „a green New Deal that would rebuild and reshape the economy of planet Earth in ways reminiscent of the programs that President Franklin Roosevelt used to revitalize the economy of the United States during the Great Depression" (Dickey–McNicoll 2008). The great political leaders of the world have taken up this cause: British Prime Minister Gordon Brown, French President Nicholas Sarkozy and – at that time presidential candidate – Barack Obama agreed with connecting the necessity of fighting climate change and combatting the economic crisis. Obama promised to invest strategically $150 bn over 10 years in a clean energy-economy, help the private sector to create 5 mn new green jobs, to manufacture plug-in hybrid cars, to invest in renewable energy projects, to enhance energy efficiency, to develop low-emission coal plants, next generation of bio-fuels, etc. The Japanese Prime Minister Taro Aso talked of „a great opportunity for new growth" and vowed that „we will achieve the low-carbon

[25] The production of biofuels is reaching very high levels in America. This was one of the reasons of the food crisis in the world economy at the beginning of 2008.

[26] This is the case, when the proper word to be used is „development". „Growth" should be used for an economy with increasing energy and resource supply.

society that is compatible with growth ahead of the rest of the world". According to MITI, the Japanese industrial ministry: building a new industrial infrastructure is needed by banking on more efficient use of energy and innovative technologies. Gordon Brown said that „…climate change should not move to the back burner of international concern…. I beleive the opposite is the case."[27].

Leaders of world organisations also declared their preference towards a green energy revolution and combining issues of energy, climate and economic crises. Robert B. Zoellick, President of the World Bank admitted that „It needs to interconnect energy and climate change."... „A new multilateralism is needed. It should reach beyond the traditional focus on finance and trade. Energy, climate change and stabilizing fragile and postconflict states are economic as well as political issues... A newly started $6 bn World Bank program on climate stabilization aims at completing UN negotiations with practical projects (technologies, forestation and adjustment)"[28]. „The solution needs a globally coordinated crisis management package, which aims at developing the new generation of low consumption and low exhaustion cars and creating green jobs" (Kemal Dervish Chief Administrator of UNDP) (Dervis 2009).

On the other side, no such ideas have been voiced by the most renowned economists, such as Stiglitz, Krugman, Summers or Phelps. Neither leading figures in international affairs, such as Pascal Lamy, James Wolfensohn, or George Soros made similar statements.

Huge energy saving projects have been started in the Western countries, with a special view on insulation of buildings,where most of the savings potential lies. These will result hundreds of thousands of new jobs. The most ambitious programme of all is that of President Sarkozy, launched in October 2007. The „Environmental Grenelle" consists of 268 recommendations, including 40% drop of CO2 emission from building heating by 2020, constructing 2000 km new TGV tracks by 2020, charging extra tax on fossile energies and offering tax credit on renewables, etc. In some respects Germany is the most progressive country in the EU, with a federal scheme to insulate the entire housing stock and an investment in wind power which puts the UK (with far greater wind resources) to shame (Monbiot 2008). Germany is specially well developed in the world market of green technologies.

A transformation in energy industry from fossils to renewables both could serve climate stabilization and giving new impetus to technological development that could overcome economic crisis. Historians of economics, such as Harold James of Princeton pointed out that each depression could be overcome by either a new wave of technologies or formation of new structures. The agricultural crisis in the 1840s was ended by the industrial revolution; the Great Depression in 1929-32 was followed by the development of services; the big boom of the end of last

[27] I.e.
[28] Newsweek, Special edition 2009.

century was a result of dotcom revolution; the last boom was due to the financial innovations in the housing estates sector[29].

Despite all this, the International Energy Agency is pessimistic. In recession consumption and energy prices go down and that discourages the development of alternatives. The development of alternative energy sources would require enormous amount of capital, with a distant payoff. Presently, with tight capital and credit and low oil prices private investors do not put billions in a distant clean energy future. At $140 oil prices alternative programmes pay off. At $70 development of alternatives make less sense, at below $40 not at all. Market volatility undermines long-term planning. According to the calculations of the IEA to reduce carbon-dioxide emissions 50% lower by 2050 requires investment of $45 trillion – now! Anyhow, if governments are funding for banks, why not for green industry, too (Dickey–McNicoll 2008)?

The US has a special interest in the green energy revolution. Michael T. Klare has published an article about the topic in the Special Edition of Newsweek under the title: „Time to Kill the Oil Beast". The heavy oil dependence of America might give an important impulse in the green overhaul of the world's energy industry, says the author. The US gets 40 percent of its total energy from petroleum and 23 percent from dirty coal. 60 percent of America's oil is obtained mostly from hostile countries. The US spends $50 bn a year in military costs on protecting its petroleum interests in the Middle East – yet it spends far less on trying to actively replace oil. Both this and a growing concern over global warming requires a large increase in reliance on reneable energy sources. Reducing oil's role as America's primary energy source (from 40 to 25 percent) and increasing the share obtained from renewables and hydropower to the same percentage (up from from 6 percent) by 2030 should be an ambitious goal (Klare 2009).

If we look at the character of the stabilization policies and packages of the leading countries, there are no signs of such a development: the overwhelming majority of the public money goes for the bailing out of banks, revitalizing the existing structures, promoting new car purchases with scrapping old ones and the development of green energy and industry is only marginal so far.

The British stabilization package is one of the world's least green, „Britain has allocated 7% of total spending to environmental causes, compared with 12% in America and 83% in South Korea."[30] But even the Chinese spent significantly more on the green cause. This is, why the Economist calls it a „Keynesian splurge". In absolute terms, China allocated $220 bn on low carbon investments, while America only $100 bn, Korea $31 bn and Germany $14 bn.

In July 2009, Green Alliance, a British NGO published a booklet under the title „From crisis to recovery – New economic policies for a low carbon future" (Hewett 2009). In the foreword its leading idea is formulated as follows: „The initial

[29] Figyelő, 2009. január 1-7.
[30] The Economist July 18th 2009.

step in response to the financial crisis, advocated by most governments around the world, and coordinated rather remarkably between nations, was a major public-spending stimulus... most if not all contained a 'green element'... But that phase is now over, and expecting the next wave of investment in green initiatives to come simply from the public purse is over-optimistic. The major investment drive for a low carbon economy must now come from the private sector..." The publication puts special emphasis on how to raise private money for greening the British economy and energy industry.

Earlier, I have surveyed the opinion of leading politicians and economists of the world concerning the green rescue. A special notice should be made to Angela Merkel, Chancellor of Germany. For many years, she had been a pioneer of green thinking and policies, a fervent agent of climate stabilization. However, with the break out of economic crisis, she followed an economic stabilization policy, pushing green considerations completely into the background. Germany has become the dirty man of Europe – writes George Monbiot in Guardian, evaluating the Poznan conference of the UN in December 2008: „It was Merkel who demanded weaker standards for fuel efficiency in cars, Merkel who pushed hardest for a €40 bn bail-out of the motor manufacturers, Merkel who now insists that the big cement, steel and chemicals companies are allowed to get away without paying" (Monbiot 2008).

What are the chances of the green rescue in the long run? Are the objectives of reducing green house gases 50-80 per cent by the middle of the century feasible? Nate Lewis of the California Institute of Technology made interesting scenarios for 2050. He supposed that world population will be 9 bn at that time, per capita world GDP increases on an average yearly 1,6 per cent and emissions should be decreased by 80 per cent. In case of a business as usual scenario present world energy use of 14 TW should grow to 45 TW. But with an unprecedented improvement in energy efficiency, 500 per cent relative to current US levels worldwide, world energy claim would be only 28 TW. To keep to the 450 ppm of emissions's concentration to be able to stabilize warming up at 2 centigrade, 26,5 TW of the 28 should be carbon free. So this is the task ahead of a green energy revolution, if consumption would not squeeze (Lewis 2004, Begley 2009).

One option is nuclear energy. If 10 TW of the 26,5 should be produced by nuclear, a new reactor should be built in every second day in the coming 40 years. „If you use every single breeze that blowes on land, you'll get 10 to 15 terawatts" (Begley 2009). But let us be realistic. 27 per cent of the land surface is good for producing wind energy. From the global potential, 4 per cent of the earth's surface could reasonably be used and that would provide 2 TW. To get 10 TW of solar energy by 2050, we would need to cover 1 million roofs with panels every day from now until then. As concerns biomass, its land requirement is even bigger. 20 TW by biomass needs 31% of total land area of the earth.[31] The main conclusion of Lewis is

[31] Lewis gives data concerning geothermical energies and carbon sequestration as well.

that „It's not true that all the technologies are available and we just need the political will to deploy them... we need Nobel caliber discoveries."

And as concerns my conclusion: maybe, there is no technologicl solution for the climate change. As a result: reducing energy use and consumption in general, becomes inevitable. And for that, the political decision would be extremely difficult.

The first angel blew his trumpet,
and there followed hail and fire, mixed with blood,
which fell on the earth; and a third of the earth
was burnt up, and a third of the trees were
burnt up, and all green grass was burnt up.
(Revelation 8)

5. Summary

The leading politicians of the world are aware of the dangers and risks to be brought about by climate change. However, solution is made almost impossible by the character of the problem: climate stabilization, as well as the climate itself, are global public goods. And as a rule, the phenomenon of free riding appears. Free riding can be managed in one country or in the frames of a regional integration, but not in international dimension, where enforcement is missing. This needs an institutional solution. Welfare economics does not provide an adequate frame to manage the issue because the social welfare function can only be interpreted with one jurisdiction and within one country. Nor discounting could be implemented in the long run and among different countries, and standard economics cannot manage risks and uncertainties to set in with climate change. Similarly, a very huge problem is the burden-sharing in climate mitigation, which raises responsibility for the past and the future, not to speak about divergent interests and different power relations. All this is caused by consequentionalism, the moral background of welfare economics and the consumer society. The solution supposes different ethics: the moral concept of sustainability and stewardship should rule that everybody should take into consideration the effects of decisions on others, the nature and the future, this way enabling us to follow a successful climate stabilization policy.

In contrast to this, financial and economic crisis can be managed within the ruling paradigm, with the existing institutions. True, there is a contradiction between the overall globalization of economic and financial processes on the one side and the overweight of nation states in economic decisions on the other, but the activity of international financial organizations can be improved. Business cycles could not be eliminated, they are part of the system, similar to greed and and the rush for profit. The beleif in the allmightiness of markets has been shocked and the visible hand of the state now plays an important role, but after stabilization economic liberalism will return. The general defeat of the political left in the elections to the European

Parliament at the beginning of this summer is a clear proof that people do not want a basic change in the ruling capitalist system.

An apparent solution would be to connect the two crises: giving a technological impetus and innovation to the stagnating economies by launching a green energy revolution, developing the renewables. No doubt, that would both help the economy and contribute to save the climate. However, thorough calculations underline, that the total energy demand of a business as usual extrapolation could not be satisfied with renewables and nuclear energy. The massive decrease of energy demand is inevitable. And it is difficult to imagine, how to achieve. As a result, unless basic scientific breakthroughs happen in energetics, our world could not be saved.

Financial and economic crises will set in time by time, they are unovidable, but they will be solved. Climate change will be only once, but it will not be avoided.

References

Balzli, B. – Brinkbäumer, K. – Hornig, F. 2008: Der Offenbarungseid. *Der Spiegel*, 40.

Balzli, B. – Fleischhauer, J. – Horning, F. 2008: Der Schwarze Herbst. *Der Spiegel*, 42.

Balzi, B. – Horning, F. – Jung, A. 2008: Die Krise nach der Krise. *Der Spiegel*, 43.

Begley, S. 2009: We Can't Get There From Here. *Newsweek*, March 23. http://www.newsweek.com/id/189293v

Black, R.: *Nature loss dwarfs bank crisis*. http://news.bbc.co.uk/2/hi/7662565.stm

Dervis, K. 2009: *Egy világ, egy válság*. HVG, 2009. February 7.

Dickey, C. – McNicoll, T. 2008: A Green New Deal. *Newsweek*, November 3.

Goodell, J. 2007: The Prophet of Climate Change: James Lovelock. *Rollingston*e, November 1. http://www.rollingstone.com/politics/story/16956300/the_prophet_of_climate_change_james_lovelock

Guterl, F. 2009: How to fix a climate emergency. *Newsweek*, April 27.

Hewett, C. (ed.) 2009: Green Alliance: *From crisis to recovery – New economic policies for a low carbon future*. Green Alliance, London.

IPCC 2007: Climate Change 2007: Synthesis Report. http://www.ipcc.ch/ pdf/assessment-report/ar4/syr/ar4_syr.pdf

Jánossy, F. 1975: *A gazdasági növekedés trendvonaláról*. Magvető, Budapest.

Glüsing, J. – Schepp, M. – Spörl G. 2008: Finanzkrise. Stützen oder stürzen. *Der Spiegel*, 42.

Kedrosky, P. 2008: Blame Greenspan's Internet-age hype. *Newsweek*, October 27.

Lewis, N. 2004: The Future of Power and Energy in the World. *Caltech*, http://online.itp.ucsb.edu/online/colloq/lewis1/pdf/Lewis.pdf

Lomborg, B. 2007: *Cool it. The Skeptical Environmentalist's Guide to Global Warming*. Random House , London.

Lovelock, J. 2007: *The Revenge of Gaia*. Basic Books, New York.

Klare, M. T. 2009: Time to Kill the Oil Beast. *Newsweek*, Special Edition.

Monbiot, G. 2008: Germany: the new dirty man of Europe. *Guardian*, Dec 12. http://www.guardian.co.uk/commentisfree/2008/dec/12/greenpolitics-poznan

petrE, 2009. *Environmental Tax Refom in Europe*. prtrE, Kings College, London, July 15-16.

Schwägerl, C. 2009: Umwelt. Lichtjahre entfernt. *Der Spiegel*, 28.
Stern, N. 2006: *The economics of climate change.* URL: http://www.hmtreasury.gov.uk/media/4/3/Executive_Summary.pdf
Zoellick, R. B. 2009: A New Kind of Globalization. *Newsweek*, Special edition.