Equity, Wealth and Growth: Why Market Fundamentalism Makes Countries Poor

R. Pestel[1]

F. J. Radermacher[2]

---

[1] EU Commission, Brussels († April 18, 2003)

[2] Forschungsinstitut für anwendungsorientierte Wissensvearbeitung (FAW), Helmholtzstr. 16, D-89081 Ulm, Tel. +49 731 501-100, Fax +49 731 501-111, e-mail: radermacher@faw.uni-ulm.de, http://www.faw.uni-ulm.de

Contents

In memoriam Robert Pestel

European Commission, Brussels
German Chapter of the Club of Rome
Brussels Chapter of the Club of Rome
Collaboration on the second World Model of the Club of Rome
Member of the Advisory Council of the Web-Site Deutschland.de

This paper is in memoriam Robert Pestel who died on April 18th, 2003. Robert Pestel was a never-waving fighter for a better future. Extending the work of his father, Eduard Pestel, and acting in the tradition of the Club of Rome´s work and thinking, he dealt with the global problematic and how to organize a better future for the whole world and its people. He used system-theoretic models to get a better feeling for the dynamics of development and innovation processes, and he networked with hundreds of people around the globe in a most intensive way. He was very stubborn in following his visions and had an unbelievable energy until the end.

Within the European Commission he shaped the thinking about sustainability, its economic, social, cultural, and ecological aspects and the correspondence to a global contract. He also understood the power of the internet and other communication networks for the good and the worse, he was an engineer that took the rebound effect into account, and was always active to have civil society take over a greater role and responsibility in shaping the world´s future. Making the best use of the power of insight, networking and communication was one of his biggest hopes. Consequently, he believed in the value of information and open debate. And concerning communication, he was willing to involve science and formal argumentation systems as much as subsymbolic approaches, a reference to emotions and reflections via different forms of art.

The following paper is all through inspired and shaped by his thinking and visions. He was a great co-worker, initiated many projects, achieved a lot and fought until his final hour when he was taken away from us much too soon. He was a great person. We miss him.

Acknowledgements

This paper builds on work inspired by Robert Pestel and Mike Mesarovic. The work took in part place in the context of the EU-sponsored TERRA 2000 project, that provided an environment for many valuable interactions. On a day-to-day basis the paper gained considerably from co-operation with PD Dr. Thomas Kämpke (FAW Ulm) who went deep into the mathematical issues, Dr. Thomas Schauer (FAW Ulm) who managed the TERRA 2000 partner groups from the side of the FAW, Markus Stark (FAW Ulm) who did a great job in data analysis, and Prof. Mike Mesarovic (Case Western Reserve University, Cleveland, USA) who was helpful in matters of orientation in the context of the TERRA 2000 project and other related work (cf. also the related references). Thank also goes to Prof. Wolfgang Eichhorn, TU Karlsruhe, for his continuous support, particularly concerning the issue of growth and investments, Prof. Joachim Voeller, University of Ulm, for his help concerning issues of national accounting and the role of order and frameworks for markets and Prof. Rolf H. Möhring (Technical University of Berlin) for frequent communication on many of the issues dealt with. Finally, my colleague Prof. Paul Stähly, University of St. Gallen, supported this work with a considerable effort. This intensive support built on years of joint work before and covered particularly the year 2003.

Abstract

The paper is intended as a contribution to the present scientific and political debate of how to organise markets and societies. Particular, the question is for the role and design of social systems. The paper tries to analyse how the relation is between social balance and a potential for growth. In particular it tries to give an answer whether the market fundamentalist position or propaganda is right, that deregulating societies always more and rewarding always stronger the top economic performers makes a country richer, while eventually everybody gains.

The insides obtained are as follows. Starting from planed markets and communist or socialist regimes, the market fundamentalist position is indeed right. However, when inequity in societies becomes greater, from a certain point on, more inequity doesn't make a society as a whole richer. To the contrary, it makes it poorer. However, the perspective of the rich and poor in a country on this issue may differ. A high inequity can be so attractive for the richest, that this can even outperform a reduced absolute wealth of a country. As a result, there is a moral hazard issue involved.

What was said here concerns rich countries where the (relative) growth potential per person is generally very limited. The situation for countries that try to catch up is different given that they start from a low level, try to improve and can leap-frog or copy. Differentiation between fully developed and developing countries concerning the interplay of equity and growth is therefore another major issue in this paper. Still, on the long run there is no chance for those states to become rich, if they not achieve a reasonable equity. Here states like Taiwan, Singapore, Korea or today China performed or perform better than most states in Latin America and Africa. These states are those with the highest inequity and make it obvious, that a high inequity keeps countries poor.

To summarise, processes of deregulation and the distribution of income from the poorer to the richer parts of society from a certain point on make countries poorer. This may already be the case with reforms we follow at the moment in Europe, particularly in Germany as an answer to globalization pressures. That is not to say that given the present form of globalization, we have so much a choice to do different. It only means that the argumentation schemes to deal with the situation should be more differentiated if we want to have a long term perspective. This is discussed in the paper under the concept of a double strategy.

In particular, the paper should make clear that social balance has not primarily to do with direct money transfer to the poor. This is one legitimate aspect. But much more important for making a country rich is the aspect of organising a society in a way that all citizens get a proper education, have access to proper health care and to needed resources and do have access to a world class infrastructure. As a side aspect all that has a consequence: that people in rich countries have a high life expectancy, i. e. become old and have a reasonable live when doing so. Its people becoming old and having a decent live what characterises rich and successful societies. All those societies naturally have a strong socially balanced structure in the way described, involving substantial redistribution and co-financing via the taxation system and the social transfer system from the richer part of the society to the rest. Also, all those societies are open and democracies.

Introduction

The paper reports on work within the EU-sponsored project TERRA 2000 (www.terra2000.org) and is part of a series of 6 major contributions from FAW members to that project (see www.faw.uni-ulm.de). In this paper, we are going to answer a number of quite crucial questions that are important for the right understanding of the interplay between the economy, the social system and society as a whole. We examine, why proper frameworks of markets are so important for the well-being of society and why a **primate of policy over the economy** is needed. Against such a background, the paper intends to give some new insights into the topics of **equity, wealth and growth.** This includes a special view onto the **nature of social balance** and makes it clear why a market-fundamentalist position of unregulated capitalism is wrong and makes societies poor.

To arrive at those results, it is first discussed in **Chapter I** why the **equity issue** or why **social balance** has gained in importance in policy debates as a consequence of **globalization**. Globalization actually **acts as a force to reduce social spending in developed countries.** There is an intellectual debate and there are good arguments from economic theory **why it can indeed make sense for almost everybody that there is a considerable differentiation in income levels.** However, does that mean, that always more differentiation is an advantage? This then leads to the question of how much differentiation is too much?

In this respect, new insights into **negative impacts of too much differentiation** are given in **Chapter II.** This includes a connection with the so-called **ultimatum bargain game**. Also, a major possible **moral hazard problem** with regard to interests of the richer part of a society relative to the rest is identified and discussed. In fact, the interest of the richer part of a society sometimes seems to go more into the direction of a higher differentiation then into the direction of a higher GDP per person, this means that the interest of the richest 20 % of a society and the other 80 % concerning societal organisation and development and concerning economic growth often may not to be identical. In this context, we discuss the issue of **meta-decisions** concerning the technological direction, societies may take, to demonstrate, how **special interests of the elite may shape the course** into their favoured direction. Markets have little say in tat issue.

Chapter III then goes deeper into the issue of how to **measure equity**, referring mainly to an approach developed at FAW in the TERRA 2000 context. This measure is build around an **equity fac-**

tor, that relates lowest incomes to average income. There is empirical evidence, that all rich and fully developed countries have a high equity, namely an equity factor between 45 and 65 percent. This corresponds essentially to the observation, that in rich countries, the richest 20 percent of people taken together always have more than 35 percent of all income but never more than 50 percent. The question then is why that is the case? The paper will in Chapters IV and V deal with these two questions.

In **Chapter IV**, we first argue about **how much equity is too much**, i. e. is counterproductive to the wealth of nations. Referring to the newly introduced equity factor, equity levels greater than 65 % turn out to be critical. There is quite some insight, why that is the case. For this, an argumentation can be used, that also neoliberals might follow, namely that there is then not enough potential to reward special or excellent contributions, risk taking etc.

In **Chapter V**, the opposite question is dealt with. The paper gives some new insight to the fact, that if **inequality is going too far**, i. e. if the equity level is less than 45 %, then this turns out to be counterproductive to the wealth of nations. It is much harder to see, why this is the case and the respective insight may therefore be regarded as a major contribution of the paper, particularly as this result is clearly different from the picture, that **market fundamentalists**, who dominate the debate since quite some time, use to communicate .

The argumentation developed contains a new look onto the issue, what **social balance** is all about. Social balance here is identified as essentially to consist in investments into **health, education and infrastructure provision for all people and old-age care** with the aim to make a country rich by fully developing all its **human potentials**. Because if a country wants to be rich, it has to take care that all its people are able to compete on a premium level, internationally. This implies a good education, good health, access to needed resources and full access to powerful infrastructures. If one puts it into other words, social balance embraces what liberals often call "**to care for equal chances**". To care for equal chances also for the poorer part of society also has to do with organising **self-defence capabilities** of the poorer 80 % of society against powerful interests, and this requires **health and education far all**. Obviously this has to involve a lot of co-financing and redistribution of wealth usually organized via the taxation and social transfer systems. Exactly this is, however, what makes a society rich in the sense that good educated, healthy people are at the core of value creation when seen in an international perspective. Such people will create value, however, at the same time, they will get old. Of course, from this results the challenge for all rich societies to organise and finance a decent living for huge cohorts of elderly people. So **education**, **health**, **infrastructure and old age pension systems are at the core of social balance** and are needed to make countries really work.

To achieve a balanced state, a nation has to activate **many teaching, medical, administrative and other capabilities** on a high level of skill and professional training, accordingly. This, in turn, requires many well trained people with considerable income active in the respective segments of society, paid to handle all that. As the numbers in this paper show, the equity of such a country then can hardly fall below 45 %. Naturally, the poorer part of society cannot finance a full participation in the sense described from shares of its own income alone. So there is a **redistribution dimension, and thus a social element required**, that is typical for all **social market economies**.

Does all that mean that all countries and their elite's have a natural tendency to increase social balance, if the equity level should happen to be below 45 % in order to make their country richer? **Unfortunately, this needs not to be the case**. Because the high relative share of total income of elite's in poor countries can raise them to a high absolute level of wealth, even in comparison to the rich people in rich countries. And on top, cheap personal services are available to them to an extreme extent, by far not achievable in rich countries. Changing that would mean loosing a lot of advantages resulting from high **relative, not necessarily absolute levels of income** within a society. Because while absolute income may increase, if the country gets richer, **relative advantages may get lost.**

Consequently there is a **moral hazard** hidden in the distribution issue, when seen from the point of view of the elite of a poor country. So there seems to be a deeper reason why in certain parts of the world, market dynamics did not lead to more balance and not made the respective countries considerably richer. It is a moral hazard on the upper side of the power structures which is able to and seems in some cases to be motivated to **perpetuate inequality**. Unfortunately, an unequal situation with a relative bigger share of the richer part is often preferred by those with great influence to a more balanced situation which in total could make a country considerably richer.

So all in all, reasonable (in)equality levels seem to be **placed between 45 and 65 % equity**. Here, the US with 47 % is the only rich country with an equity factor below 50 %, which is the **poverty definition line** of the European Union, while the Northern European Countries with equity levels between 50 % to 63 %, Japan with 62 % and Austria with about 65 % (for older data) turn out to be "top" performers concerning equity.

The findings reported may be important for the political debate. Particularly the close connection between **a high level of public investment into the development of human potential and an equity level higher than 45 percent** seems to be crucial. This is related to the **issue of education** that today is at the core of the **policy debate in Europe** about a future orientation, particularly, since the **present misled form of globalization** is actually forcing European states to cut back massively on their social systems and turn their education systems more into a pyramidal structure. This is, from the point of

view of the authors unavoidable at the moment to survive under present globalization forces but will make the European countries and their citizen poorer, in comparison to what alternatively would have been possible without such pressures.

Chapter VI adds another dimension to the topic. It asks for an **"honest" GDP measure** and, consequently, an **"honest" measure of growth**. Today's GDP includes, for instance, "cannibalisation" effects as positive contributions. The debate also refers to **hedonic accounting by the US**. Taking together, the insights developed support cautiousness when interpreting numbers.

In Chapter VII, we ask for a **fair recognition of all peoples´ contribution to value creation** of a country, also of those people whose contributions today are not counted as value creating within the GDP (for instance, mothers staying at home caring for their families). Taking this perspective, a lot of "misinterpretations" concerning the higher wealth and growth potential of the US economy with its comparatively low equity value become apparent. Also, the recent drop of value of the Dollar relative to the Euro make things look more realistic. Again, all these observations remind us to be careful when interpreting numbers. There are many traps in data interpretation to be aware of .

In **Chapter VIII**, we argue that the growth potential in front-running countries is eventually limited to maybe 3 percent a year, where a rough average of 1.5 is most often realised. Arguments are given, **why more is practically not to be expected**, if not a **hedonic accounting** is used or special effects make a difference. One such effect is the special role of the US as **"safe heaven"** for money all around the world and with the dollar as the world's most important reserve currency. We will show that in order to understand principal **growth limitations** in fully developed countries, a split of a country into a segment where **technology can drive growth** and a segment where **technology essentially doesn't help for growth**, is fundamental. This is also true for the more standard differentiation of high-level and minor jobs (the bulk of jobs available).

As a maybe particularly valuable insight, it is discussed that a smooth growth in developed countries needs a **circulation or pumping of money**, where money has to flow from the technology-backed side of the economy to the primarily human-backed side, and where income shares between high-level and low-level jobs have to be accepted and reproduced.

This corresponds to a scheme where the productivity gains on the technology-backed side are **translated in a balanced way** into wage increases of about the same percentages everywhere in society. **Progressive taxation and social transfer systems** play a major stabilising role in this context. They also help to generate decent jobs of a type, where technology doesn't increase productivity much. If balanced wage increases can be achieved there is a reasonable potential for growth, otherwise **block-**

ing often takes place and **society gets stuck,** maybe even without growth at all. Change concerns the relative size of the two principal groups within a society mentioned and the shares between high-level and low-level jobs. There is not much that can be done concerning the respective shares on short notice. Consequently this sets a close limit to growth on the long run if a balanced development is not achieved. This has immediate consequences for the crucial issue of **what jobs are available** and how is the **employment situation**.

Taking all considerations together, in Chapter IX, the **equity, wealth and growth** issue is dealt with comprehensively. Here the interplay between growth and equity is crucial. This issue is often wrongly posed in literature by looking at all countries simultaneously. In this paper we make clear that there is a **fundamental difference between fully developed and not fully developed societies** concerning growth potential. Because not fully developed societies have certain options to generate growth that fully developed societies have not. They can do **extension processes** by bringing in more people (e.g. from agricultural sites) and more material input and they can **leap-frog**, particularly via high investments in building up infrastructures, companies etc. This offers countries in development a potential for a high growth rate up to 10 %, though often they fail in this respect, for instance due to **bad governance and/or corruption**. But this high potential is directly connected to the fact of those countries being relatively poor. Therefore, it makes no sense to compare those countries to rich countries with respect to growth potential. And from what was said it follows, that if those countries want to become rich, e. g. have a high average GDP, on the long run they have to invest into sufficient - but not too much - equity, in particular, in the form of the full development of all their **human potential**. China, India, and Southeast Asian states do much better in this respect than most African or Latin-American states. Therefore, they in general perform better and more steadily in their development processes.

If countries are rich, not much can be gained from further excessive investment and there are hardly any extension processes possible or socially acceptable any more. Also on top, being so rich, 1 % growth on average income is often more in absolute terms than 10 % growth per person in a country in development. Consequently, growth of average income in a rich country can essentially **only result from technical or social innovation** which is very complicated to achieve and very expensive. Therefore, growth rates (of average income) are quite limited.

If both groups of countries are separated we see that countries that catch up can make up to 10 % growth, particularly if the frameworks are right and governance is in order. **Not to be a fully developed democracy** at that point seems sometimes to be an advantage. When combined with an eco-social **Global Marshall Plan** including co-financing of developing countries as advocated for in this paper, opportunities for high growth rates of all such countries are obviously good. This can also be learned from the **EU extension processes**. Unfortunately, most countries in development do not make

it, in spite of this huge potential. Many of them have no growth at all because of **bad leadership** and/or an **unfavourable form of integration into the world market**. And often, they are "robbed" by powerful actors world-wide in close co-operation with part of the poor countries' own elite that “steal” via different forms of **corruption** from their own peoples' future. A clear separation between **economically leading countries** (all are democracies, all have a comparatively high equity) and **catch-up countries** is therefore mandatory at this point if one wants to understand better the interplay of equity, wealth and growth.

In **Chapter X**, finally, the observations made are projected onto the actual **EU extension process to** middle and south-east European (MOEL) countries. What **equity situation** is to be expected for the extended EU, what **growth potential** can be seen and what **policy lines** should the EU follow in its extension process, for instance, concerning **co-financing volumes** and where best to invest the money. From the point of view of this paper, **more co-financing, when done in the right way, would be helpful and make Europe richer**. Results from a little study of numbers are given.

In the same line, it is argued that the rich world could do much more today to have the whole globe develop into a better, more peaceful and much wealthier direction, compatible with sustainability and peace. This could be achieved by **extending the logic of EU extension processes** to the whole world as a development model. This would reflect the **Balanced Way** or **Ecosocial Model** to the future referred to in this paper, maybe the only way for a peaceful and sustainable future of the globe and certainly the way to create a global "**economic miracle**", compatible with sustainability. Some hints to a recent **Global Marshall Plan Initiative**, related to this work, and strongly backed by now by many political and other leaders, is mentioned. More on that issue is given in a separate TERRA report. Also, a book on this issue will be published in July 2004.

Concluding remarks and References close the paper.

I. The social issue in times of globalization

The question about the relation between **equity, wealth and growth** is an important policy issues, particularly in Europe, where **social market regimes** embedded into **open democracies** are the standard approach to organize society. Of particular interest for Europe, also in competition with other parts of the world, is the issue of **equity and growth for highly developed (rich) countries**, i. e. counties with a **high average GDP (wealth) per citizen.**

In times of globalization, much of the political debate in rich countries nowadays centers around the aim or need to **reduce social spending.** This is because of globalization countries nowadays have to compete heavily in rather unregulated global economic environments against cheap labor all around the globe, because public budgets are drained out via globalized market processes (need to reduce taxes for globally operating enterprises, international competition in labor markets, privatization within the public sector etc.). One hope then is that by cutting back social spending, **people will be motivated to work harder, so that there is more growth generated**. In particular the US is often taken as successful example for this kind of approach. This was certainly true before the breakdown of the so-called **New Economy and the Financial Market bubbles**. Arguments against social spending often come down to the position that **"honest work has to be better rewarded**".

Particularly since the collapse of the communist system in the Eastern Block and the Soviet Union, **arguments for reducing social spending have gained momentum**. For there is no longer a political philosophy and alternative in place which has to be outperformed, particular from a social point of view. Since the victory of market economies over communism, a crude type of **market-fundamentalism has evolved as a powerful philosophy**, for some even as a kind of **new religion**. One of its strongest manifestations is the so-called **Washington Consensus** [39], ruling the credit policy of the International Monetary Funds (IMF) and other international donors of support for less developed countries with partly disastrous results [39, 55, 56, 75, 89]. Though the **recent collapse of the financial markets** and the extreme cases of **betrayal by insiders**, that became apparent there, have changed the picture some what, there is still a tendency to see failures as a result of individual irresponsibility and misbehavior, not as a systemic element inherent in market fundamentalist regimes.

A great reluctance against socially motivated co-financing is particular obvious concerning the **organization of the world-wide economic system**. This is best seen in the general (selective) **free-market approach**, dominating the overall logic of the WTO. In a sense, this is a **least-commitment**

design for the global economy, as social, cultural and ecological aspects of the economy in general and of trade in particular are not systematically addressed within the WTO, but have been delegated instead to other international institutions and to states, however under a frame, that motivates cutting back, not increasing social spending [11, 27, 47, 54, 55].

The market fundamentalist promise is that a global deregulated market and, as a consequence, more deregulation in the highly developed countries, will, in the end, make us all richer, at least with respect to the average GDP - avoiding the distribution issue. **The paper shows that this is wrong** and adds to argumentation of others in this direction. But the market-fundamentalism propaganda was and still is very successful and we all have to pay a price for its success.

Market economies or free markets?

Market economies consist of frameworks and competition. The political issue for the future is, what type of market economy, that is what type of framework, is best to make the world rich, protect the environment, care for social balance and peace among cultures. The breakdown of the East Block should have been interpreted as a victory of social market economies, not of free markets.

Mistakenly, the break down of the communist world was positioned as a victory of free markets. This was a great success of a manipulative public awareness management. That made a few people richer but the world poorer than it need to be and generated many of the avoidable problems of the last decade that we now have to deal with.

For more information on the issue, also the link to **Adam Smith** and his position, see [5, 9, 12, 13, 14, 16, 20, 21, 22, 25, 39, 42, 44, 45, 55, 58, 59, 61, 64, 67, 68, 74, 75, 76, 77, 79, 80, 82, 83, 84, 85, 89].

Concerning a reduced social spending many actors today seem to believe that **the less social spending**, **the less regulation**, **the better for society.** The market-fundamentalist credo often also reads as follows: **"The lower the equity, the higher the growth potential"**. Following this kind of logic, cutting back on social spending is positioned as the only way to generate more growth. And if the growth then doesn't come, the reaction is to cut back even further. Market-fundamentalism seems to believe, that a low equity in the end turns out best for all, even for the poorest ones in society and world wide, because all people will profit, in the end, from the high growth it argues will result from implementing a free market approach. Some people therefore really seem to believe that even the poorest, properly informed, would choose the market-fundamental route and reduce social spending.

It should be said at that point that this is an extreme position and that in the economic literature, particularly in classical textbooks, including the origins going back as far as to **Adam Smith** and to Nobel Laureates in economics, such as P. A. Samuelson, A. Sen, J. Tinbergen, J.E. Stiglitz and also again in

recent times there are quite some claims to the contrary, see the references given above. Such claims ot the contrary say that, from a certain point on, more order and more social fairness can help to have more growth and have a society developing better. The debate is more or less inconclusive - for some more references, particularly concerning the issue of growth, see also [12, 13, 15, 16, 17, 19, 25, 38, 44, 45, 46, 48, 58, 61, 64, 66, 69, 70, 75, 78, 79, 80, 88, 89]. More balanced voices became stronger since the **collapse of the New Economy** and the **scandals on the world financial markets** in the context of the **breakdown of the financial bubble**. The same is true after the recent collapses in Latin America, following IMF interventions [75, 89]. In this context, **George Soros** is a particularly valuable reference [69, 70] given his detailed insight into the working of the world financial markets. These events made it obvious, how **limited the so-called collective intelligence** of those market systems is, how much these systems require as basis **moral or ethical or human capital**, they cannot produce themselves and how much these systems are **misused by insiders for their own profit**.

In this paper we will consequently show that it is really a **balancing issue**, that we deal with. That means the following: (1) if there is too much equity more openness and less regulation is needed, but (2) if equity is too low, things turn the other way round. And interesting, it is not so, as often thought, that the market fundamentalist approach in any case provides more total wealth than any other approach. If this was true, arguments against a market fundamentalists rigidity could, at most, be drawn from the distribution side. How is the "bigger cake " distributed, does everybody gain more than before or are there losers? Unfortunately, distribution in market fundamentalists regimes might be so unbalanced, that the poor may loose in the absolute sense not to speak about the relative sense. Where the loss is systemic. But in fact, the picture concerning the market fundamentalist approach is even worse than mere distribution issues would suggest. There is less wealth created in this approach and this “smaller cake” is than even more unevenly distributed, so **the poor loose double**, while the **rich may still win**, at least from a relative point of view, though the country as a whole turns out poorer as it needs to be. In a sense, this makes life much easier. Because once a certain differentiation of incomes is given, the aims of higher growth, more wealth and more equity **go hand in hand** and enforce each other. They **do not** block each other. Things therefore are quite nicely from an **ethical point of view**.

While the authors agree that in the present set up of globalization social spending must be reduced, this is not, because it is the right long-term solution or because this makes us all, or at least our societies as a whole, richer. Rather, in a **double strategy** [54, 55], we are forced to follow a wrong route in order to compete successfully in wrongly organized global markets, though as a country, we get poorer this way as would be the case under a more balanced order as part of a better global framework. Consequently, **the fight is for a better global order**, while at the same time trying to adapt to a nasty Status Quo as intelligent as possible. This is a fight against a crude market-fundamentalist position, as

made clear in this paper. The **mega-philosophy** [40] of free markets, above all, serves the most powerful in society – but even this is not clear in a longer term perspective and taken sustainability and security issues into account. And the price for our global development processes today, motivated that way, is too high. **There are better alternatives**. The paper will go into some of those issues.

What do the numbers tell? If one tries a mere statistical approach to "equity and growth", the results are very inconclusive. Also, if one tries a correlation between the equity levels and growth rates of states, the results make little sense. As will become clear later, this is because totally different countries with respect to growth potential, namely fully developed countries and countries that try to catch up, are looked at simultaneously. **Both such categories of states** have, however, completely different growth potentials, and **can therefore not be compared**. These are different worlds. Therefore, they have to be considered separately, as will be done throughout this paper.

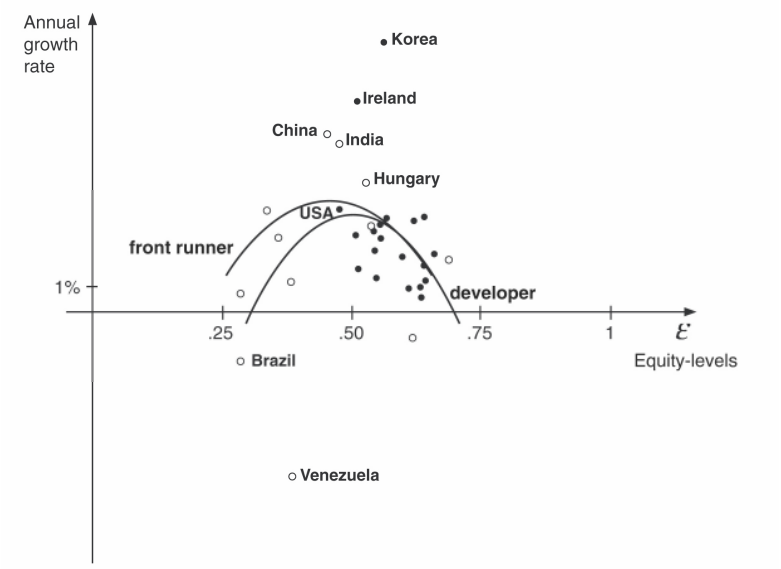

Fig. 1 Equity and growth data of front runners (black) and catch-up countries (white) with separate best-fit parabolas. The parabola for the front runners has its maximum value of 4.441 percent growth at $\varepsilon = .4470$. The parabola for the catch-up countries has its maximum value of 3.996 percent at $\varepsilon = .4959$. (For definition of ε, see Chapter III; note that the respective best equity values reported in Fig. 1 are larger than 0.44 %)

To point to the differences mentioned, notice that **growth rates are high in China** as an emerging country, they are much **lower but still high in the US** as a highly developed country. (Here, the **"honesty"** or "**comparability"** of the growth rates is a topic in itself, cf. Chapter VI). Developed countries make between 0 and 3 % growth in general but on average are better then the developing world, though developing countries have a much higher growth potential, which, however, in most cases is not realized, due e. g. to **inadequate governance structures**, **corruption** or **unfair global**

control, for instance, via financial global markets and international debts, that can never be repaid. **Democracy** seems not to be the central issue in this context, as the route to success in countries such as Korea, Taiwan, Singapore and China demonstrates. As will be pointed out in this paper, particularly in Chapter IX, this may be a strange picture for some observers, but has a deeper reason, often overlooked when dealing with the issue.

Actually the interplay between equity and growth is quite different when looking either into (1) **front running developed states** (which essentially are all democracies and wealthy) or into (2) **developing states in a catch up process**. We will describe in this paper, where and why the situation is so different for both groups and hopefully give a clearer idea about what the concrete relationship between equity, wealth and growth is, depending on a differentiation between the two groups of countries, mentioned. This includes some hints on to how countries within the respective groups should orientate their policy if they **want to increase their growth**. A differentiated taking into account of issues such as democracy, human rights and high ecological standards also plays a role here.

We will aim at the same time at a **more honest notion of what growth is** and will make apparent, as was already often discussed in literature, cf. [83], how **social capital sometimes is reduced today, while the GDP seems to grow** (Chapter VI.). That means, we should take into account deficits in today's way of computing value creation and from that the growth rates of (national) economies. This computational issue complicates the whole debate even more, on top of the required distinction between front-runner and catch-up states when trying to get a grip on growth potential and its correspondence with wealth and equity.

Note finally that for principal reasons countries that are quite poor can much easier have high growth rates than rich countries. This is just a matter of numbers and for principal reasons it is **impossible to have a high growth rate going on forever** [26]. For instance, at the moment, GDP per person in Germany has less then a one-percent growth rate. Note, however, that one percent would mean (absolutely) three times as much more services and goods per person added than in China 10 % of GDP growth per person because in China at the moment the average income is only 1/30 of that in Germany.

II. Mega-philosophical design issues of the economy, a case of moral hazard and relations to the Ultimatum Bargain

It is a principal question how to organise an economy and how to evaluate what is a good design and what is not. This question should be asked in the context of seeing societies as **superorganisms** [52, 55]. In this paper, we take the point of view that a good first approach to what is a good design is that a society should have a **high average income**. A second dimension is that this **income should** be reasonably distributed, always having a view to the fate of the poorest, as discussed e. g. in Rawls´ **Theory of Justice** [57]. Also, a reasonable distribution turns out to be the very basis for an **open society** [67, 70]. And obviously, it is also related to a reasonable value of the **human development index** [82]. As it turns out, **too much forced equity** as well as **too much inequity both lead to comparatively low average incomes in a country**. Therefore both approaches are not in the best interest of the poorest in society and, seeing it rightly, not in the best interest of anybody. Also, they do not lead to open societies.

The observations given mean that a **high-average income (world class) necessarily seems to be connected with a reasonable or balanced equity** in the sense of what will be discussed more formally in the next Chapter. The nice message is consequently that we **do not have to choose** between either a high average income or high inequality. That societies have to do this nasty choice is a position, market fundamentalist like to communicate. And their promise is that by going for the higher growth rates, which they indicate to offer, the poorer will eventually also win, even if they have to accept less equity, i. e. a lower share. Now taking this idea to the extreme, where 20 percent take everything and leave nothing for the rest of the population shows that this cannot be true in general. There is obviously some balancing needed. In [35], there is more insight given, accepting for a moment the higher growth rate promised. It is shown, that in many cases, loosing 5 % of equity and inducing e. g. 0,5 % more growth a year on average, it can take 20 - 40 years for the poorer to ever reach the absolute level again they started from, not to talk about their much better earlier relative position, which is lost forever.

But the situation is even more extreme and this is a central message of this paper. **Giving up too much equity** may even lead to **lower growth rates**, making the poor poorer two times: less growth

and a smaller share. Still, **this might be attractive for the top of the pyramid**, a **moral hazard** issue, that we will discuss next.

To repeat, **highest average incomes seem to go along with modest** (European) **types of inequality**. To be more precise, it seems to be the case that an equity level (in the sense discussed in Chapter III) between 45 and 65 percent is necessary - though not sufficient - to make a country rich. Another way of saying that is the following:

> If the richest 20 percent of a country have less than 35 percent of income, a country is poor, but if they have more than 50 percent of income, a country also is poor.

So optimisation for making a country rich seems to be within a certain range of (in)equity and it may well be that within this range more equity goes along usually with a higher average income per person. To put it more clearly, doing away the special case of the United States, which has a number of **unique advantages** as the only remaining **super power**, that are capitalised on, it seems that higher equity in direction of maybe 60 percent seems to make countries richer on an average, than reducing equity towards 50 percent or even 45 percent.

Consequently, there should be no debate concerning a high level of equity of at least 45 percent. We will argue in this paper that to achieve a high average income essentially requires to develop **all human potentials** of a society in an internationally competitive way. This automatically includes other requirements as well. It means to care for **sufficient nutrition, education and care for all people and requires all people to stay reasonably healthy**. It also means to supply a world **first-class infrastructure for all citizens**, it means to make available the resources needed to allow value creation in an internationally competitive way and it needs a proper societal order to create an **open society** [69, 70]. This last point aims at **promoting creativity**, for which, among other, **democratic structures** and **personal freedom** are required. If all that is given, a country can be rich, otherwise not.

Note that this picture given includes a **new view on what social balance is about**. It is much more about **developing all human potentials**, to care for **equal opportunities** and to **help people to protect themselves** as about direct money transfers to the poorest of a society, which is an important but not the most important aspect of social balance.

Today, we still observe that in many **African or Latin-American countries** the equity situation is much worse, going in the direction of 35, 30 or even 27 percent which then makes those countries poor if one takes the point of view of looking at the average income of a country. However, we will

show next in Table 1a and 1b, that even when counted in absolute numbers - using the mathematics of equity as give in Chapter III - **such countries may have more dollar income millionaires** per 100,000 people as, for instance, a socially balanced country. If we take the direct comparison between an unbalanced country C_2 ($\varepsilon \approx 30$ %) and a balanced country C_1 ($\varepsilon \approx 60$ %), where ε denotes the equity factor in the sense of chapter III, with country C_1 having about 2 times the average income of country C_2 (28.000 $ instead of 14.000 $), still there are relatively more dollar income millionaires in country C_2 than in country C_1. Asking for instance for the share of people in country C_1 with at least 5 times the average income (about 140.000 $ a year), see Table 1a, this is about 0,5 %, while the share of people in country C_2 with at least 10 times the average income (about 140.000 $ a year) is bigger, namely 0,67 percent.

This picture becomes even clearer, if the incomes considered are further increased. Looking into the share of people in country C_1 with at least 10 times (15 times, 20 times, 25 times) the average income (about 280,000 US$ a year or 420,000 US$ / 560,000 US$ / 700,000 US$), see Table 1a this is about 0.09 % (or 0.03 % / 0.015 % / 0.009 %), while the share of people in country C_2 with at least 20 times (30 times, 40 times, 50 times) the average income (about 280,000 US$ a year or 420,000 US$ / 560,000 US$ / 700,000 US$) is about 0.25 % (or 0.14 % / 0.09 % / 0.07 %). This shows that the ratio of the really high absolute incomes even gets better in favour of the poor country, the higher the absolute level considered is. While for 5 vs. 10 times the average income, the ratio in favour of the poorer country is about 1.34, for 10 vs. 20, 15 vs. 30, 20 vs. 40 and finally 25 vs. 50, it is about 2.78 or 4.66 or 6 or 7.78. This means that in the poorer country C_2, about 8 may times as many people as in the richer country C_1 have annual incomes higher than 700,000 US$ a year.

On top, from the point of view of those having such an income, the situation in country C_2 is even more comfortable in many - not all - aspects as the situation of corresponding people in country C_1, as **personal services cost almost nothing** in clear difference to the situation in C_1, or to be more concrete, in Germany today. Actually, this is the reason why quite poor countries with extreme income inequalities often **supply the highest number of servants in the homes of their richest**.

ε	A=1	A=2	A=5	A=10	A=15	A=20	A=25	A=30	A=35	A=40	A=45	A=50
0,25	15,7490%	6,2500%	1,8420%	0,7310%	0,4257%	0,2901%	0,2154%	0,1690%	0,1376%	0,1151%	0,0984%	0,0855%
0,3	17,9073%	6,6525%	1,7968%	0,6675%	0,3740%	0,2480%	0,1803%	0,1389%	0,1115%	0,0921%	0,0779%	0,0670%
0,35	19,8869%	6,8461%	1,6720%	0,5756%	0,3085%	0,1981%	0,1406%	0,1062%	0,0838%	0,0682%	0,0569%	0,0484%
0,4	21,7153%	6,8399%	1,4853%	0,4678%	0,2360%	0,1474%	0,1016%	0,0750%	0,0580%	0,0464%	0,0381%	0,0320%
0,45	23,4141%	6,6397%	1,2549%	0,3559%	0,1703%	0,1008%	0,0673%	0,0483%	0,0365%	0,0286%	0,0231%	0,0191%
0,5	25,0000%	6,2500%	1,0000%	0,2500%	0,1111%	0,0625%	0,0400%	0,0278%	0,0204%	0,0156%	0,0123%	0,0100%
0,6	27,8855%	4,9295%	0,4988%	0,0882%	0,0320%	0,0156%	0,0089%	0,0057%	0,0038%	0,0028%	0,0021%	0,0016%
0,65	29,2056%	4,0307%	0,2940%	0,0406%	0,0127%	0,0056%	0,0030%	0,0018%	0,0011%	0,0008%	0,0006%	0,0004%

For two countries C_1 and C_2, we assume the average income in C_1 is double the average income of C_2 (i.e. C_2 is a poor country). We assume, that the equity in C_1 is clearly higher than in C_2 i. e. $\varepsilon_1 = 60$ % vs. $\varepsilon_2 = 30$ %. We ask for the share of rich people (in absolute income terms) in C_2 in comparison to C_1. Comparing for instance the share of people in C_1 with an income higher than five times the average to the share of people with an income higher than 10 times the average for C_2 shows the ladder to be indeed greater. Table 1 also makes the same comparison for 10 vs. 20 times, 15 vs. 30 times, 20 vs. 40 times and, finally, 25 vs. 50 times the average as described in the text. In the last case, with respect to the mathematics of equity as described in the Chapter III, the shares are 0,0089% time vs. 0,0067 %, i. e. in the poorer country, about 8 times as many people relatively earn at least 50 times the average than in the richer country people earn 25 times the average. Obviously, the higher the absolute income considered, the more the ratio considered is in favour of the poorer countries' elite.

Table 1a: Why being poor as a country can be attractive for the elite

We are now going to analyse the effects described for the comparison between a country like Germany (with equity about 60 %) and Brazil (with equity about 30 %). In this respect, the situation is about the same as in Figure 1a, however Germany has an average income, about 8 times (precisely 7.7 times) as high as Brazil, not 2 times as assumed in comparison in Figure 1a. Still, for incomes high enough, the picture from Figure 1a repeats itself, when using the functional approach to equity as given in Chapter III. This is shown in Figure 1b.

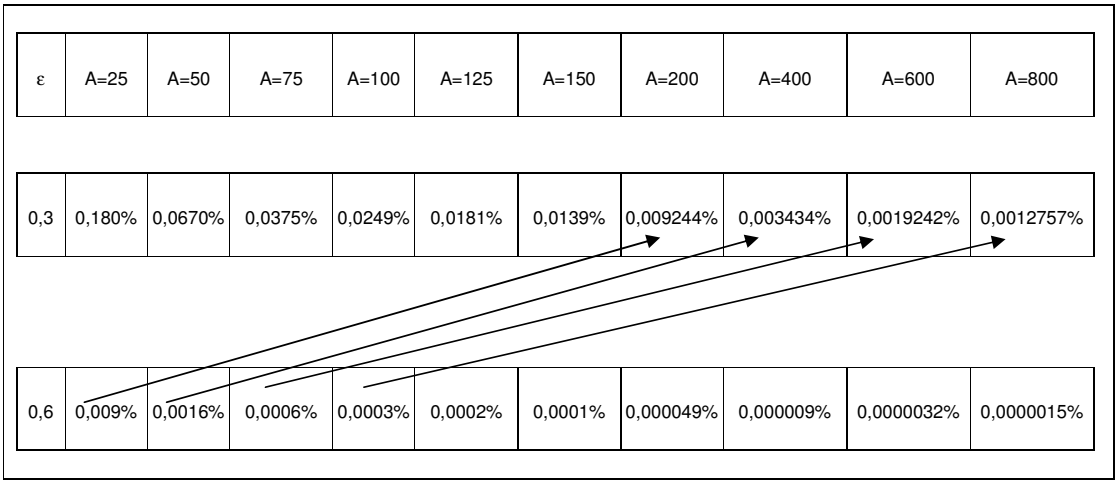

Fig. 1b The share of top performers in an absolute sense. There are relatively more income millionars in a country such as Brazil than in Germany. And the higher the incomes considered, the higher the differences in shares.

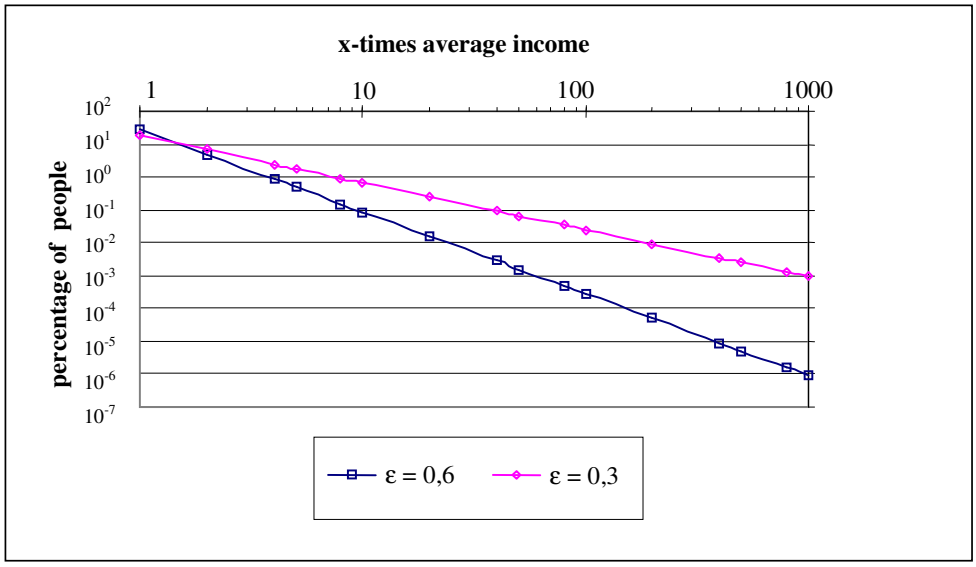

Fig. 1c The general picture concerning the relative share of rich people in a comparison of a rich country with equity factor 0.6 and a half as rich country with an equity factor 0.3. The crossing point is (1.52, 0.098) I.e. already when looking at more than 1.52 times the average income of the rich country (more than 3.04 times the average income of the poor country), the share of such people is higher in the poorer country, and the higher the absolute income asked for, the larger the differences in share between the two countries.

The **moral hazard** that occurs here is the question whether the elite's of such countries indeed are interested at all to make their country rich in GDP per person, because that will require, to all we know, to care for a much higher equity. This will, on the long run, make the country richer, however, will make the richest relatively poorer even if they become absolutely richer. And there is often much resistance to such a change of affairs which, for instance, in Brazil would require the implementation of a **land reform** that is long overdue. There is still a kind of **neo-feudal situation**.

However, if we argue here against Brazil, then we should recognise that the equity situation concerning the whole globe is **even much worse than the situation inside Brazil**. For the whole world, 20 percent of people, that is the people in the OECD States, hold 85 percent of income. We have an **extreme global Apartheid situation**. The people in the OECD states directly and indirectly profit more from the poor around the globe than do rich people in Brazil with respect to the poorer part of people in their country. The moral hazard question here is whether we, as the rich part of the globe, want to change that or whether we build mega-philosophies [38] of a **market-fundamental nature** that in ef-

fect lead to a stabilisation of the situation as it is. Rigid intellectual property right regimes are “very helpful” in this respect. We will even **blame the poorest for staying so poor as they are**.

But what will in the end be the price for such a strategy? This leads to issues, dealt with in a corresponding TERRA paper [47] and in the book [55], namely which future we will have on this globe. In this context, see also the very involved book [36], that connects all these issues nicely with the issue of **world population development**. While an **eco-social market economy** [55, 59] is regarded as our only option to sustainability and peace, the highest probability (estimated 65 %) is seen in [47] for failure in this respect. This would then lead either towards an **ecological breakdown** (estimated probability 15 %) or a **resource dictatorial security oriented solution** (estimated probability 50 %). In the last cast, the rich world would try to keep the situation as it is, not seriously work on improving the **global equity situation** and offer the poor world only one choice: "**take it or leave it**". In [41, 55], resistance up to terror is seen as the natural answer. Because humans are no **simple Pareto optimisers** and care for balance [60]. They are in general **co-operative** and have ideas about **justice** and are willing to **fight against a perceived injustice**. This kind of insights into human nature has gained considerably in support by recent research in **behavioural economics** and in **modern brain research** in connection with the so-called Ultimatum Bargain Game. And insights into this game may tell us a lot about the future of the globe.

The Ultimatum Bargain [10]
The classical form of the so-called „**Ultimatum Bargain**“ game is as follows: There are two people and somebody puts an amount of money on the table and makes the one guy the **proposer** and the other the **receiver**. There is no discussions allowed, there is no debate, the proposer has one chance to offer a percentage of the amount to the receiver and the receiver can accept or not.

If the receiver accepts, the money stays with the two people with shares as proposed. If the receiver rejects nobody gets anything, instead the money goes back to the original owner. One would expect that usually the proposer gives less than or equal to 50 % to the receiver and a **market fundamentalist** would argue whatever is offered to the receiver, the receiver would say ‘yes’, because that would then be **Pareto optimal** to both having nothing. Even more, he would position receivers, who say no to an offer of e.g. 10 %, to be socially not integrable and greed driven, because **how can somebody say no if he gets an offer for free**?

However, as **empirical economics** has shown ones and again, in real life the receiver often says ‘no’, even to offers of e. g. a 30 % share, because **he does not regard as fair what is offered to him**. This is all the more true if he is not so poor and in need to have to accept anything offered to him or the offer is not so extremely attractive in absolute terms, that he cannot say no. In all everyday cases, he uses

his **power to say 'no'** to not allow the other one to **take the big bite** he wants to take. This is a kind of revenge for being treated unfair from the point of view of the receiver. Actually, recent **brain research** has shown, that areas, responsible for emotions and pain in the brain are activated [65], when unfair offers are made and that is already true for **chimpanzees** and other apes, not only for humans.

The situation here can be easily interpreted as a kind of **prisoner's dilemma game** [55] and much of life is full of that kind of dilemma. There is also an interesting relation to the **equity value** discussed in more detail in Chapter III, cf. also [35]. For this, we may think about the equity situation of a country roughly as a deal between the 50 % group of richer people and the 50 % group of poorer people and see the more powerful richer group as the proposer and the other group as the receiver. The receiver part is offered a shared π between 0 and 50 %. The question is, whether the poorer 50 % accepts the offer or refuses co-operation. In real life terms, saying no may include collective undisciplined civil behaviour or even **civil disobedience** or even **terror or civil war**. Depending on π the equity value in the sense of Chapter III of this society can be computed as there is a **one-to-one relation** between the equity value ε, the associate Lorenz curve F_ε, and the cumulative income F'_ε (0,5) of the poorest 50 % etc., which is π, i. e. $\pi = F'_\varepsilon$ (0,5). Note that the approach chosen in Chapter III for defining the equity value means, that when looking into the richer half of people, and dividing this part once again into two groups of equal size, the richer half (that is, the richest quarter) again offers a share of π to the poorer half among the richer half and so on.

In Table 2, the respective numbers are given, and also the corresponding cumulative share of the richest 20 % in society F_ε (0,8), which is another measure of societal inequality. What do the numbers tell? Offering, for instance, 25 percent leads to an equity of 41 % (this corresponds to a share of the richest 20 % of society of 51 %) and offering 35 percent leads to an equity of about 62 %. (this corresponds to a share of the richest 20 % of about 37 %). Empirically, this reflects already comparatively low acceptance levels, i. e. many individuals may already refuse offers of 35 %, not to talk about 25 %. However, as group decisions are involved, this level seems to make sense, particularly, as we start from a given power structure, namely Rich vs. Poor, which is different from the normal set up of the ultimatum bargain. Also note, that a relative share offered of $\pi \approx 10$ %, quite a low offer, corresponds to an equity of 15 % (here, the richest 20 % have about 78 %), which is a little about the world equity level - not an offer, that is often accepted empirically by individuals. This indicates once more the imbalance of the global picture and what risks are involved.

Receiver's share π	Approximated equity parameter ε $\ln(1-\pi)/\ln 0.5$	Cumulated income of the richest 20 % of society $1- F_{\varepsilon}(0,8) = 0.2^{\varepsilon}$
0.05	0.0740	0.8877
0.10	0.1520	0.7830
0.15	0.2345	0.6856
0.20	0.3210	0.5957
0.25	0.4150	0.5128
0.30	0.5146	0.4368
0.35	0.6215	0.3678
0.40	0.7370	0.3053
0.45	0.8625	0.2495
0.50	1.000	0.2000

Table 2 Share π in the Ultimatum Bargain given to the poorer 50 percent by the richer 50 percent of society. There is a 1-1 correspondence to an equity value, given by $F_{\varepsilon}(0.5) = \pi \Leftrightarrow \varepsilon = \frac{\ln(1-\pi)}{\ln 0.5}$ and a 1-1 correspondence to the share of GDP covered by the richest quantile of society as well.

As was pointed out, there is an interesting correspondence between the empirical equity situation of rich countries and acceptance levels within an ultimatum bargain. Acceptance of an **asymmetric but constrained offer** in the ultimatum bargain somewhere between a share π of 27 % to 37 % corresponds remotely to an equity of about 45 percent to 65 percent, e. g. the equity range of successful countries.

To put this correspondence into the right perspective, the following observations should be added. First of all, the ultimatum bargain game changes its character if, for whatever reason, the proposer has done something to gain this privileged position. So, in a sense, if he is entitled to the right to propose, then the receiver does accept a much lesser share. And, of course, in a societal situation, for instance when looking into income shares, things are different somehow from an ultimatum bargain game. On the one side, we look into huge groups of people, that have their own internal bargain-processes of a game-theoretic nature. And the more uneven the situation is within the two groups and the more people involved, the harder it is usually to arrive at a common bargain position, because those who earn a lot often bring in special contributions and have options to implement their will, while newcomers might accept almost anything to have a start at all. On the other side, the receiver in the society (here **the poorer half** of people) is not just receiving something. These people do their jobs and take over important roles and partly it is hard jobs for little money. And without all those jobs being filled out and performed properly, societies would collapse and there would be no wealth at all, also not for the

richest 20 % of society. So, two effects interact and may balance each other to some degree. And then, there are many interactions between many people having high incomes and even much more people with low incomes and all have special interests and some are in urgent needs to generate incomes.

Still, the essential insight coming from the ultimatum bargain is that the poor part, if not something reasonable is offered, **can say „No“**, even if it means loosing something offered, which can be hard for the poor part. This situation might have shown itself at **September 11, 2001** and obviously is closely related to the **Israel/Palestine drama** [41, 55], that the world is now witnessing for decades. Also, recently, a similar pattern become visible, when the **Cancùn-WTO development round failed**, due to a clear "No" of the South to an insufficient offer by the North. And, for instance, the poor part of the world will obviously not accept **a contract to limit CO_2 emissions** that reduces its own future share to further emission if there is no **fair deal including considerable financial transfers offered by the rich world**. Those countries will then just follow their own way of development and omit as much CO_2 as results in the course of their growth and industrialisation processes, **even if that may lead to a disaster for the globe**. The recent development in China is very instructive in this respect.

Also, a State like Brazil may cut down its rainforests even faster in the future to show what it can do and put a pressure on the rich countries to **pay for preservation** instead of paying for usage. And, of course, all kind of resistance and even **more terror** may eventually materialise when a rich world tries to dictate onto a poor world what it is allowed to do and what not in the sense of e. g. a **resource dictatorial approach** [47, 55].

In this sense, we deal at the moment in world politics with a **moral hazard in an ultimatum-bargain type of game** that reflects global decision-making processes. This issue is about the **mega-philosophical design** of the world economy. Is this design for the advantage of most of the people, i.e. is it **eco-social**, or is it for some (mistakenly) perceived advantage of the richest 20 percent, i.e. **market-fundamental**, which will probably include a **resource dictatorship dimension** and will need **massive security instruments** in the end [47, 55]. The latter would involve a perverse but still quite realistic **use of information and communication technologies in the future** [47, 51]: For total control of people and for modern warfare. This would actually not be the empowering of all people, that we originally all hoped for [41, 51].

The problem here is that when the situation is stabilized in one of the two cases, these cases create economic and material patterns which are able to **reinforce the state they are in**, so these states have the character of **attractors**.

In a more balanced situation, the poorer 80 % of society still can mobilise enough resources to stabilise societal conditions under which **intellectual capital can defend the status quo as it is**, for instance, by involving state-paid university professors, not needing extra money from the richest 20 percent of people or from the businesses they control. The situation is different in the second case. There is much more competition for private funding within the university system. Actually, also public money flows are made, in the end, heavily dependant on a complementary flow of private money. So eventually the richest 20 percent of a society can organise almost all intellectual processes in a country in the direction of arguing for an extreme asymmetry to their favour and even in direction of increasing the asymmetry. As an example, we mention the argumentation for the **elimination of inheritance tax** as we see it today in the US or argumentation for a reduction in the **progressive nature of income taxes**, coupled with the demand to reduce these taxes, anyhow, as is now typical for all developed countries.

There is one more point to be discussed here. While in the market-fundamental logic, markets are said to automatically tend to find the best solution for a society (highest growth rates / highest income per person), for instance when creating and rolling out new technologies, this must absolutely not be the case if it comes to the issue of **mega-philosophical design**. We discuss here for clarification the following example/study where there are **three meta-technological choices** for a society in the form of Scenarios A - C available, leading to different kinds of economies with different growth rates and different distribution patterns over a time horizon of 20 - 40 years. The details are given in Tables 3a and 3b.

When looking into meta-decisions of where a society goes in technology, e. g. going for a centralised or decentralised energy system, for investing into adapted technology for billions of poor farmers in poor countries or instead into genetically modified high yield crops protected via highly developed **intellectual property right regimes,** for **promoting free software** or defending a highly monopolistic situation concerning operating systems as we have it today, again using intellectual property right instruments, it is to be expected, that the rich of the word, the top of the pyramid, strongly supported by people with interest at the high-end side of society, be it lawyers, scientists, doctors, security people etc. **will usually opt instinctively for the centralised, capital incentive, legally complex etc. solution** and not for others. The same is true for the **military complex** who requires a world full of tensions and for the centralised, oil based energy “world”, which allows to generate huge centralised incomes.

The natural aim of all the major actors involved in making such choices is not always to make the world as rich as possible, it is not always about full democratisation or full development of human potential. No, it is to be expected that investments go into **stabilising a situation of privilege**, defending

the own opportunities against others, also and particularly in **relative terms**. Of course, those in power are usually able to convince themselves, that what they do is for the advantage of all people. And also they never have a problem to create argumentation, why this is the best solution for the world even for the poorest, as they can **mobilise all the intellectual, marketing and media resources they want**. And as alternatives are never checked, in a kind of **self-fulfilling prophecy,** things can go on like that forever. And competition and markets will not change that picture, particularly not in a globalized economy, because the interest of the international elite is usually similar all around the globe and elite's usually try to avoid fights among each other concerning the principal role of elite's as such. **Rawls** has nicely addressed this problematic in his theory of justice [57], too. Only if after the making of design decisions by those in power it would be decided by chance, who of the today 6.2 billion people is who, would there be a chance, that a design is done for the best of all, not deliberately, or at least instinctively to the **advantage of those with great power**.

In the following, we want to demonstrate these considerations with an example that shows 3 principally different development patterns for a society over 20 or 40 years, based on different lines of technological development and corresponding investments into human potentials, expressed here in average growth rates and equity levels. The examples are to interpreted as follows. We start from a **rich and reasonably balanced country** today with an average income of 30,000 $ a year and an equity factor of 60 %. This means that the relative share of the richest 20 % of people with respect to income at the moment is 38 % of GDP. Multiplied by the average income of 30,000 $ a year, this gives 11,421 $ as absolute share of the 20 % richest on every unit of average income of 30.000$ a year, see Table 3a. After that, the three routes into the future are described. We consider the given future values to be reached after **20, 30 or 40 years**, i. e. distinguish 3 time horizons combined with 3 scenarios.

Scenario	Average income in $	ε	Richest 20 %		Poorest 80 %	
			Share	Absolute share per average income	Share	Absolute share per average income
A B C	30.000	0,6	38 %	11.421 $	62 %	18.579 $

Table 3aStarting point for 3 scenarios

Scenario A

Scenario A takes a middle road in technological sophistication. After 20 or 30 or 40 years, GDP per person has doubled to 60,000 (**200 %**). The equity value stays unchanged as **ε = 60 %.** In the sense of Chapter VIII technological progress is fairly distributed as income growth over the whole society.

Scenario B

Scenario B reaches a high growth rate (**233 %**) and leads to a GDP per person 70,000 $ due to massive technological progress and corresponding investments. However, equity goes down from 60% to **ε = 45 %.** This route makes society rich but most of the people poorer than in Scenario A.

Scenario C

Scenario C leads only to a comparatively small growth, namely to a GDP per person of only 45,000 $ after 20 or 30 or 40 years (**150 %**). The equity is considerably reduced to only **ε = 30 %.** This route makes society poor but might still be the most attractive way into the future from the point of view of the 20 % richest of society (the **moral hazard** issue discussed in this Chapter II).

Scenario	Growth factor	Average Income	ε	Growth rates in % over			Richest 20 %		Poorest 80 %	
				20 years	30 years	40 years	Share	absolute share per average income	share	Absolute share per average income
A	200 %	60,000	0.6	3,53	2,33	1,75	38 %	22.842 $	62 %	37.185 $
B	233 %	70,000	0.45	4,33	2,86	2,14	48 %	33.929 $	52 %	36.071 $
C	150 %	45,000	0.3	2,04	1,36	1,02	62 %	27.766 $	38 %	17.234 $

Table 3b: Outcome for the scenarios considered. What mega-design to choose? And who has the say?

Those who have the power often might not go for scenario A, which is the best for ordinary people. In scenario B, GDP per person is the greatest for all 3 scenarios considered. In this case the richest are the winner. They get absolutely much more than in Scenario A, so this Scenario is clearly more attractive than A, when seeing it from a narrow, personal interest oriented perspective of the richest 20 %. The absolute share of the 80 % poorer people is, however, less in this case than in Scenario A; on top, the relative position of the poorer part is degraded a lot, from a share of 60 % to a share of 52 %. Still, both groups might compromise and jointly prefer B to A, particularly, if the richest allow for an absolute shift per unit income to the poorer 80 % of about 2,000 $. Because then, also the 80 % will win on average in absolute terms. **However, the poorer part should be careful**. The question is, whether

such contracts can be sustained on the long run, if, for instance, under scenario B and the technologies involved, the nature of the economy should change considerably the form of involvement of the 80 %. With the right technology, one might "get rid" of the need of work input of many of the poorer 80 % of society and on the long run, it might be possible to deprive those people further of their share instead of compensating **their acceptance of a high tech route, that may easily live with many unemployed.**

Finally, Scenario C looks unattractive for all at first sight, with growth so low. Still, the absolute share per average income for the 20 % richest is clearly better then in Scenario A. And with respect to Scenario B, the relative share of the 20 % richest is so much more attractive (62 to 48 %), that as a consequence of the moral hazard issue, this is the solution, the gravitation centre of power might actually implement. It keeps a country much poorer than it needs be to but makes the richer relatively much more rich - the **moral hazard issue.** Only with a **strong role in politics and a strong role of politics**, the poorer 80 % of society may prevent this route to be chosen. There is a high probability under present-day globalization pressures, that C is where the economy would go to.

To summarise, Table 3a/3b tells us the following. Often it is in the power of those who stir the economy to go for the technologically intensive model or, for instance, to build expensive, centralised infrastructures and opt for solutions which allow to **generate plenty of intellectual property rights**, for instance in fighting against **"free software"**, even if this limits the **creativity potential** of a society and also does not create lots of decent jobs for all the money that is invested. To the contrary, an ideology of **efficiency at every price** may lead to the expulsion of as many people out of jobs as possible. Here, from the point of view of having people work, maybe a completely different path of development would make more sense. For instance using wood on a local level for producing pellets to create heating and producing energy-intensive crops on soils not used otherwise at the moment in agriculture, could be a much better solution for the majority of people in society than going for nuclear power plants. The import-tax in Brazil on PC (while Brazil does not produce much PC itself) may serve such a purpose of keeping 80 % of people relatively powerless and avoiding a land reform certainly does.

On the mega-philosophical dimension there is a lot to decide. Not only growth rates are interesting but how the **work load is divided between humans and machines** and how the distribution is towards humans, which skills are required and who has a chance to develop those skills, and how all that fits best to the interest of people in power and their view of a world, as they like it. **This means not necessarily to go for the highest GDP per person**. Actually, for the elite also solutions might be interesting that create a relative low GDP but under conditions of **extreme inequality**. This means to get many people down the social ladder and, by that, to modify the balance and equity and corresponding the power structure in a society, also the **quality of a democracy**, at the same time creating a **work**

force for cheap personal services. It can well be that the **New Economy** and **World Financial Market bubbles**, closely related to the actual form of organising globalization are of that nature. This has been the lever to reduce **tax burdens** for the richer part of society, which is now happening at a big scale. It is **forcing social systems in Europe down and making our countries poorer**, but exactly by this it makes the **elite relatively richer**. Is this the deeper reason for what is going on?

III. How to measure equity?

Before we go deeper into the issue of what equity levels are advantageous for societies, we first deal with the question of how equity can be described. There are many such definitions, one very prominent being the so-called **"Gini coefficient"** which in turn is a measure related to **Lorenz curves**, which are the standard way to describe **income or wealth distribution patterns**. If F is a Lorenz curve, then F(y) gives the accumulated income share for the poorest y segment of people, $y \varepsilon [0,1]$, $F(y) \varepsilon [0,1]$.

We refer here in the following to a new approach based on a **mathematical theory of equity** that is build around a so-called **equity parameter** that was developed in [35], see also [30, 31, 32, 33, 34, 72] for more information. The equity parameter appropriately relates **lowest incomes to average incomes**. The approach started from and corresponds directly to the **EU definition of poverty**, which is a relative poverty measure, saying that nobody should have **less than 50% of average**. A similar approach is also used by the EU to define rules of how structural funds are used for **co-funding of cohesion**. These are so-called "Objective 1 Regions", which are defined by having at most 75% of average income of the EU.

If one generalises the EU poverty definition, i.e. abstracts from the 50% level, and defines an equity factor ε by fulfilling the equation '**lowest income equals ε times average income**', then one is close to the equity factor. However, there is incorporated one further step. We not only look into the society as a whole and its lowest and average income, but as well into **all segments of the x % richest of a society** as well. For each such x-depending segments, we require that the poorest within the x % richest also have an income that is ε times the average of the x % richest. This approach leads to a **differential equation** for the associated Lorenz curve that is the key to the equity definition. This means that ε is chosen as a kind of compromise or best fit as the value that allows the **best approximation of equity as described with respect to all segments of the x % richest people**. Certainly, there is a **robustness dimension** in this approximation which gives the equity factor an additional meaning, power and stability. On top, it turns out there is an interesting element of **self-similarity** (see below) over all segments of society incorporated into this definition.

The Theory of (In-)Equity

The new mathematical theory of social equity (T. Kämpke, R. Pestel, F.J. Radermacher: "A computational concept for normative equity", European Journal of Law and Economics 15, 2002 [35]) is based on the fact, that the factor ε is not only set for society as a whole, but also for the x per cent of the richest for any value x. So it is also assumed that within the x per cent richest the poorest of them have an income constituted of ε times the average income of the x per cent richest. This leads to a linear, inhomogeneous differential equation depending on ε : $F'(x) = \varepsilon \frac{1-F(x)}{1-x}$, $0 < \varepsilon \leq 1$, whose solution is given by the following Lorenz function:

$$F_\varepsilon(x) = 1 - (1-x)^\varepsilon.$$

If one wants to determine the equity factor of a country, then one selects the ε that comes closest to the known distribution values of that country (according e.g. to World Bank distribution statistics [86]), i. e. in the sense of minimising the average squared approximation error [35]. This way the values given in this paper were determined. Note that the available empirical data is less than ideal.

The following Fig. 2, consisting of two parts, gives the Lorenz curve and its derivative in a schematic way to make the concept better understandable.

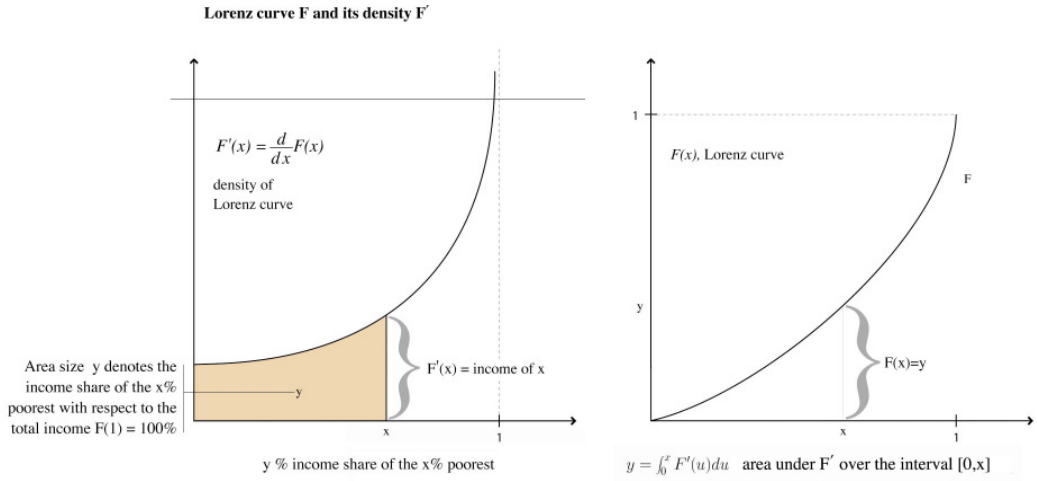

Fig. 2 Lorenz curve F and its density F´

Note that there is a one-to-one correspondence between equity values as described and the corresponding Lorenz curve, thus with the value of the curve at any point x∈ (0,1). In particular, this holds for the 50 % value, used above in connection with the **ultimatum bargain**, and for the 80 % value, re-

flecting the **income share of the richest 20 % of society** (so-called **rich segment**), referred to many times in this paper (in particular see Table 2 in Chapter II for the corresponding numerical values).

In the context of **power-law** considerations in theoretical physics, dealing with phenomena far away from thermodynamical equilibrium [1, 2, 3, 4, 7, 8, 28], the issue of **self-similarity** has gained a high relevance. And interesting enough, the new type of Lorenz curves developed here can be uniquely characterised by having such a property [31]. To describe this in more detail, let F(x) be the Lorenz curve of some population. This allows to derive the Lorenz curve of any fixed population segment [x, 1], the **rich segment**, by re-scaling the population fraction - which means re-scaling the argument - and by normalising to the cumulative income of the rich segment. This results in the truncated Lorenz curve. The original Lorenz curve is understood to be **self-similar** if all truncated Lorenz curves are equal to the original curve, cf. Fig. 3 below.

Theorem [31]

The Lorenz curves $F_\varepsilon(x)$, studied in this paper **are self-similar. Even more interesting, also, the converse is true. Any self-similar Lorenz curve which is differentiable and has a continuous derivative at zero is of the form $F_\varepsilon(x)$**.

Self-similarity does not a priori require the Lorenz curves to be of any parametric type. But due to the given theorem all solutions of the self-similarity condition are parametric. Only one real parameter is required, the equity parameter. Thus, the **equity parameter evolves from self-similarity**.

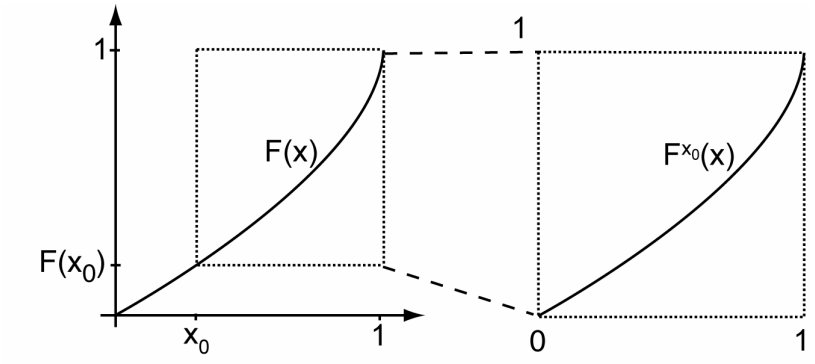

Fig: 3 The dashed box and the enclosed section of the Lorenz curve (left) are rescaled to the square (right). Self-similarity requires the complete curve $F(x)$ and the curves $F^{x_0}(x)$ to be equal for all truncation values $0 \le x_0 < 1$.

Note further that **all Lorenz curves F_ε incorporate a power law**. So they are consistent with general requirements that imply that for the right side of Lorenz curves (very rich segments), such power laws should be valid [2, 4, 24, 71]. More on the power law nature of Lorenz curves considered here can be found in connection with Table 5 in this chapter.

To arrive at the relative income level of all people, the densities of the Lorenz curves are needed. Fig. 4 gives the densities F'_ε for the income distribution F_ε for some values of ε associated with certain countries.

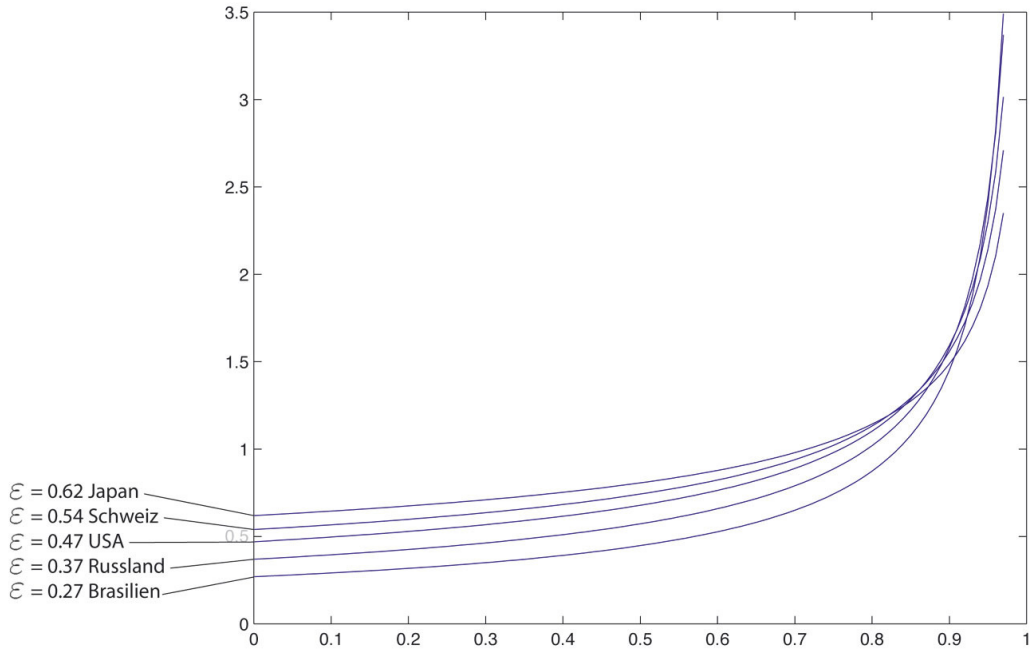

Fig.4 Some examples for the density of Lorenz curves with associated equity parameters

It is interesting to note and helpful from an application point of view that conclusions resulting from the equity definition chosen are in accordance, in the overall picture, with conclusions based on other measures, already broadly used. In particular, when ordering the major countries according to their equity level, the results are very similar too, for instance, doing the same on the basis of the **Gini-coefficient**. Actually, we come to the situation as given in the following Fig. 5 that characterises to a considerable extent the **equity situation around the globe**, country wise and in total.

We note here that as ε is an approximation, of course, a society will have people with **income less than ε times average income**. Some intensive studies on these over- and underestimation aspects can be found in [34]. In particular, it turns out that ε times average overestimates the real situation, the greater the segment of society considered. I.e. the poorer the part of society under concern, the more it falls under this value. To put it the other way round, if one concentrates on richer segments of society, the (relative) poorest there are better able to defend their interest relative to those who are richer than this is the case for the absolute poorest of society [34]. This fits well to what is said later in Chapter V about **equity levels and education** and what social balance really is about. However, at this point, we are essentially interested in the general equity picture of a society, not the detailed, though the particularly important issue of the poorest ones, of course, deserves a special covering.

Fig. 5 Global situation of equity [35, 55]

Concerning **world population and the distribution issue between the rich and poor world**, the situation is as follows. The starting point is the often cited claim that 20 percent of world population today owns 80 percent of wealth, leaving only 20 percent of wealth for the rest of the world. Within TERRA, the **world income distribution** has been determined [72] as given in Table 4 and Figure 6. The computation is complicated, builds on the World Development Report data set [86] and will be a reference point in the following. Note that this work within TERRA took place in parallel to other (rare) approaches and results on the world income distribution [62, 63], where data is, however, not generally available, also not on request, also not to the authors of this paper. For some more information, see also [12, 45].

Quantile in %	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50
Share in %	0,10	0,18	0,21	0,24	0,31	0,36	0,38	0,41	0,51	0,70
Average income in US$ per Quantile	99	179	209	238	308	358	378	407	507	696
Quantile	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90	90-95	95-100
Share in %	0,80	0,95	1,01	1,54	1,81	2,86	6,5	13,35	20,77	47,01
Average income Per Quantile	795	944	1004	1530	1798	2842	6458	13265	20637	46710

Table 4: The world income distribution

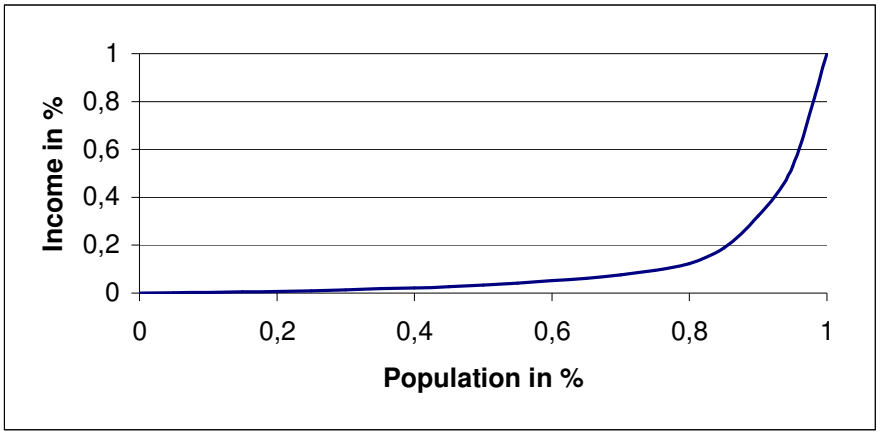

Fig. 6: World Lorenz curve

Note that world average income today is about **5000 $ a year**. With a European-type equity level of at least 50 percent, nobody should have less than 6 $ a day at his disposal. However today 3 billion, half of mankind, live below 2 $ a day—a scandal and dangerous. And 1 billion people or even more live

below 1 $ a day, and this numbers are referred to as the **official (absolute) poverty lines**. We should not accept this definition. It make things look better than they are, though even with respect to this definition, the global distribution pattern is a disaster. However, things really go into the opposite direction. Even in Europe, administrators are now trying to stabilize this approach by changing the EU definition of poverty. This allows to hide negative trends, now also gaining force in Europe. The trick is a small, hardly notable, **change in definition**, namely changing **mean** to **medium** in the poverty definition. Then half of humankind can add always more income while the poor may remain where they are, but numbers would not tell.

Mean or medium value?

The equity definition of the European Union calling somebody poor if his income is below 50 percent of average (mean value) is an extremely intelligent approach that supports social balance. Because if the GDP of a country doubles, average income doubles, then also 50 percent of average income doubles. So with GDP doubling, if one does not want to have essentially more people being poor than before, then also the income of poor people has at least roughly to double.

At first, that would seem to be self-understood. In absolute terms, doubling income of rich people means so much more in absolute value that is added that one might rather argue, that for the pooper part, increase should more than double. However, if increase is not higher for the poorest, then at least it should double, which in absolute terms is not so much. However, there is a tendency around the globe that the richer part, in the situation described, is not yet satisfied with just doubling. It wants to increase even more which is then only possible by not allowing the poorer part to double their incomes as well.

There is a lot of strange argumentation, above all from a market-fundamentalists side, why this is in order, well justified and should even find a willing approval by the poorer part, if people would only be informed in an unbiased way. In practice, such arguments not find any support at all - for good reasons. Therefore, it is better to hide things. In this respect, there is recently a tendency, as so often before implemented clandestine on the level of administrative procedures, to replace the mean by the medium value. This is true even in Europe. Here, the medium denotes the value of income, where half the population has more and half the population has less than that value. Consequently, there is, at the moment, a tendency in Europe to replace 50 percent of mean by 60 percent of medium which, at a first look, might even seem favourable in the sense that 50 percent is replaced by 60 percent of some "middle" value.

However, it is only a trick. It is a trick which, on the long run, could allow the richer half to concentrate on it all the further GDP growth without ever the poor part of society seeming to grow in numbers or volume at all.

This is nicely demonstrated when one looks into the present world-wide situation. Global average (mean) income is 5,000 $ a year. So, seen from a European perspective, nobody should have less than 2,500 $ a year at this disposal, which is roughly about 6 $ a day. Actually, half of humankind is lying below 2 $ a day, which is called the poverty line, and one billion or even more below 1 $, which is called the absolute poverty line. The United Nations Millennium Development Goals for instance try to half the number of people that lie below 1 $ a day by 2015. Many people think that if they achieve this they did something considerable to eliminate poverty. But is that really true? In fact, much more is needed and we should say that, even if it is hard to achieve.

When looking at the global picture one can nicely understand the difference between mean and the medium value. Because the global medium at the moment is about 2 $.

This is because roughly half of humankind lie below 2 $ of income, while the rest lies above. Now assume that world GDP doubles, but essentially nothing goes to the poorer three billion, only the tiny little bit to shift more of the poorest over the 60 percent of medium which is 1.20 $ a day. Then it would seem that poverty is eliminated while, in reality, half of humankind becomes always relatively poorer in comparison to the other half. More precisely, the rich part eventually doubles its income of average 9.500 $ today to 19.000 $ or more, while the poorest stay with their 450 - 600 $ income a year, essentially unchanged. This is completely unacceptable as the relative aspect of poverty is extremely crucial in everyday life. Beware of administrators, particularly if they clandestinely try to change the mean for the medium in the definition of poverty.

The new equity theory brings about a lot of practical advantages, for instance to compute quite straight forwardly the **world income distribution** as given above in Tab. 4 and Fig. 6 or informative tables such as Table 1a, 1b, Table 2 or Table 5 below. Note that corresponding empirical data is just not available in many cases. Also, using this new equity theory, each equity parameter belongs to a **particular Lorenz curve** instead of many possible such curves, as is typical for the GINI index. Very helpful is that the respective Lorenz curve allows all kind of computational tasks to be done quite easily. So it turns out to be computationally quite easy to deal with the **equity of groups of countries**. For instance, an equity parameter for greater areas, **such as the EU,** can be derived quite straightforwardly [30, 33, 34, 35, 72].

On top, we mention that the equity parameter defined also fulfills **equity criteria** that the Nobel Prize winner for Economics in 1998, **Amartya Sen**, partly based on former work, has formulated [66]. These contain, among others, the following: (1) the Pigou-Dalton Transfer Principle, (2) Income Scale Independence, (3) Principle of Population, (4) Anonymity and (5) Decomposability.

Another interesting aspect is that this definition of equity **fits nicely with other and more recent theories about power laws for the distribution of income** or at least its tail [24, 71]; Table 5 below shows some details. So, the approach chosen is nicely embedded and connected with a lot of other approaches in the field. Particularly, $\varepsilon = 50$ % coincides with a **power law 2**, cf. Table 5, a particular prominent case, as shown below.

At the centre of the new measure for equity is the question **who as a person is available for whom in the market for which kind of services on what quality level**, i. e. how many hours on what level of service quality of others one person (potentially) gets as reward from society for his contribution to value creation. This actually reflects a special look within the work in TERRA on the issue. One way of seeing the process of social structuring in this point of view is as follows: Whatever fixed equity factor ε, first the topic is about the jobs that are paid on the lowest level of income, i. e. ε times average income. In Table 5 (which is closely related to Tables 1a, 1b), for equity parameter 50 % (power law 2) and the assumed 25.000 € average annual income this is 12.5000 €. That is a kind of starting

situation, the less paid occupations, from where one can improve, either by better education from the very beginning or while developing by or parallel to doing the job. So while a certain number of people operate on that level or stay on that level, others can make it to a higher level of income, competing for the next layer of income etc., while others, e. g. due to other routes of education followed or family background etc., will start to compete on a higher level of income from the very beginning. This leads to the **social pyramid** in Figure 7 that comes along with each equity factor and the associated income curve. For power law 2 (equity 50 %) and average annual income of 25.000 €, 1/4 of people earn more than 25.000 € a year, 1/4 of these people more than 50.000 € a year, 1/4 of these more than 100.000 € a year and so on. That means, if income is doubled, the size of the respective groups of people with higher incomes shrinks be a factor 4. Consequently, the share of people with income higher than 400.000 € a year is about $(1/4)^5 \approx 1$ °/oo, i. e. one in one thousand.

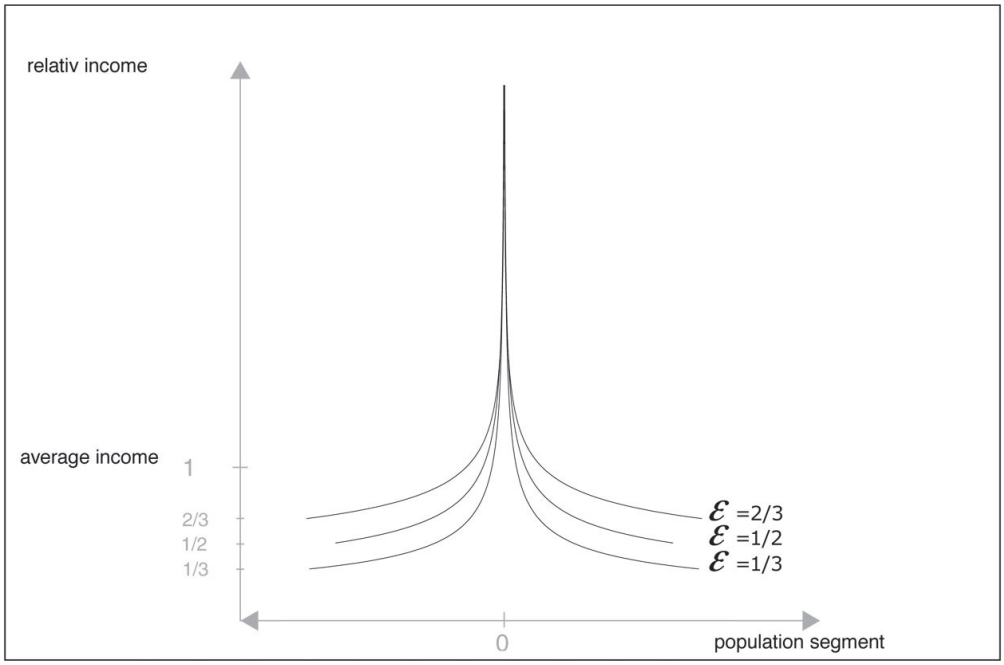

Fig. 7: Pyramidal structure of society depending on different equity values

As already mentioned, **power law considerations** for fluctuations between jobs or capital income lead to similar results concerning the overall picture of the income distribution, at least for the rich tail. These results fall into a wide range of recently obtained insights about the working of complex systems, also closely related to issues of **network building, net dynamics** etc. [3, 4, 7, 8, 28].

Percentage of people, whose income is higher than I, depending on the equity factor					
	Equity factor	ε = 0,2	ε = 0,3	ε = 0,4	ε = 0,5
	power law factor $P_{\varepsilon,2}$	0,420	0,371	0,315	0,250
	lowest income	5000€	7500€	10000€	12500€
I	average income	25000€	25000€	25000€	25000€
		Part of population after shranking			
25000€	i = 1	13,37%	17,91%	21,72%	25,00%
50000€	i = 2	5,62%	6,65%	6,84%	6,25%
100000€	i = 4	2,36%	2,47%	2,15%	1,56%
200000€	i = 8	0,99%	0,92%	0,68%	0,39%
400000€	i = 16	0,42%	0,34%	0,21%	0,10%

Percentage of people, whose income is higher than I, depending on the equity factor					
	Equity factor	ε = 0,6	ε = 0,7	ε = 0,8	ε = 0,9
	power law factor $P_{\varepsilon,2}$	0,177	0,099	0,031	0,001
	lowest income	15000€	17500€	20000€	22500
I	average income	25000€	25000€	25000€	25000€
		Part of population after shranking			
25000€	i = 1	27,89%	30,46%	32,77%	34,87%
50000€	i = 2	4,93%	3,02%	1,02%	0,03%
100000€	i = 4	0,87%	0,30%	0,03%	0,00%
200000€	i = 8	0,15%	0,03%	0,00%	0,00%
400000€	i = 16	0,03%	0,00%	0,00%	0,00%

Table 5: Power law distribution concerning income

The general connection between equity factor and power low coefficient is:

$$P_{\varepsilon,\gamma} = \gamma^{\frac{-1}{1-\varepsilon}}$$

For ε = 50 %, and the basis γ = 2, this means that if income is doubled, then the percentage of people above the new level **shrinks exponentially** by the factor $P_{½,2}$, i.e. to ¼ .

Using the Lorenz curves and power laws corresponding to a particular equity factor obviously allows us to get a feeling of how many people we might think should earn a very high income as argued for often in order to make use of the power of differentiation, being a strength of societies that are strongly organised around competition. This issue is followed in more detail in the next Chapter. The argumentation is much in line with how **market-fundamentalists** would deal with the issue.

IV. Why makes too much equity a society poor? On the power of differentiation

In this part we start from a basic **mega-philosophical observation** [40]. This concerns the question whether income differentiation makes sense or not. There is now a quite universal belief, worldwide, also shared by the authors that typical forms of communism or "equal income for all" or "you get what you need" are **no reasonable approaches for organizing developed societies** in the world, as it is today**.** This has to do with **individual needs** and **individual abilities**, but even more with the extreme differentiation of the **available choices** today, of **personal abilities**, with taking **individual responsibility** and, above all, the **power of differentiation and motivation for fostering growth**, which is asked for by most people and which makes it much easier to organize political processes. It is, for instance, known from **organizational science**, that even if all people would be identical in their abilities and motivation, in complex tasks better results can be achieved, if some person is chosen to coordinate the others. If that person is better paid, inducing an extra motivation to do a good job in coordination and control then often the total output of the economic activities is so much bigger than before without differentiation, that, if reasonably shared among all people involved, it makes absolute sense for all to have such a kind of organizational structure with a differentiation in payment, even for all those who are not the coordinator. So, even if its not clear a priori, who will be the **coordinator** afterwards, a group of people might in many cases agree beforehand voluntarily on such an approach. So, differentiation is fully in line with considerations in the **theory of justice**, as e. g. analyzed by Rawls [57].

Of course, this is all the more true, if some of the people for whatever reason are able, per time unit, to **create a higher output than others** or have particular abilities in coordination or innovation. And if somebody creates a three time as high output than others, than, as a first approach, he might reasonably get three time as much income. Another important issue is **tournament type of payment structure** in sports, art, music etc., with thousands of people working virtually for no income at all (even investing private funds instead), hoping to make it to the top (low average income, **very few "top winning positions**"; **extreme rewards for the winners** as a motivation device). Certainly, this also involves compensation for **high risk taking**, which also corresponds to tournament type payment structures.

On top of these factors, aspects of **risk taking behavior** or the **willingness to postpone consumption and to invest** into a possible later (more or less risky return) are other important roads to differentia-

tion of income, that play an immense role today, as do different levels of accumulated wealth in an **intra- and intergenerational** perspective, e. g. in a family context. What was said here for individuals is also right for whole societies. In particular, the level of **societal investments** e.g. into **developing human potentials**, **infrastructure** and **research** are major issues in this context, for instance when company families or whole societies.

Much more important than the sheer output of work done is, of course, **the quality of work, particular of decision making** or concerning **inventions and innovations**. This is true, because these points indirectly influence the value of much of the work (of others), done subsequently. And the more complex a society becomes, the more important becomes the quality of decision making. This is particularly true for important **top level structural or paradigmatic decisions**, that essentially influence the quality and opportunities of activities and decisions on all other (lower) levels. Therefore for the most important, most complex questions, one would like to have the most able decision makers involved to the maximal extend possible. In this context, of course, people involved gain always more experiences just by being involved. This will generally further improve the quality of their contributions, while those not involved, always fall back more. And to be true, the practical opportunities to share such insider knowledge are extremely limited. So, the question of getting onto a track of being involved, which is necessarily very **exclusive**, namely the track of being involved in making experiences in high end decision processes, is very important for making a top career and for personally developing a **very high value as a human potential**. As a consequence, people on such a track, for a long time, have a chance to improve their abilities and market value year after year, thus can always make even better decisions, thus getting even better jobs, due to which they get involved in even more important decision making processes afterwards and again make even more valuable experiences etc.

It then seems to be reasonable and understandable for a society to try to involve people with such experiences to a maximal extend, if they are really good. Society will really make them **work a lot and permanently** and not “only” 8 hours a day, but may be 12 or 14 or 16 hours and more on average, every day, over the whole year, weekend or not, holiday or not. Of course, to motivate such people to do so, the payment has to be higher, particularly for every additional hour, beyond 10 hours a day. So, the **marginal cost for motivating such people** will go up dramatically and still it will be worthwhile for society to pay so much, if the aim of society is maximizing the total value creation and social aspects of differentiation are not at the center of considerations.

So, if a top performer works 3 times the average working time at least on a quality level of an average income, he may earn 3 times the (net) average income, just due to the time volume invested. Taking marginal aspects of time invested into account, as well as the quality of output honored in form of **extra rewards for good performance**, this can easily lead to 10 and more times a normal (net) income.

This is particularly true, if long times for formal education and comparably short times of peak incomes are taken into account in a **life time perspective**. Assuming a 50% taxation level for high performers and a 20 % taxation level for average incomes, and if we require 20% of income after tax for buying time (about a 1,5 average incomes paid for personal services before taxes) in the form of private used and needed services to do the job, then an income of **20 times the average** is needed easily for such top performers, for achieving 10 times the average income after taxes and after paying private services needed to do their job (0.5x20 – 2 =8 compared to 0.8).

What was said means that if looking into marginal cost for additional hours, it can easily be that for a real good decision maker and a specialist with certain knowledge, one pays for an extra hour 100 and more times the average hourly income. And that may make sense from a total value-creation point of view. This means, for instance, that if instead of this one hour, society would pay one extra hour for 100 persons with average qualification paid on the average hourly payment level instead, or even 150 additional people for one hour, each paid on the payment level of two-third of the average income per hour, then to pay that one hour to the specialist might yield in comparison the higher value added for the society as a whole. It could even be that it increases so much the total value added of society, that it would allow to pay the total amount for that extra hour to this 100 or 150 people and the extra money for the specialist on top.

To summarize, it is obvious, that a considerable income differentiation makes indeed sense from a value creating point of view, **the only question then is how much?** Note that under a European 50%-65% equity model, considerable numbers of people have such a high income level. As Table 5 in Chapter III shows, for $\varepsilon = 50$ %, this value is 0,1 %, while for $\varepsilon = 10$ %, it is 0,21 % and for $\varepsilon = 60$ % it is only 0,03 %.

The **World Economic Forum** estimated, that only 100.000 people on this globe belong to the **information elite**, i. e. are really informed about what is going on. 20 % of these people live in the US, 6000 - 7000 in Germany, i. e. in Germany less than 0.01 % of the population. Remember that 80 % of income on this globe is concentrated to about 17 % of world population, which is about 1 billion people. Roughly, one in a ten thousand of these people would belong to the fully informed groups. Many people in this group might be able to make it to a ten-time average net income. For Germany, that would be an income of at least 400.000 – 500.000 € before taxes, as discussed above. The 0.01 % quote for that income level fits roughly with the rate in Table 5 for $\varepsilon = 65$ %.

Tab. 5 then tells us the following. For $\varepsilon = 50$ % and an average income of 25,000 € the corresponding lowest income is € 12,500 and 75 % of people lie between that value and the average. Looking into equity ranges of 70 % to 90 % obviously does not allow for sufficient numbers of people to be paid

high enough to motivate enough excellent people for huge inputs. For ε = 65 %, the highest equity value realised today for rich countries, the share of people with 400.000 € annual income in a world with average income 25,000 € (16 times the average) is about 0,01 %. This is one person in ten thousand, a very low value. For ε = 60 %, the corresponding value is 0.03 % , i. e. in a city of 100.000 people, this would be just 30 people. This must be close to the needed motivational power, while for ε = 50 %, the value is 0,1 %, which seems certainly powerful enough.

All in all, it is not too surprising, that there is no successful country with an equity level higher than 65 %, because corresponding societies obviously are not able to pay enough to enough top performers on a level that would be appropriate with respect to the arguments given above. Interesting enough, with the **Northern European countries**, e. g. countries that perform particularly well in almost any respect, it becomes clear, that 62 % or 63 % equity, i. e. approaching 65 % may be possible in the right societal environment, **but more equity apparently doesn't work.** And in times of globalization, also the Northern Europeans are now cutting back on equity.

As a necessary (not sufficient) condition for a country to be rich, the equity value should be below 65 percent, or, to put it differently, the richest 20 percent of society should collect at least 35 percent of total income.

V. Why makes too much inequity a nation poor? Development of human potentials and its interaction with equity and wealth

Too little equity makes a country poor. As a necessary (not sufficient) condition for a country to be rich, at least an equity ε = 45 percent seems to be needed. Correspondingly, the richest 20 percent should collect at most 50 percent of total income.

This Chapter deals with a core observation of this paper. The observation proves that the (implicit) argument of market fundamentalists, that always more deregulation and inequity makes a country richer, is wrong. This is obvious in the extreme case, if 20 percent of the population accumulate 100 percent of income, because then 80 percent of people would starve to death. But, in fact, it is also wrong already, if 20 percent of people accumulate much less than 100 percent. How is the empirical evidence and what is the argumentation? If we look in Table 6, obviously, all countries, where the richest 20 % earn more than 50 % of total income (equivalently where ε is below 45 %) are poor countries. So it seems that **too much inequity makes a country poor**. By the way, this does not mean, that a high equity makes countries rich, see China or India. So a reasonably high equity seems to be a **necessary**, but not **sufficient** condition for a country to be rich.

Note that this finding leads to a strong contra argument when dealing with the **market fundamentalist deregulation ideology**. Because, the argument against extreme market fundamentalist positions is no longer, that while their approach creates a high wealth in a society this is unfortunately distributed too unevenly and by that creates quite frustrating results in many areas, e.g. with respect to the human development index [82], i. e. for other dimensions of well being of people than just money. No, this approach **not even creates the highest wealth** possible and on top, distribute it extremely unevenly. Exactly this may make this approach, however, so attractive for the top of the pyramid - demonstrating again the **relative aspects of poverty and of being rich,** and the **moral hazard issue**, discussed in Chapter II.

Nation	ε	Income of the richest 20%	Nation	ε	Income of the richest 20%
Austria	65%	37%	Mexico	33%	57%
Brazil	28%	64%	Netherlands	54%	40%
Canada	55%	39%	Nigeria	35%	56%
China	45%	47%	Norway	62%	36%
Czech Rep.	62%	36%	Poland	53%	40%
Denmark	63%	36%	Portugal	50%	45%
Finland	61%	35%	Russian Fed.	37%	51%
France	54%	40%	S. Africa	28%	67%
Germany	59%	44%	Slovakia	69%	34%
Gr. Britain	50%	43%	Spain	54%	40%
Greece	54%	44%	Sweden	63%	35%
Hungary	52%	34%	Switzerland	54%	40%
India	47%	46%	Turkey	42%	46%
Italy	60%	43%	USA	47%	46%
Japan	62%	36%	Venezuela	38%	53%
Korea	55%	38%			

Table 6 Empirical evidence: There is no rich country with an equity less than 45 percent.

If one asks why too much inequity can be negative for a society there is first of all the overall picture as discussed in [25, 43, 51, 53, 54] to be taken into account. Here the overall global view on the societal processes is as follows. Productivity is a power and property of the **superorganism "humankind**" [36, 52]. There is a great historical build up in knowledge production, governance structure, technologies, access to ressources organized, infrastructure built and, of course, in human potentials developed. In this world, there have always been contracts under which work is done and results are distributed. Always in a pyramidal structure the poorer part of people forms the majority. As winners are highly rewarded, once you are on top you have a good chance to stay there (**"the winner takes it all"**).

Those down the ladder may just not have been lucky, or started with huge disadvantages or were confronted with unfavorable circumstances. In part they also might be where they are because of certain personal deficiencies. In any case, where they are, they do not have much chances to legally earn a lot of money. But they belong to the system, they have a right to be there, they are entitled to certain claims of being involved and, whatever else may be said, even if they are outsiders, they have a **potential to make trouble**. Also, in all cases where limitations concerning use of environmental resources or pollution is an issue, they have every reason to insist on having a priori the same right of access to resources and to consuming pollution potentials as others. It is not so easy to argue against such a point of view. Therefore, there is at least a **blocking power**, which eventually, in extreme cases, can be even translated into disobedience, disorder, **terror or civil war**. This issue has been discussed above in Chapter II in relation to the **ultimatum bargain game.** Essentially, low equity values in societies may be interpreted as insufficient offers in an ultimatum bargain, **that might be rejected by**

the potential receiver. Consequently, societies with too low equity values might be **prone for trouble**.

As was argued above, too much equity doesn't work for the economy, if high wealth and growth are the aim. It seems that equity values ε below 65 % have to be chosen. We know from mathematical analysis [35] **that the lower ε, the less cumulative wealth** will be with the people whose income lies below average, while, at the same time, the number of such people is growing. On the other side, with always lower equity levels there are always more rich people, whose incomes are far beyond the average, cf. again Figure 7. The question now is, whether the **mega-philosophy of a crude market fundamentalism** mentioned in the introduction of this paper is right: Saying or speculating or creating the impression or belief or promise that the lower ε, starting from an extreme communistic situation of ε=100%, the growth potential will always improve and society will always become richer. Is this suggestion true arbitrarily of what ε we have or not?

Now, the interesting observation already discussed in [35] is, that **this is not true**. To see this, we study again Table 6 and Figure 5 in chapter III, giving the equity values of countries as of today.

"While some differentiation seems to advantageous, even needed, to achieve a high wealth per person, too much differentiation is obviously counter-productive".

It becomes clear here, that crude market-fundamentalism after the fall of the Berlin wall took the correct observation that too much equity and too much regulation obviously does not lead to best results too far. They overdid an argumentation that was, however, right in the beginning, to force onto the world a solution that is particularly attractive for the rich and dynamic or privileging 20 % part of society, but not for the rest. **That offered an easy approach to the questions of globalization**. And certainly, for a poor country to be part of the world economy at all is better then isolation in national boundaries. But the world as a whole pays a high price for the asymmetric design chosen [47, 54, 55, 58, 59].

Note, that in fact all countries that today are prime performers as economies, are, at the same time, **democracies**, and have a **high equity**. Being at the **edge of competitiveness and innovation**, they all have equity factors between 47% (the US, the only such country with ε below 50%), and going up to 65%, which refers to North Europe, Japan and Austria (old data) with the highest degree of equity within the top performing group. So, obviously, there seems to be a **certain spectrum of balance for achieving maximal economic performance**. However, never a best performing society was found outside the spectrum of balance mentioned (45%-65%). And growth rates are inconclusive in this

spectrum, see Table 7 below. So, in a sense, it seems to be that differentiation from a certain point onward will not help anymore to become richer, but, to the contrary, **will make the economic performance on average worse instead of better**, also w. r. t. growth, not to speak of other virtues of social balance, that will then be lost. This refers to the issue of a **moral hazard in shaping economies**, as has been discussed in detail in Chapter II.

We mention, in particular, that if one looks into the **growth rates per person**, which, from an individual point of view, is **really the important measure to look into**, the picture is as follows: Norway and even more Austria, from 1975 to 1999, have very high values of per capita annual growth, on average 2.7 % and 2.0 %. Within 1990 to 1999 the respective values are 3.2% for Norway and 1.4% for Austria. If we compare that to the United States, where the respective amount is 2.0%, we see, that there is no reason to assume that the unusual low 47 percentage equity factor in the US necessarily means a higher per capita annual growth rate then in countries with a much higher degree of social balance. Taking into account the hints given below, that the US data profits from **hedonic accounting**, and the special role of the Dollar as well, makes the argument even stronger.

Nation	Population in Mill.		GDP in Billion US$		GDP per capita in US$*		Annual growth rate in % 1975 – 2000			ε
	1975	2000	1975	2000	1975	2000	GDP	Population	GDP per capita	2000
Chile	10	15	18	70,5	1721	4700	5,7	1,5	4,1	#####
Malaysia	12	23	18	89,7	1428	3900	6,8	2,5	4,1	0.3745
Singapore	2	3	18	92,3	8663	30767	6,8	1,6	5,2	#####
Indonesien	133	207	33	153	252	741	6,3	1,8	4,4	0.4854
Norway	4	4	85	161	21188	40250	2,6	0,0	2,6	0,6211
Hong Kong	4	7	33	162	7518	23143	6,6	1,9	4,6	#####
Sweden	8	9	146	227	17817	25222	1,8	0,4	1,4	0,6289
Denmark	5	5	110	162	21592	30566	1,6	0,2	1,4	0,6061
Austria	8	8	125	189	16483	23333	1,7	0,3	1,4	0,5650
Switzerland	6	7	171	239	26624	34143	1,4	0,4	1,0	0,5376
Korea	35	47	76	457	2162	9728	7,4	1,2	6,2	0,5525
Canada	23	31	347	687	15274	22161	2,8	1,3	1,5	0,5525
Italy	55	58	611	1074	11014	18517	2,3	0,2	2,1	0,5988

* data before the current dramatic change in currency value between the US$ and the €.

China	916	1250	113	1080	123	864	9,5	1,2	8,1	0,4464
France	53	59	758	1294	14390	21932	2,2	0,5	1,7	0,5376
UK	56	59	821	1414	14608	23966	2,2	0,2	2,0	0,5025
Germany	79	82	1123	1873	14268	22841	2,1	0,2	1,9	0,5882
Japan	112	127	2192	4841	19583	38118	3,2	0,5	2,7	0,6211
USA	216	273	4743	9837	21963	36033	3,0	0,9	2,0	0,4673

Table 7 Growth rates per person in the last 30 years (#### means no data available to the authors)

Add to this the fact, that Italy also did quite well with an equity factor of 60%, having 2.1% annual average growth from 1975 to 1999, with a level of 1.2% in the period 1990 to 1999. Of course for Norway, the oil in the North Sea might have been a particularly helpful issue, but Sweden also achieved a 1.2% average growth per person in 1975 to 1999 and in the time span 1990 to 1999 as well. In Finland, which is a very interesting country concerning the **route into the information society**, the 1.9% in 1975 to 1999 and 2.0% in 1990 to 1999 are also impressive numbers. Denmark has respective values, 1.6% and 2.0%. A little disappointing may be Germany where there seems to have been no growth per person in the first time period considered and of (only) 1.0% on average within 1990 to 1999. However, there are special financial burdens to be taken into account in Germany, namely **German reunification** and the **introduction of the Euro** as well as indirect burdens from the **collapse of the New Economy and the world financial bubble**. German banks were heavily involved in these processes. Putting all that aside, we will describe, however, in Chapter VII, why the numbers for Germany and other countries with a high equity might look worse than they really are. That has to do with measurement issues concerning the GDP and with the role of non-paid labor and corresponding growth in a society, dealt with in Chapter VI. Also, the recent drop of the exchange rate of the Dollar relative to the Euro was helpful. On the other hand, the high equity in Germany and other fully developed states has, in recent years, **been financed in part by public debits**, due to reduction in corporate and income tax, forced onto these countries via globalization. As those debits cannot be extended any more, extra trouble in the social field is ahead.

To summarize, all countries with **high wealth are democracies and have a high equity**. Why is that the case? Because there growth potential consists **essentially in innovation processes**. These seem to require high human potentials as input. And that will be also true in the future, at least as long as **human creativity** remains the most important ingredient into creative processes and corresponding services. And to develop human potential of high quality and power, that is to develop the full human potentials of a society **is very expensive and necessarily leads to a high equity**. Why this is the case will be discussed next.

To understand the need of a high equity for creating high wealth of a country (and thus in the long run for high growth rates) even better, we look into an extreme type of distribution pattern, namely the one we have world-wide at the moment, associated with an equity factor of about 12.5% or less. In [35] there is a table showing how many people in this situation can already be paid by using **one eighth of the income of the richest 20% of people** for that purpose. This is, maybe surprisingly, already about 40% of the whole labor force.

Or to put it the other way round: it is usually very attractive for humans to have other humans available for all kinds of personal services, which are not of a sophisticated nature but time consuming. However, **rich people are obviously not willing to privately spend a huge percentage of their income for that type of purpose** ("trickling down" doesn't work via elementary personal services). This can e. g. be easily seen with maids in rich countries, and is the same with all categories of (rich) people, whether they have a strong social orientation (then they rather have no maid at all but do not pay high salaries for having one) or not. Consequently, there are not so many maids in rich countries, particular not so much officially registered and reasonably paid maids with full social security and labor rights. This is because its obviously **only a limited amount of their personal income**, may be 10-15% of their income, that richer people seem to be willing to spend for this kind of services, in total. In case the equity is really low, then already with 10-15% of the income of the 20% richest, a lot of people can be paid.

That is the reason why in poor countries with high inequity, e. g. in Africa or Latin America, we find the highest numbers of personal servants. For the kind of work they do there is not much investment in education and training needed and they can easily be substituted for by other people, so there is also no need for much investments from the side of society into the **social security and medical care** for these people, i.e. into the general health system and education system. Consequently, there is no need for and there are no powerful groups to care for huge investments into **public infrastructures** and corresponding **public administration** to handle all that, in order to protect the investments into all people made. As a consequence, in unbalanced societies, **a lot of people, in a sense, are not really so much value creating** and certainly not on an internationally competitive scale. Because if someone with a cup of tea is following someone else all the day, where is the value created? Or to put it the other way round: such societies do not invest enough to develop their full human potential, keep it healthy and equip it appropriately with infrastructure and technology. And such investments are at the **core of social balance**, of **caring for equal opportunities**, of **defending the rights of the weaker majority** against the pressures from the richer part with all its power. This is much more at the core of social balance than alimentation for the very poorest.

Consequently, most people in poor countries are not able to create high value because they are **not educated** in that way, because they have **no access to corresponding infrastructures** and are not **sufficiently protected**. All in all, they are not equipped to do value creation on a level that is worldwide possible today in a quite competitive environment. By the way, this is the reason, why e. g. **micro credit movements** put so much emphasis on **education** [88]. And obviously, having a lot of not educated but cheap private personnel around does not make rich people more value creative in competition with top performers in other countries, so that they could compensate for all those servants and still bring their country to a front position in GDP per person.

On the other hand, **front edge investments into broad development of human resources is really expensive and seems only to be possible in form of realizing a sufficient level of equity**. This means that fully developed human potentials and high equity go hand in hand. Of course this means again, that a considerable part of people of poor countries while never properly prepared for that task, will not contribute essentially to wealth creation, and that means, that such countries must be comparatively poor countries.

Today, technology, innovation and thus investments are the most important issues to allow for a high value added and for growth, particularly for rich countries. Above all, the **combination of highly trained people with powerful machines** working in the direction of always more automation determines the overall picture, of course coupled with labor intensive production in low income countries. Consequently, people today have to be **broadly – and life-long - educated**, for instance, to use computers, the internet and the new information resources, on top of using telephones, cars, credit cards etc. It is today the most overwhelming issue for being and staying a rich country, that so much people have to know so much, and much of what they have to know can be only achieved by **life-long learning, mostly on the job**, and when using devices daily. So it is the most challenging issue for a country to be and stay rich today, to bring its people on a top level of education, knowledge and skills and then keep it there, **life-long**, in a world of constant change and innovation in the **struggle for top positions among countries**. This is an intrinsic issue given what is possible world-wide in personal value creation, when adequately using the knowledge and the infrastructures we have available today.

Actually, a recent and important German study [1] very convincingly showed that, for the people in Germany, the value of their **human intellectual capital** is the highest asset they have. It **is about € 130,000 worth on average**, while **capital stock is (only) about € 100,000** on average. Intellectual capital is devaluated over time in that study according to the type of knowledge considered. About one third of the formal education "capital" comes from school, two thirds from high education and polytechnicum / university. A dominant factor is **life long learning**. Achieving an actual value of € 130.000 has of course to do with how to evaluate input that partly doesn't appear in the GDP, e. g. in-

put by parents (above all typically mothers who stay at home, see Chapter VII) and **private unpaid time invested into life-long learning**. Concerning all these unpaid inputs, the study mentioned [1] uses the average payment for a working hour in Germany, which is € 13 at the time being. Certainly, there is a social /ethical judgement in how this is computed. Partly, the effects involved here correspond to the small data study done in Chapter VII on the issue of a more honest GDP and how to incorporate the value created outside the formalized parts of the economy into this picture.

If education is such an essential issue, then what does that mean for the equity situation of a rich country and what does it mean for equity in a developing country in a catch-up process? It means above all, that **education is of highest importance**. As a consequence, many teachers are needed and have to be paid. And good teachers are able everywhere under normal conditions to generate at last an average income (taking family size into account). In rich countries, this is about 2 - 3 percent of the work force (average value for Europe 2.7 percent, see [23]. If all people are adequately educated, they require **full medical support** to protect the investments made. From this, the need for good health services results. In rich countries, the medical sector makes up for about 10 percent of the workforce, where at least 2 percent have comparatively high incomes, e.g. doctors and pharmacists who make up for 1 percent [73]. this is also about 2 - 3 percent of the work force. Further needs to protect the investment made concern infrastructure availability (e.g. water, water sewage, streets, train systems, ports, airports, public transport, electricity, telephone, internet) and systems for **old age care**. Again note, that good teachers, doctors, administrators usually don't work for less money if they serve the poor part of society. So, guaranteeing full chances for this part of society requires means of **co-financing**, coming from **redistribution** systems, to allow for a proper income of all these experts needed to bring a whole population onto a high level of human capacity. See also [45] reflecting on a vision for development by J. E. Stiglitz as articulated in his Prebish lecture at UNCTAD in 1998. All that amounts easily to 5 - 10 % of the work force. And even more experts of a similar quality and income are needed in economic service and production fields to care for a dynamic economic environment and to pay the taxes needed to do the co-financing of all the mentioned public services or social security systems, required.

Summarizing, such a bulk of people of at least 23 - 25 % of the total work force is needed on a quite reasonable level of education and payment to make a country rich, that equity, almost unavoidably, will go up to 45 % or more (cf. Table 8 below). So obviously a society, which wants to be a front-runner State, needs a high equity, easily beyond 45 % and more, corresponding to 23 % or more jobs beyond average income for organizing the needed good education for all, with all the indirect requirements concerning infrastructure availability, health care and pension systems resulting from this need. Of course, all this creates enough attractive jobs, also **public service jobs** needed, to allow for a high equity. In particular, a lot of high paid, non-technical jobs, result from this approach, too, for instance in public administration.

ε	Share of people earning at least average income
0,25	15,7490%
0,3	17,9073%
0,35	19,8869%
0,4	21,7153%
0,45	23,4141%
0,5	25,0000%
0,55	26,4867%
0,6	27,8855%
0,65	29,2056%

Table 8 Relation between the equity level and the share of people, earning at least average income

It is interesting in this context to look into the **social fabric of countries with a quite low equity**, such as in Latin American and African States, where equity is something like 30 % - 35 % or even less. In such countries there is not enough education, health care etc. available in general for everybody. Unavoidably, this is then coupled with a low level of equity. So in order to reach a higher level of general education, **equity has to get higher**, while higher equity makes a higher educational level possible more easily. An equity level of 45 % or more seems to be necessary, if one wants to bring the bulk of the labor force on a human resource potential, on which they can operate fully competitively on an international level.

In summary, **a high equity** is a necessary condition for a high GDP (wealth) per person and international competitiveness of the labor force, but **not yet sufficient**. The necessity here results, among others, from the need to bring a whole society on a high level of education in a broad sense, which is a long way to go, and to keep it there.

Obviously then, there is a **force that requires increases in equity**, particularly in the form of education of most people in order to make a country rich per person. On the other side, we saw already under a 45%-65% equity model, such as in leading countries today, that there are high-income people in considerable numbers. So obviously, there is also no more motivation to gain by re-distribution of an even bigger share to them. To the contrary, there is a certain danger that people may get too much distracted from their work with too much money available coupled with a too high inequity. For instance, they may need more time then to spend their money and take advantage of so many personal services and may, for instance, go into all kind of (personally rewarding) but not value creating hobbies or intellectual activities instead of concentrating on international competitive forms of value creation. So,

also from that side there is no further impetus or societal need for more inequity, once a country has passed below the 50% or even 45% level.

Summarizing, quite straight forward considerations show that **45%-50% is somewhere a lower limit for an arguable inequity**. Below that point, **more inequity doesn't help to increase the wealth of a society** and on the long run its growth potential any further. To the contrary, lower equity levels will make or keep a country poor - maybe with the secretive approval of its elite's, the **moral hazard** issue discussed in Chapter II. So, the real issue about equity and wealth, and finally, about "equity, wealth and growth" is a **balancing issue** concerning social balance. **Between 45% to 65% equity seems to be the scope of balance to place a society today. Outside that range the value creation potential on the level of international competition is too low**.

> With an equity **too high** (≥ 65%), not enough people can be motivated enough for top value creation activities and excellence, with an equity **too low** (≤ 45%), the population in total cannot be brought to the level of education to be internationally competitive. For these reasons, an equity between 45 percent to 65 percent seems to be a requirement for a country to be rich. This is a necessary, but not sufficient condition.

To **summarize** the insights gained in Chapter V, a **rich society** is a society with a high social cohesion, doing the following job. These societies organize enough public funds, internal co-financing and redistribution to have a **good education for all people**. And so, also the poorer people will be educated by good teachers that are relatively expensive when compared with the income of these poorer people. This is at the heart of social balance, because good teachers usually insist on receiving a reasonable income, even when teaching children from poor families. But once a society has invested so much into the brains of its people, it cannot let them die for a little coughing. With the same logic with which an infrastructure for education has to be created, that was not directly dependent concerning the quality of individual services on what the poorer part of society can pay, the same has to happen with the **health system** and with **available powerful infrastructures**, as a consequence of which all people now are good educated and are quite healthy and equipped with world-competitive infrastructures. This will, by the way, have the consequence, that in the end such societies will have **a lot of elderly people**, i. e. it will be an older society as is typical today for all fully developed countries. This makes up for part of their success - if interpreted correctly.

With this observation we are in the middle of the **social issues of all rich societies today**. This social issue is **not primarily about social subsidies.** In Germany, for the time being, these make up for about 15 billion Euro for about 2.8 million people, which is about 0.75 percent of German GDP, a limited amount, also with respect to equity requirements. No, the social issue is about something differ-

ent. Eventually, all the people of a socially balanced state are good-educated, healthy, and they live long, but that is essentially what it means to be a rich country. Of course, the question is whether this can be sustained on the long run in a world, dominated by **market-fundamentalist global frameworks of the economy**. The answer is no. Unavoidably, if global framework are not improved, it will happen what we see happen today in all rich countries, namely a **cut-back in education for all, social security for all , wealth for all, infrastructure availability for all** etc. Of course, while the cut back happens, nobody wants to say that. Instead the propaganda is, that with more emphasis on competitive international regimes, e. g. **markets for education**, things should even become better, what is obviously wrong. But the way to deal with shrinking public budgets is pretending everything becomes better due to more competition introduced, where in effect, on the long run, most people will not be so well educated anymore, not so healthy anymore, die earlier, etc. than necessary. Just as a side remark, the last point will solve some of the social security problems of today quite cheaply. And as wrong as things run in rich countries under globalization pressures, as wrong they run globally. For instance, under the **Washington Consensus** [39], developing countries are often forced to cut back in civil services, including **education** and **health services**, which will keep these countries poorer than the need to be. Not surpringly, the Microcredit movement puts extreme effort into the issue of education [88],as do planetary thinkers such as [13, 45, 58, 67, 75, 85, 89].

All that was said doesn't say necessarily something about **growth** as such. Because particularly if GDP per person is low there is a huge potential for growth in **catching up countries** coming from **leap-frogging**. Leap-frogging means the copying of solutions found somewhere else instead of inventing everything from scratch. So poor societies, temporarily, can have high growth even with equity levels that are quite low. But this is possible only for a while. Once a society has reached quite a high GDP per person, this will amount to being somewhere between an equity of 45% to 65%. So in order to become rich, countries will eventually have to care for an equity level of at least 45%. Japan, Korea, Singapore, Taiwan proceeded that way and become eventually rich. Most Latin American and African states never took that route and kept poor. Here, the **moral hazard** problem dealt with in Chapter II seems to dominate the picture. China and India proceed in a better way. In particular, **China now has a chance to become a rich country**. One question is whether the rich world will allow that [41, 47, 55], this is the moral hazard issue given the size of China coupled with a **power issue**, now on the global scale. Another question is, whether the world will even promote progress on a world wide scale, eventually also reaching out to Latin America and Africa. This is the issue of a **GLOBAL MARSHALL PLAN/planetary contract** leading to a **global eco-social market economy** (cf. Chapter X and [6, 29, 48, 54, 56, 59]).

Growth and its connection to equity can be different for a long time from wealth and its connection to equity, because growth potential is particularly high, when starting from a low status quo. When a country is still poor, one can have an additional growth potential by moving fast into the direction of a better organizational and technological situation in the form of **leap-frogging**, doing the right kind of investments if investors can be found. By what was said, this will, however, have to include **improving equity towards at least 45 percent,** if the aim is to reach a top level position in a world-wide comparison concerning GDP per person.

VI. A more honest indicator for value creation and consequently for growth

This part of the paper deals with an extra irritation in the debate about "equity and growth" that has to do with the fact, that there are problems in our way of computing the GDP. There is generally a lot to be said about **what a reasonable measure of value creation should be**. In many contributions (e. g. [83]), it is made clear, that today's forms of computing a nations value creation includes lot of biases. For instance as we are not on a track for sustainability. GDP numbers don't tell the truth in a long run perspective, an issue pointed at strongly by representatives of the **young generation** [74, 87]. Today, destroying social or ecological capital, or reducing the number of jobs instead of creating new ones may lead to a growing GDP even if it makes humankind really poorer.

So, a first step in dealing with the issue of "equity and growth" must be a **more honest GDP definition**, leading to more adequate numbers and consequently a better measure of growth. Two issues should be taken into account here, particularly. (1) If the "mistakes" in computing GDP stay more or less the same every year, than comparing the numbers from year to year and extracting a measure of growth out of it could still give essentially the right idea of what is going on. (2) If the GDP is replaced by something else such as a **green GDP**, or the United Nations **Human Development Index (HDI),** standing aside to the GDP, then the question still is how to integrate both or all forms of measurement **into one coherent system** to give orientation to decision making by the State, companies and individuals. It is a basic result from **multi-attributive decision theory** [37], that every consistent form of decision making eventually requires a one-dimensional attribute and scale to put **values to outcomes**. So, GDP and green GDP and HDI somehow have to be integrated (explicitly or implicitly) into **one** number, whenever they are used as a base for decision making.

Given these two points in the following we not invent a new GDP but rather ask for conditions, under which today's GDP would tell the truth. It seems that the way the GDP is computed would be okay, if only **all prices would tell the truth**. The problem therefore seems less to be the definition of the GDP as such, but that the **frame of the global economy and of world politics on a more general level** is not in order, so prices don't tell the truth. Or to put it different: **Sustainability requirements are today not internalized sufficiently into the (world) markets**.

The framing should not lead to prices that do not say the truth (socially, culturally, environmentally). The easiest approach to think of a better GDP may therefore be to think about a world economy where the frameworks take care for social, cultural and ecological concerns in such a way, that this allows for sustainability. As part of a global contract, limitations to resource use and pollution, accepted by developed states and states in development are needed. To reach acceptance of such standards by countries in development in a peaceful way, **co-financing** of the convergence of standards could be a solution. This is sometimes called the **Balanced Way** or an **Eco-social Market Economy**, as it is typical for the EU member states and for the EU extension processes, see [55]. Such global contracts must incorporate a co-financing of development, traded against the willingness of developing countries to accept high standards, e. g. concerning children and labor rights and environmental protection. The **issue of an eco-social GLOBAL MARSHALL PLAN/planetary contract,** as discussed in Chapter X, leads into this direction. If such a framework was implemented globally, then **economic activities** and **growth would be compatible with sustainability** and only in that case would the GDP, computed as today, quite correctly describe value creation, and, consequently growth. I. e. growth numbers being deducted from changes in GDP over time would give us a real picture, which is not fully the case today.

Note that still the GDP might give a wrong impression. If for instance growth is only due to more traffic accidents, handled, then it doesn't mean that people are better off. However, such accidents are then a form to give more work to certain people and, on the other hand, modern states improve on all kind of issues of public concern, such as the number of deaths annually in road accidents. Consequently, only in fields not of general concern to the public, such unwanted effects still might happen, once the frameworks are in order.

There are other factors that are of importance, when comparing GDP between nations, for instance, needed corrections concerning the impact of **currency exchange rates**, particularly differences between dollar costing and internal costing for countries in development. However, the importance of that issue is diminishing under globalization pressure**. Another important question is how to compute or evaluate technical progress**? Do we compute it in a more conservative way as most of the European states do, or do we compute it in a **hedonic way** as it is the case in the US? This can make up to 0,5-1% growth differences a year. Hedonic here means, that we count new and better technological solutions beyond actual market value to reflect improved functionalities, apparently not translated into higher prices, leading to a higher GDP and, in the beginning, higher growth rates. However, people may ask themselves, whether, e. g. with always faster, but not more expensive computers and the same income, they are richer than before or not. More information to that issue is given in Chapter VIII. The conclusion is, that there are some arguments pro and some contra hedonic accounting but in any case, to do comparisons between countries, they all should use the same accounting method.

Other aspects to be taken into account when looking into GDP and growth.

1. The official GDP/official earnings

This concerns all goods and services produced and offered which are officially handled, paid in money, with taxes and social security paid and where the people involved may be legally registered or illegal workers. An important question here will be, how many labor hours of the legal and illegal type are involved? Because, if we ask for wealth, which is GDP per person, of course its an essential question, **how many people are really involved and how many hours those persons on average have to work to make their income**. So lower income and more free time may also be ssen as **lifestyle decisions**, not necessarily an expression of one nation falling back relative to another nation. Or put it the other way round: We will associate below in a data study an economic value to having free time, to not have to work so much in the official economy. This can massively influence the observed performance of present days economies, e. g. in comparing the US with Europe or Japan. By the way, the same is true with the recent heavy **drop of the value of the Dollar in comparison to the EURO.**

2. In-official economy/black labor market

This concerns the part of goods and services produced which are in-official (i. e. black market) but still paid in money to people who might be legal or illegal workers. Again the question here is, how much working time is invested by legal and illegal workers to create these goods and services and how many not registered people are involved. Note: Illegal workers are of interest here, because they add to the official GDP, but are not taken into account when we see the GDP per person, i. e. GDP per person will look better than it is, when not taking the unofficial workforce into account.

3. Money-less economy

Value creation done by legal or illegal workers that never is seen in a purchase bill (exchange of natural products, neighbourly help, moonlighting on building sites etc.). In particular, people caring at home for a family usually contribute heavily to value creation, e.g. education of children, but that never enters the GDP.

If we compare the situation between the US and a country like Germany, then the GDP per person in the US is higher, though that changed essentially with the recent drop of the Dollar value relative to the EURO. However, part of this is also a consequence of the fact that in the US, about 75 % of people in working age perform regular jobs, in Germany/Europe only about 66 %. Also, the US workers on average have a 25% higher productivity, which essentially results from higher average working hours (more daily hours, less holiday etc). On top, in the US, on the lower side of the social spectrum, we have the phenomena of very low paid people and very limited social subsidies, requiring people **to ful-**

fill two, or three jobs to be able to earn their living, so the input in working hours there is even higher. To put it the other way round, quite uncomfortable working conditions are needed to reach in the US the still low level of equity achieved.

All in all, today's GDP per person should certainly be reduced for the US in order to have a meaningful comparison to the situation in e. g. Germany. Not so clear is the situation with respect to illegal work in the sense of a "**hidden economy**". This is a phenomena in the US, as well is in Europe, maybe to a somewhat higher extent in Europe, for instance to avoid taxes and social security payment. For the US, higher numbers might result from more unregistered people staying in the country.

On top comes the **hedonic valuation** of technical progress in the US versus a conservative one in most European states which might add another 0,5% of difference in GDP, to the advantage of the US, which would have to be withdrawn in a fair comparison.

4. The influence of making use of resources of the world outside

One can, in principal, increase GDP by extension of inputs, i. e. by using more resources, by "eating up" more cultural diversity to get more homogeneity in consumption patterns , by using low paid resources from other countries via World Markets, by shifting the terms of trades to one's own advantage and, of course, by **bringing more people into the formalized economy**, be they legal or not. **The US as a "save heaven" for money** in the sense of high expected returns, comparatively low taxation, political stability, civil and military security, has always profited from a **high inflow of money** from all around the world, which is available for instance as comparatively cheap money to foster investments and innovations. That gives the US a clear advantage. **But the US also draws heavily via Green Card** on well educated people from all around the world without paying for the (primary) education of these people and for the even more extensive search processes for excellency, i. e. **identifying the few out of hundreds of young people who have a real high potential**. These people then leave their home countries leaving the others behind.

So there is a huge inflow of resources from outside into the US that makes its GDP look a lot better than it is out of itself, because it massively feats on input from other countries. Actually, given the numbers quoted above for the **economic value of an average brain in German** [1], high potentials entering the US every year in total numbers of **100.000 - 200.000**, **can be worth 1 - 2 % of US GDP**, if an equivalent would have to "produced" inside the US - apart from the fact, that this would probably be not possible at all for principal (genetic) reasons. Not surprisingly, the US are getting into trouble now with their mor restrictive Greecard policy, following September 11. No doubt, though, also an **unintended development effect comes along with the Greencard** [55]. And **remittances** being sent back from people learning or working abroad to their relatives in poorer countries make up now for 80

- 100 billions $ a year world-wide [29]. This is almost double as much as international over seas development aid and an important factor to local well-being and development.

Finally, there is also a kind of "tax" to be taking into account, **paid by all other currencies** towards the US dollar, as this is (still) the world's most important reserve currency. And of course, as already pointed out above, also the **financial bubble** and the **new economy bubble** did a lot to have the US growth look better than it was and is.

5. Extension by bringing more people into the formalized economy

This issue is a very important one. The more people work in an economy and the higher the formalization degree of an economy is, the higher the value added is in numbers. This can, for instance, be obtained by integrating always more people from the outside world (registered or illegal immigrants, partly with comparably low incomes) into the economy, an approach that the US, which still has enough space, is following since a long time. Another aspect is to bring always more women into the official labor force. This issue today is of high importance with respect to a **more formal equity between men and women**. However, still numbers in this context may not tell the truth. Because extending the formalized area of work does not necessarily mean, that the real value created does grow or grows accordingly. Because more formalization may only mean, that the value that was created before is now created in a different way. Before, value creation also took place (i. e. a mother caring for a child, a mother cooking for her family or caring for her parents and neighbors), but was not counted in numbers as part of the value creation process. If now one woman in a formalized job cares for the children of another woman, who then herself, as a nurse, cares for the parents of that other woman, it seems there is more value created with respect to numbers. **Actually, it can even be the other way round**. It may well be that as a consequence of formalization sometimes certain values created before are **now definitely lost**. After formalization, there may be less people who have time to listen to others, to invest into children and into developing human potentials, to care for neighbors and to build social cohesion, to stay with parents, to stay with those who are ill, who are dying. There is a lot of value created of that type, today, for instance by mothers (sometimes also fathers) "**working**" **at home**, and once they go into the formalized economic processes many of those contributions are lost forever and not substituted at all.

As a consequence, numbers will show a higher GDP and higher growth if always more people go into the **formalized economy**, but in reality, people may have become poorer on average. The higher GDP may then essentially be only a consequence of extensions in the sense of having more people involved in the formalized economy. There is no creation of higher value, may be even a loss of value, but in numbers, there is growth. Now, as a country like the US is growing in number of people, above all due to steady immigration, this induces growth. But also, the US was faster in bringing in women and el-

der people into the formalized economy than Germany. So part of the higher US growth also results from this mechanism. We will, in particular, do a data analysis in the next Chapter about the balance in such processes, which is of high importance when comparing the performance of countries. The data analysis shows, that sometimes **more is lost in a formalization process** than is gained if a more reasonable model of value creation is employed, that might also be better compatible with the idea of a sustainable development. In this data analysis, services that are not translated into numbers today, get into the model as numbers and thus values. Note finally, that the observations given here are not new. As mentioned above, many authors have critically looked into the limited explanatory power of the present day GDP. And the **United nations human development index**, developed to reflect the well-being of people beyond mere GDP numbers, shows an interesting picture [75, 82, 86]. With respect to this index, the US performance looks rather limited.

VII. Monetarized and non-monetarized value creation – what do the numbers tell?

In this Chapter, we extend the considerations developed in Chapter VI concerning value creation and numbers. To repeat, there is in every economy a lot of value creation, **not being monetarized**, e. g. mothers, or parents, caring at home for their children. This is particularly also true for the developing countries, which are therefore richer in certain dimensions than numbers tell. Here, we again refer to the United Nations development index [82]. However, to some extend, the phenomena also occurs in the rich world, as discussed in the last Chapter. In the following, we do a data study, to demonstrate some of the effects.

For this, we cautiously assume the following. Every human has an average daily time of 12 hours, minus the time they officially work or work in the "hidden economy", as a potential for monetarized value creations, not used for making money. What do people do with this "**free time**"? We assume in the following, that this time, though not paid for, is used to a degree of about 50% in a socially or culturally or environmentally value creating form for society. In the study, we will evaluate those unpaid hours of input with 5 € or 7 € value, where 13 € is the average hourly wage in Germany for the time being. With this value, we on average honor half the free time by a value close to the average salary per hour.

As a background, we recall, that **social coherence between people in a society is produced by spending time with each other**. People who are unemployed, people who are not in the formalized economy, people who are retired, children etc., but of course and above all, **mothers or fathers or grandmas and grandpas caring at home or during holidays or whenever for their families**, they all do a huge input into the **'social fabric' of society** and many of them give such inputs 12 or 14 hours a day or more **for free**. Of course, part of the time invested by the different groups mentioned may have nothing to do with increasing social cohesion or life long learning or whatever. So we assume on average as described above, that e. g., 50% of that time will be used in a value creating but unpaid way. In our study, we will evaluate this by either 5 € or 7 € an hour. **This way, the informal sector and its value creation is monetarized to a certain (cautious) extend**.

One could further differentiate this data study concerning the way how we treat people that work more then 12 hours a day, on average over the year, in the official economy or in the hidden economy. We

could of course say, that it has an effect 0 concerning the additionally created value, but we could even say, that **working more than 12 hours even has on average a negative effect regarding social cohesion**. If this view would be taken, we might even distract money in this case, i. e. reduce GDP, because these people, in a certain sense, are on average also a burden, concerning the social fabric, be it their families, their neighborhood etc. To see overtime work this way is worth consideration, however, in order to keep things simple, in the study below we will avoid that issue by averaging working hours for all people employed. This way, the issue of people, partially high income people, working more than 84 hours a week in the formalized economy, does not occur.

Now, if we go into that kind of computation and compare the US and Germany as an example, then we see, that **Germany**, de facto, **becomes much richer in comparison to the US** as the GDP per person would tell. Here, the comparison is done before the recent drop in value of the Dollar relative to the Euro. Why is that the case? The reason is, that much more people work much more working hours in the formalized economy in the US than in Germany. Because in the US, official working hours are more, more retired people have jobs, more woman have jobs. So much more contributions of more people enter already into the formalized economy, while informal contributions by these people can then obviously not be realized to the same extent any more. The picture is still the other way round in Germany.

In particular, the socially weaker but active part of the US society, which has to do two or more jobs to survive, is in part busy up to exhaustion. And even elder people pack consumer goods in supermarkets for 5$ an hour. All these people then do monetarized value creation, which has as a consequence, that time is missing for non-paid creation of social coherence. All this makes it understandable, why in spite of higher growth rates in the US year per year, and a high GDP per person, Germans when visiting the US not have the feeling, that people there are better of, particular not ordinary people in the lower income segment of society. If the US growth rates in real values would have been so much bigger than the German ones as official statistics tell , then an easy computation shows, that over time, the differences should have accumulated to such a huge value that it **must be felt and seen everywhere, also within the poorer part of society**. That is however, not the case. We now better understand why, an interesting further aspect to the issue of “equity and growth”.

As a data study, see Tables 9a/9b, we look into two types of countries A and B assuming a potential workforce of 1 million people each. In State A, the workforce is actually 750,000. Taking main job and additional jobs together, they have a weekly working time of 50 hours, 48 weeks a year, leading to 2,400 paid hours of work. The average annual income is assumed to be 30,000 € leading to an official GDP of 22.5 billion €. We now assume as a potential a socially active time of 12 hours a day, 7 days a week, 52 week a year, leading to a potential of 4,368 hours a year. For the paid workforce, this creates

a potential for 1,968 hours of non-paid contributions per year. For those people (250,000) officially not working, this means a potential of 4,368 hours a year. In case 1, the extra hours are valuated with 5 € an hour, in case 2 with 7 € income value an hour. This leads to an added GDP of the paid workforce of 7.38 billion and of the 250,000 other people of 5.64 billion, leading to an enriched GDP of 35,62 billion € in case 1 (see Fig. 9a). For 7 € income value per hour not formalised work, it is 40,176 billion € (see Fig. 9b).

With the same procedure, we calculate the enriched GDP of State B. In State B, the paid workforce within 1 million people is 650,000 people. Taking main job and additional jobs together, they have weekly working hours of 40 hours, 44 weeks a year, leading to 1.760 paid hours of work. The average annual income is assumed to be 24,000 € leading to an official GDP of 15,6 billion €. We now assume, as above, a socially active time of 12 hours a day, 7 days a week, i. e. 4,368 hours a year. For the paid workforce, this creates a potential of 2608 hours of non-paid contributions per year. For those people (350,000) officially not working, this means a potential of 4,368 hours a year. In case 1, the extra hours are valuated with 5 € an hour, in case 2 with 7 € an hour. This leads to an added GDP of the paid workforce of 8,476 billion and of the 350,000 other people of 7,644 billion, leading to an enriched GDP of 31,12 billion € in case 1 (see Fig. 9a). For 7 € per hour not formalised work, it is 38,168 billion € (see Fig. 9b).

Conclusion: Taking the extra social dimension and value effect of so-called "free-time" into account considerably changes the comparison in value creation between State A and B, as is obviously the case when comparing the US with most states in the European Union.

Average Income = 5 € per hour non-paid services

	State A	State B
Potential workforce	1 million	1 million
Workforce	750.000	650.000
Annual working hours per worker	50 h x 48 weeks = 2400 h	40 h x 44 weeks = 1760 h
Average income per year	30.000 €	24.000 €
GDP	750.000 x 30.000 = **22,5 billion €**	650.000 x 24.000 = **15,6 billion €**
"Added" hours per worker	(34 x 48) + (84 x 4) = 1968	(44 x 44) + (84 x 8) = 2608
Added GDP of workforce	750.000 x 1968 x 5€ = **7.38 billion €**	650.000 x 2608 x 5€ = **8.476 billion €**
"Added" workers	250.000	350.000
Annual working hours per "added" worker	84 x 52 = 4368	84 x 52 = 4368
Added GDP	250.000 x 4368 x 5 =	350.000 x 4368 x 5 =

	5,46 billion €	**7,644 billion €**
Enriched GDP	**35,62 billion €**	**31,12 billion €**

Fig. 9a *Effects of evaluating non-formalised value creation*

Average Income = 7 € per hour non-paid services

	State A	State B
Potential workforce	1 million	1 million
Workforce	750.000	650.000
Annual working hours per worker	50 h x 48 weeks = 2400 h	40 h x 44 weeks = 1760 h
Average income per year	30.000 €	24.000 €
GDP	750.000 x 30.000 = **22,5 billion €**	650.000 x 24.000 = **15,6 billion €**
"Added" hours per worker	(34 x 48) + (84 x 4) = 1968	(44 x 44) + (84 x 8) = 2608
Added GDP of workforce	750.000 x 1968 x 7€ = **10,332 billion €**	650.000 x 2608 x 7€ = **11,8664 billion €**
"Added" workers	250.000	350.000
Annual working hours per "added" worker	84 x 52 = 4368	84 x 52 = 4368
Added GDP	250.000 x 4368 x 5 = **7,644 billion €**	350.000 x 4368 x 5 = **10,7016 billion €**
Enriched GDP	**40,176 billion €**	**38,168 billion €**

Fig. 9b *Effects of evaluating non-formalised value creation*

As a summary, it becomes clear, that the average working hours and the degree of non-formalised value creation have an extreme effect when determining, how rich a country really is. The GDP tells only part of the truth, as is already well-known from many studies and from looking into the **UN Human Development Index** [82]. Once more: **One has to be aware of numbers**.

VIII. Why is annual growth in rich countries usually limited to very few per cent?

Growth is a difficult issue to understand. But one principal difference between rich and poor countries is obvious. For principal reasons, in rich countries high growth rates of maybe 3 % a year **can not go on for ever**, for pure mathematical reasons. Any fixed such growth rate would lead in direction of infinity soon, as is discussed e. g. in [26]. Or to be more precise, if we do a comparison between Germany and China, then for the time being, a 10 percent growth in China in absolute term means only 1/3 of surplus per person on average of a 1 % growth in Germany. This is because the GDP in Germany at the moment is per person about 30 times as high as the one in China. So, there is a principal reason that growth rates must go down on the long run because **growth is a relative issue**. This comes on top to the other growth - limiting effect that, once certrain life-style decisions are made, **in rich countries growth per person can only come from innovation** – and innovation has its own problems and is expensive and slow - which will be discussed later.

Note, that for countries in an early stage of development - like today in China – much growth will come from **extension processes**, which means that **more people** enter into the formalised economy or **more resources** are put into it. Also even more growth can come from **investment**, particularly also from investment from outside. **High investment,** and thus **high rates of savings** are of central importance for fast growth [15, 16, 17, 18, 19, 20, 46, 48]. Furthermore, **leap-frogging** is a central issue. This is a form of using or copying the best technologies that others have already developed. It allows late comers to avoid many of the pit falls, that the fully developed countries had to go through. For instance, fiber optic telecommunication lines, available now, are much more powerful and cheaper than copper and mobile phone systems often are an even better solution and all this is nowadays available at reasonable cost.

The situation for **front-running countries** is much different. Particularly if there are **stabilised societal decisions about the level of involvement in monetarized economic processes,** about free time, holidays, retirement age etc. and if too much immigration is not wanted, then the only real ingredient for more growth is **innovation**, be it technical or on the societal side. And innovations are **hard to invest and even harder to implement**. For innovations usually require appropriate **new skills and human potentials**, often a higher level of education or new ways of doing things, **life-long learning**, new ways of dividing labour between humans and machines. We could study this very nicely in the

context of the **New Economy.** There came up the need to **re-educate** great parts of society permanently to be able to handle productively those new devices, entering the markets extremely fast. On top, innovations change the status quo in many areas. And rich countries always create **massive defence lines against change**, because they already achieved a reasonable state of affairs that is **worth to be handled with care**, and to be protected, if possible.

- **Why huge potentials are translated into small annual steps?**

Now assume a big step of scientific progress to occur , which translates into completely new technologcial solutions in many areas of society. Then really big changes are to be implemented that more or less have a meaning for the whole of society and than of the economy as well . These are those things that maybe lead to **long cycles of growth**, like inventing **steam-engines** or **electricity** or maybe recently the **computer** or the **mobile phone**. Now, **such cycles take a long time to materialise**. The problem is that usually infrastructures such as buildings, production facilities, roads or airports have to be modified, which takes a long time. This is because such changes usually have to respect the **amortisation cycles** of the respective expensive installations and infrastructures, i.e. houses or energy systems.

So even if there is a big potential from a new innovation to make us all much richer, the whole cycle of implementing such a basic innovation can easily take 30 – 100 years, so the big potential is translated into small steps every year. Again, also the aspect of **human potentials** is a big issue and to the extent that young people have to be educated in completely new ways and then be involved, this leads again to a long cycle, particularly in **replacing the workforce**. This is particularly difficult in countries where the population gets older and where there are not so much young people which is, however, **typical for all rich countries**, particularly, if they not profit considerably from **green card like mechanisms**.

Altogether, this constitutes a general limiting aspect concerning growth rates in rich countries. The same is due to the fact that **innovations often hurt**, particular, if they make old qualifications obsolete. There are many ways by which the **old defends itself against the new** and in rich countries it makes sense, to be very careful. This often makes it difficult for the new to be implemented at all, not to talk of a fast implementation, which again limits any growth potential still further.

- **The money "Pumping" problem for regular innovations**

In the following, we will study what it would mean if we could do a reasonable step forward on the technological side and how this would affect the economy and society. For this, we assume that over a few years there is a 20 % potential of progress meaning that with the same input in physical resources, investments and human potential into a particular, technology-dominated sector of the economy, we

can make a **20 % increase in output**. Asking what that means for society and what kind of overall growth can result from that we will now separate society into groups as is done in Fig. 8.

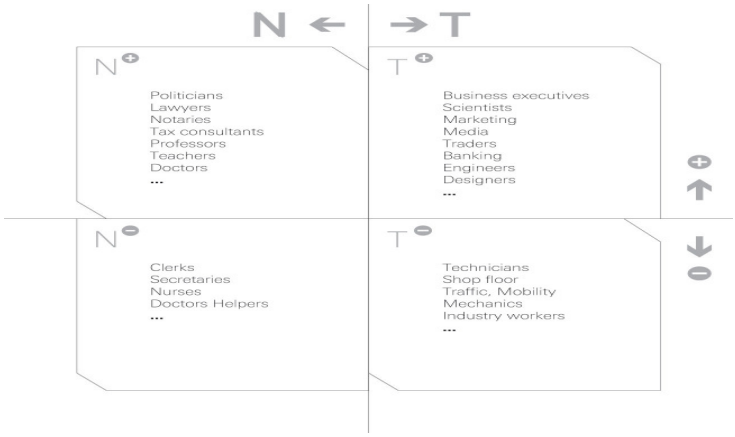

Fig. 8: Job categories, distinguished as technology backed (T) and not technology backed (N) and as high level (+) or normal/low level (-)

Fig. 8 splits society with respect to two dimensions. One is the usual **distribution pattern with respect to equity**. We distinguish high level jobs and other jobs and naturally, there are by for not so many high level jobs as others. This is because high level jobs often require a special education or special skills or support of many other job categories or because many of such jobs require its owners to be **successful or lucky in tournament types of economic games**.

Parallel to the distribution into high level and other jobs, we have to take into account that society usually falls into **two parts with respect to the role of technology**. In one segment technological progress can easily be translated into more output, using the old type of input, so-called **technology-backed part** (T-segment) of the economy. However, in the other part of society, this is not the case, i. e. such jobs are **not-technology backed** (N-segment of jobs). For instance, politics is a difficult job of balancing interests and this task doesn't change so much if there are new technologies around. The same is true with consultants for tax declarations because with more sophisticated technology available usually the tax system becomes more complicated, too. The same observation is true for doctors, and nurses and for all people who care for other people, e. g. those dying. And, of course, that is also true for **everybody who cares for children**. Caring for children is a difficult job. To care for two or three children is already a lot. If there is new technology around, that doesn't really change that picture because with more technology, things in a sense always become more complicated, at least as much as technology may make certain things earlier - a typical **rebound effect** of progress [50]. An extreme example for N-jobs is given, if somebody sits on the bed of somebody else who is dying. One just has to spend time, **one has to be present**, one has to be available. However, this is not just particularly value creating.

How does society handle the problem of balance between those two sides of the economy - the side where technology helps to multiply output (T-segment) and the N-side, where it does not? Usually, with technological advances, there is a lot of new money generated within the T-segment of the economy, but the practical problem in societies is **how to get part of that money from the T-segment to the N-segment, where technology doesn't help to create more output** (Pumping-Problem). For it certainly wouldn't help if only the people in the T-segment become always richer and have always higher incomes while the others have not. Because then, everybody with a sharp brain would essentially try to be within the T-segment of the economic game. But for principal reasons there are (1) just not enough jobs for everybody in this segment and (2) **the N-tasks have to be done as well**. This concerns one aspect of balancing. The other has to do with balancing high and low paid jobs in both segments. For there are just not enough higher paid jobs in comparison to the others. Or to put it in another way: we don't only need chiefs, we also need "Indians" and usually the role of being a "chief" requires the support of a lot of others being "Indians".

From all those reasons, there is in all societies the practical problem of how to get the money from the T-segment to the N-segment, and at the same time how to balance the high paid and the low paid jobs. It is easily seen, that much of the money flow from the T-side side to the N-side needed for balancing is channelled in all developed countries via the **taxation system** and the **social security systems**. Particularly, progressive taxation of high earners is a central issue and the same is true for **social transfer systems** such as in the **medical field**, **unemployment insurance** and **old age pensions systems.**

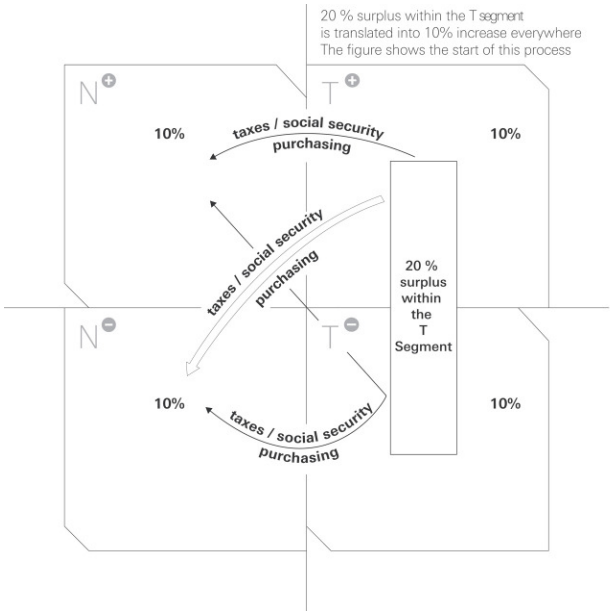

Fig. 9: A 20-percent growth in the technical field is translated into 10-percent increase everywhere

Fig. 9 gives an indication what it means if there is a 20 % surplus of output within the technologically backed part of the economy, while input is not changed. Growth could happen essentially here, e. g. when people take saved money to buy new devices. There is then more income on the T-side, leading to higher incomes then and consequently more purchasing power. People will also try to purchase more services within the N-segment. The people in the N-segment, at first, get no additional income. However, if additional purchasing starts, this will happen. Note that important money flows, particularly concerning the N-segment, will take place **via taxes and social security payments**, imposed at people in the T-segment. Later, the money goes into all directions as indicated.

To repeat: If there is now a new potential for buying more in the T-segment, maybe a new type of car, mobile phones etc, then there is a potential for an increase of income in this sector. But the crucial question is, what happens with this income. Because the people working in the T-segment of the economy, where the extra income is first allocated, wouldn't want to spend all there money only for the newly introduced technical devices. They still want services from doctors and teachers, they still need services from nurses and in kindergardens and they would usually want more of those services if they earn more money.

However, there is, in general, **no increase possible in the output volume of those active in the N-segment**, because technology doesn't help to make people really more productive in relative terms. And because there is also a societal balance in job categories, now people cannot go easily into those fields because otherwise the T-segment would get weak pretty soon. But this would be fatal, as the T-segment is essentially the basis for future innovations. And again, the output in services can hardly be increased essentially by technology.

So there will be competition for those services in the N-segment and for that and other reasons the incomes in the N-segments will raise parallel to those in the T-segments, though there is no additional outcome. This is particularly true for the N^+-segment, because there is usually no alternative to making use of a lawyer etc., if needed. Concerning the N^-sector, there is a certain tendency to refuse or try to dump prices. Because those jobs seem to be easy and straight forward (for instance cleaning houses), it is hard to accept, that such work gets always more expensive, and one can try to bring people in (for instance the wives of immigrants, that do a cheap job in the unofficial part of the economy). However, as long as many of those N jobs are financed via **public social systems** or as long as workers are protected by **labour laws** and e. g. minimal wages requirements or cannot easily be laid off, and as long as **strong trade unions defend the status quo in distribution**, income will also increase there, i. e. the money is **pumped around**, **distribution is stable**, nobody has a fear for the future, money is spent etc.

The picture described reflects the typical pattern of **Eco-social market economies**, where usually the industrial sector sets the path in wage increase and then all the others segments follow, accordingly. Consequently, there is proportionally also more money available in the N-segment which allows people in the segments then **also to buy the new technical devices**.

By this, eventually the following happens: If we assume a 50/50 pattern between the N- and the T-segment and if there is a 20 % increase in output in the T-segment, this translates into a 50 % of 20 % increase in both segments. So, a 20 % increase coming from the T-segment is eventually translated into a 10 % increase of income in both segments. Just notice if it were only 30 % of people in the T-segment and 70 % in the N-segment than a 20 % increase in the T-segment would mean a 6 % increase in total, meaning that income everywhere than would eventually increase by 6 instead of 10 % as given in the Example above. Obviously, a significant growth induced in the T-segment can this way be translated into a significant growth for the whole economy even in rich countries, as long as the pumping works.

For the **money pumping machinery** described to work smoothly it is important that the N-areas have similar increases in income over time than the T-segments, because otherwise we get an **imbalance in the composition of the work force**. And only to the extent that the relative size of both segments or the +/- composition within the segments may change over time, smoothly, growth may not be blocked by asymmetries in the distribution of additional output from the T-segment. Changes between the N- and the T-sector need their time because they correspond to principal changes in the core societal structure of the workforce and are connected with severe changes in people's life. **Much of that cannot be achieved in one year**. E. g. to balance the 20% increase in Fig. 9 only by a shift of jobs in the sense of having proportionally more jobs in the T-segment would mean that instead of a 50/50 relation between the N- and T-segment, the balance should move to 42/58 in a few years. Hardly a 1% shift per year can be imagined and for principal reasons, this cannot go on for long, as it would lead to a service crisis. So essentially, shifts between segments are no solution. So either pumping between segments is achieved, or there will be **blocking**, limiting growth.

Remember: Growth usually starts with people taking extra money from their bank account and buying new devices and new services, becoming available via the T-segment, i. e. via technological progress, take mobile phones as an example. This triggers a process by which with respect to the old prices, the volume traded becomes higher. This allows the central bank to extend the money supply available thus inducing the growth process in money terms. However, if the pattern of Fig. 8, i. e. pumping, breaking down, things can turn out different because parts of society become **very reluctant to spend their money**. They would try to keep their money together, being afraid for the future, particularly their per-

sonal future income situation. By this, they eliminate a growth potential, that others in the T-segment would start or induce. All in all, then the **growth process doesn't get started**, because of **blocking**. And **more investments** cannot help in this case, because under blocking conditions, investments make, if at all, only sense to **get rid of cost and work force**, thus increasing the causes of blocking.

Now this **doesn't mean that technical progress is not realised**. It is maybe not realised to the extend possible, but it is realised. There is another way of doing this, cf. the hints to **hedonic accounting** below. This way means, however, even more pressure on making work cheaper, on automating more and on getting rid of unskilled labour to the extend possible. What happens then is what we see since years, in the developed world. We get always more and always better devices, there is more wealth due to technical progress, but **it doesn't tell in numbers** or it doesn't tell so directly. Maybe it would tell relative to average income including those that have no jobs or are in **early retirement schemes**.

What does this mean now for Fig. 9. If a fight between the N- and T-segments is avoided, then still there is a problem, when pumping doesn't work, because the fight then goes into the direction of **changing the equity situation**. This means changes in the distribution of good jobs and less good jobs. In particular in order to implement technological progress without making devices more expensive - because the market, as a consequence of blocking doesn't allow that - means pressures on reasonably paid jobs of all categories, i. e. it means changes in equity. **Part of it is getting people out of work**. We know the terms for the lower side of jobs:

- downsizing
- lean management
- outsourcing
- privatisation
- synergy via mergers
- free lancers etc.

Often for the better categories of jobs, where jobs are also lost, this is made easier to accept by reasonable financial compensations (companies plus state) and the chance to earn extra money as a consultant, later.

For the less good jobs, the situation is much worse. Wherever there is a chance to get rid of a certain workforce, not have to pay it, replace it by something cheaper, there is a tendency in the system to do that under market pressures, particularly also under market pressures **coming from globalization**. One of the major tools operating in this direction is the chance to transfer certain type of jobs into countries in development. Combined with this alternative is the chance to get certain jobs done much cheaper by

people even here. The argument being that if they not accept, the work will go into another country. Another way to achieve the same **is draining out public budgets** by enforcing **taxes cuts** with arguments concerning **global competition**. Interesting is also the half-official use of illegal workers here, as can be found typically in the building industry. Also, to find somebody to care for children or older people, one can try to have unofficial workers from Eastern Europe involved, and to use **black market types** of constructions, which is quite usual today, in all developed countries.

Consequently, market pressures mean disadvantages for certain segments of society. People will be loosing the jobs they had until now. And **many people will be set off**, e. g. **via early retirement**. Simultaneously, a pressure of **downgrading income** of people with low qualification is an issue. And the less they are inclined with complicated technical devices, the more there is a chance to do so and to enforce such a course.

Of course, migration and immigration are also part of the game, but there are limits to migration and immigration. Certainly the owners of **high-level value added processes** wouldn't want to see their own jobs going into other countries, so in this segment, they try to defend the status quo, inducing even more pressure in other segments. So it is more or less a **globalization and competition triggered process** in trying to get rid of certain parts of the work force, or alternatively downgrade it, that dominates the picture, today. In particular, but not exclusively, this hits those parts of the work force that are **less able to protect themselves**, but other parts follow more and more, for instance in the IT field. From the point of view of the **trade unions**, it is usually better to loose some jobs than to reduce the level of payment for all jobs. **Trade unions** therefore most often try to keep the equity position high for those in jobs, which is an important aim and a natural tendency for trade unions to do, but if it means to kick even more persons out of the process or out of protected fields, changing the overall equity this way.

Changes between the sizes of good or less paid job categories are hard to achieve, because this directly concerns the equity situation of a society. But here is where **globalization** comes into the picture. Heavy competition internationally brings people of all categories out of their jobs. **This stresses the social security systems**, inducing new pressures on the N-segment of the economy. The State has to help, but controls less money to do so, because people with high income and internationally operating companies can force onto the State **tax reductions to their favour**. So, the state cannot fulfil his legal requirements anymore from the regular budget. The State will then **borrow money**, but after 10 - 20 years, State interest burdens are too high to go on like that, as we will discuss in more detail below. All in all, there is a strong pressure to downsize everywhere and to reduce equity. This will mean to change laws and adapt social systems, called **reform** or sometimes **social innovation**. While this may help on a high but balanced level (e. g. 60 %), though only in a limited way to the poorer part of soci-

ety, in the long run (e. g. with equity eventually falling below 50 % or less), **it will make a country poorer**.

All in all, the globalization process and its negative impact on equity **disturbs the money pumping pattern** required in Figures 8 and 9. There is no longer a respectable place for everybody. This results in **all kind of blocking**. The fear of those, who lost their jobs or might loose it is one problem and the more unpredictable form in which the rich winners may use their additional income either at home or abroad is another.

With the transformation cycles in Fig. 8 and 9 disturbed, which is the normal case for developed countries nowadays, then there is not so much growth per person shown anymore and the technical progress is translated into always better devices, essentially on the same level of prices. That is the deeper reason why the US and others now do **hedonic accounting** that was discussed elsewhere in this paper. **Consequently, in hedonic accounting, there is a logic**, because we have a certain growth, but it doesn't show itself in numbers and it is associated with a change in equity, while GDP remains essentially the same. Apart from that, the major problem with hedonic accounting is, that all countries should do accounting in the same way, if one wants to compare numbers between countries on a fair basis.

Consequently, today we have a situation, where **globalization creates blocking problems** in fully developed countries. This results from a tendency or intention within the economic system to **get rid of part of the workforce** and trying to shift almost more cost to the public side, while at the same time trying to drain out the public budget. To be more concrete: There is a non-declared “war” going on about reducing the equity level of society. Transferring burdens did happen to a huge extend with early pension schemes in Germany, the same happens if always more people become unemployed. In the end, there is not enough money in the medical sector, there is not enough money anymore for the unemployed, there is not enough money for old-age care and so on. And that is all the more true in Germany, where most of the social systems are financed by the 80 % poorest of society essentially among themselves. And where, on top, these systems had to cover most of the huge adaption cost of **German unification**. Of course, in the end in our system always the State has to help. But at the same time **globalization drains out the budget of the State.** The end of the story is that the State has to radically reduce his payments, as we see it today. This is because of the debt situation and, on top, because of the **European stability pact**. As a result, the distribution of the money circulation in Fig. 8 and 9 is disturbed even more. A generally **increased cautiousness on part of society** becomes a major problem. Resulting from that, an increasing pressure onto the government can be overserved. And because it is difficult to tax people beyond 50 or 60 % even including the social security and the medical sector, there are limits to what can be done. In fact, globalization makes high taxation even more

difficult. All in all, we see extra expectations concerning help from a State that has a shrinking instead of a growing income. That means that the State will have to **draw back on investments and will increase debt making**.

In a sense, increasing debt on the side of the State is a trick to avoid the problems described above – at least for a certain time. It is in a sense a good solution, temporarily. What happens here with borrowing money is to **compensate for taxes that cannot be organised regularly**. In a sense, the richer part of society has too much money and is in need of a **trusted borrower**, which is the State. By giving money to the State, the State can do all the good functions a State is meant for, like fuelling increasing growth, keeping the pumping in Fig. 8 and 9 going, particular also with respect to the lower spectrum on the N-segment of society, and, of course, helping those who otherwise would fall out of the picture. **Early retiring schemes** are of this nature. Borrowing money by the State is the very basis for certain investments which are important for growth, in particular **investments into infrastructure** and long-term **investments into building-up human potential**.

If the state, however, increases its debt for too long, then the **debt eventually becomes too high** and then public budgets get drained out by paying back the debt. The **State than no longer is a trusted borrower** and there will be pressures from the powerful parts of society to reduce public debt. Public debt is not a solution on the long run. This makes the topic even more delicate also when seen from the point of view of the **young generation** [74, 87]. Because from a young generation point of view, it is crucial that the State finances universities etc. This allows building up human potential, particularly among young people. But investing borrowed money increases the debt, so part of what we invest into the young generation comes from lending money and that makes the issue so difficult from their point of view.

If we would not borrow the money, the societal conflict concerning a reduced level of equity, due to globalization processes would materialise immediately. Borrowing more money means, by the way, that part of the future young generation will be better off than ever, namely those who or whose parents own the money that the public is borrowing. However, the price is that the greater part of the young generation is burdened either with having to pay money back or else by not being well educated from the very beginning - **an ugly choice**.

We today reach the end of the cycle. Since about 15 years the pressure on the public budgets has increased. **Globalization, German unification** and other forces have driven us into the situation described. We do not even generate the 1 to 3 % growth anymore that would in principle be possible, because **our societies are blocked concerning the pumping processes** and full of fear for the future. We generate less purchasing from the private side, less investments by companies, and the state has to

borrow more money all the time. This route reaches now an end and we have to find a solution. And of course, at the end of the day there are only two types of solution as we actually are in a kind of an **ultimatum bargain game** (see Chapter II). Either on the side of the State something **dramatical will happen to change the debt situation of the State**. In earlier times sometimes wars or a currency devaluation or hyper inflation or some extra sacrifices put onto those, who are very rich, have been part of the solution. In a sense, **arguing with the total breakdown of society becomes a valid strategy**. Because for the rich part it would mean that the alternative is even worse for them then giving up some part of the legal claims they are entitled to.

However, given globalization at is is at the moment, the State or even Europe as a whole doesn't have this option, at least not on short notice. Because we are in a competition now between states to attract capital that can, at least in part, go somewhere else. So the **classical solution operating with the risk of a super crisis can not easily be followed**, though with the extreme budget deficits in the US, a world-wide process of that nature is not out of possibility, where big money would than have no place anywhere to retread to.

Anyhow, at the time being, things go more in the direction of a second solution , that is possible. This means more pressure onto those at the lower end of the societal spectrum and onto those that depend on the social security systems, the medical system etc. These people are now forced to accept to do with less. We therefore are today in the **final phase of implementing a shift in our social balance**. And essentially all political parties support this shift without really liking it - because the situation is as screwed as discussed. Obviously, this will mean that for the bulk of our people on the long run education for the majority will have less quality than today, at least relative in the sense of where we could have been in the future, with a **different balance between private and public wealth**. The present debate in Germany about **elite universities** is in part a trick of 'public awareness management' to detract society from what is really going on, viz. reducing the level of education of a great majority of people and even students. The same will be true with the health system, the same will be true about the average life span or the possible enlargement of that life span. All in all, the situation will not relatively be so good any more for the bulk of the population as it is today.

On the other hand, if such steps back are not implemented, we get into illegal states with our public budgets or we have to increase taxes and tariffs in the social field. This will eventually lead to even more frustration by those who could invest and will fuel among them a nervous and negative attitude. And as a result, we will see even more restraint by those who could buy and invest, what **will block further growth even more**. So probably, and seen from the point of view of the majority, globalization is problematic, as it is organised today, but we cannot change its effects on short notice. So we better **intelligently adapt** to the pressures than try to resist in a naive way.

In this context, the concept of a **double strategy** [54,55] is of greatest importance for mobilising the public (see below). **Adaption will include a reduction in equity**. As we are on a high level of equity, this may still induce some extra growth, though limited in effect for the poorer part of society. On the long run, it will reduce overall growth but may still be attractive for the richer 20 % of society - the **moral hazard issue** of Chapter II. Therefore it is not surprising, that strong groups argue for it with all their broad media influence.

All in all, a high level of equity and a high level of taxation and social spending as part of the public budget, seem to be a **must in order to make and keep a society rich**. And the Northern Europeans very convincingly prove that this is the case. The particular way of organising richness and corresponding equity is an optimisation topic. And, of course, as much as possible of this publicly collected money should afterwards be **spent in a strongly competitive way**, i.e. a public value orientation and markets are not a contradiction. Of course, it is essential that the money that flows through the public side, has to be used to the best of society very **efficiently**. And as soon as this is not the case, it is the end of any reasonable social future. It is also clear that globalization at the moment forces a step backward. The real political challenge therefore is to use a kind of **double strategy** to do the adaptation as intelligent as possible.

Double-strategy type approaches [54,55]are a method for handling pressures of a game theoretic nature. Sometimes it is important to be able to do the wrong thing at least as convincingly as a competitor, in order to win him over to **jointly do the right thing**. The best example for such an approach was the **NATO double resolution**, from which also the notion of a double strategy resulted. To report: Upon the Soviet Union's threat to build big SS20 missiles and install them, the West had to convincingly make it clear that although, from its side, it would not build any new missiles, this would change if the East did. In this case, the West would even build two of its own for every one of the East's. This position showed an effect. “Maybe that is why there is no Wall anymore in Berlin today."

For mathematicians this topic is nothing new. In mathematical game theory such constellations are discussed in terms of the **prisoner's dilemma game**. Life is full of such difficult "social constellations." They dominate our lives and are probably one of the most important reasons for the substantial development of the human cerebrum in the last hundred thousand years towards a so-called **social intelligence**.

All in all, the following State of affairs has to be accepted. It can very well be that the **economic frame forces societies into decisions that make them poorer** as they could be and that **market fundamentalism may be part of that problem today**. Also frames may be so wrong that doing what

would be right under a right frame, would make the people in the end even poorer than if they do the adaptation needed under the wrong frame. It also becomes clear that under globalization pressure as we witness it today, the normal innovation induced growth cycle in rich countries, as described in Fig. 8 and 9, doesn't work any more, but is interrupted and blocked. This means that growth only happens - if at all - to the degree it is possible under such type of blocking conditions. Growth then has to do (1) with **people loosing jobs instead of more jobs being created** (2) and a **forced change of equity** between the high-level jobs and other kinds of work. On top (3) the **state becomes poorer not richer** and (4) **social security has to be cut back**.

Final remark: Is the shifting generational balance an issue?

Because the population in rich countries always grows older, there are, in comparison, not so much young people. The emancipation of woman adds to this trend. As a consequence, questions of **intergenerational justice** gain in importance [74, 87]. Is the fact that our population gets older on the average the deeper reason that we have to change the equity situation and the social security situation in Europe as is often argued for by market fundamentalists. Now, there is certainly some adaptation needed in this respect, but it is important to note that over all we still have growth and hardly a population increase. Consequently, **more GDP per person is generated than ever before**, even with so many people unemployed and with so many people retired. So, in principal, it should be possible to make available at least what we had before for all people. The problem is, however, that if the workforce gets smaller, one would need more reallocation. If reallocation is done via investment shares , it remains quite invisible, which is also true for indirect taxes, e.g. on gasoline, but these indirect ways of reallocation have there own limitations. If one has to use a direct taxation beyond 50 %, instead, it is so frustrating that it does not work. So, money flows in times of globalization rises problems. If society does not find ways to de-couple taxation from the day to day income flow directed to the market, then societies may get into major trouble, even much more than we witness already today.

Summarizing what was said in Chapter VIII, we ask again, why growth in rich countries is limited to very few percent a year. The first observation is that for mere mathematical reasons every fixed growth rate that would stay forever would lead to infinity with **exponential speed**. We remember again, that a 1% growth in Germany at the moment per person means three times as much absolute increase of wealth on average than 10% growth in China.

So, if at all growth should go on forever this would require an **extreme dematerialization, i. e. an increased eco-efficiency** is needed to have growth without more physical inputs and environmental burdens, which is not yet the case, however. This would require dramatic shifts in technology, for instance in the energy system, which can only be implemented over decades. An alternative would be

different life styles, more spiritually, but shifts in life styles without different price systems don't work. And different price structures would somehow require the higher eco-efficiency just discussed. So for political reasons, not much can be done on short notice.

Taking this into account a one-to-two percent annual growth would already be much for rich countries. Now, whatever additional growth can come, has to be seen in the context of social balance, with working time and non-paid work somehow fixed. Therefore, **essentially only innovation can drive growth** for rich countries, but innovations create a lot of problems and high cost for inventing them. And to implement them is even more cost intensive. Because this has to do with new ways of doing things, relearning, life long learning and different life styles.

Above all the **pumping problem** as described in Figures 8 and 9 has to be solved smoothly to make this way to growth work. There is on the one side the balancing between the T- and the N-segment of society which has to be handled. This is not so easy and strongly depends on public and social reallocation of money which however comes under pressure in times of globalization. Then there is as much the need to balance between the high and the low level of jobs available in a society, which amounts to the equity issue. This concerns, among others, the number of jobs available, which indirectly influences the equity situation, and it has to do with the power of the social systems and with the flexibility of the state budget to eventually help out in the social area.

The last point is also related to the ability of the State to borrow money to do investments into infrastructures, human potential building, investing into future generations etc.

Now it is crucial to note, that globalization today **interferes with the need of the money pumping structure**. As a consequence, there is a clear shift concerning the equity issue. This leads immediately to a **blocking** by all those that might be affected by reduced income, loosing their jobs etc. It also stresses the social security systems and the state budgets to a point where nothing goes anymore. We than loose the public investments, as we see it today. Eventually not even the one-to-two percent growth possible are realized any more. The practical situation now is for most develop countries difficult. Only countries with special effects, particularly the US, can cope with that situation. But this is a solution only for a few on the top of the pyramidal structure, not for the others. And how long the US can go on like that without creating a crisis with its huge **trade deficits** is also an open question. **Tough times ahead.**

IX. Equity, wealth and growth – how is the relation?

Coming back to the central question of this paper and summarizing all that was said so far, how is then the connection between equity and growth? As already pointed out in the introduction, treating all countries as one group, i. e. not separating them with respect to wealth, and doing a regression analysis, obviously does not make sense at all, see Fig. 1 in Chapter I. This is because two effects are not taken into account: (1) **the different situation for front runner and catch up countries**, (2) **the computational problems with the GDP described above**. Consequently the topic of "equity, wealth and growth" can only be dealt with properly, if the major groups concerning the wealth status are looked at separately. Actually, a third groups might be distinguished, namely not fully developed countries, being in **possession or bulks of oil or other crucial types of raw material**. However, looking separate into this special group of countries would not give so much new insight, as their situation is strongly depend on the overall performance of the other countries in times of globalization. Also, the two other groups dominate the picture, completely.

What makes up for the biggest difference between these two groups? The biggest difference is, that in front runner countries (1) an enormous bulk of people are already in the formalized economy (the degree of incorporation of women is the most crucial differentiating issue, the number of people, still in agriculture and the number of illegal workers involved another). Furthermore, (2) in such countries, apart from a growing population, in particular due to **immigrations**, **the main potential for further growth is innovation**, i. e. technological and societal innovation and progress. As is well known, such innovation processes are very expensive to produce and implement. For research is expensive, also from a human potential point of view, and search processes in markets concerning consumer acceptance are even more expensive. We saw that, when Germany or Japan caught up again, following World War II, or Singapore more recently. While there are extreme growth rates possible, **may be up to 10%** annually, as long as one catches up, as soon as one is a front runner State, the whole spectrum of possible growth rates, particularly if these rates are honestly computed, reduces to at most 3% per year, because, among other things of the cost of innovation, cf. Chapter VIII.

1. How is then the situation for front-running States (high GDP per person)?

> **In all fully developed countries, equity is high and all those states are open societies and democracies.**

Among best performing states, we only find countries with **equity levels between 45% and 65%.** Taking out the US where a number of extra effects have to be taken into account, this spectrum is even reduced to an equity of 50% to 65%. So, there is always a high equity given in this case. And all those countries are **democracies**. As discussed in Chapter V and VIII, this all has to do e.g. with the need to **empower the whole population** as a thoroughly trained and flexible group of people of high creativity. Democracy seems to be helpful to organize search processes concerning front running innovations for which the conditions of **open societies** seem to best suited [69, 70]. Democracy and openness seem to be necessary (but not sufficient) for a high wealth (GDP per person). Here, democracy plus a balanced equity seem to be the basis for open societies, which have a particularly strong potential to find always better solutions [69].

Asking for the relation between equity and growth means that for best performing states, **there is no other example but high equity, democracy and openness**. Consequently, the issue concerning wealth and growth for front runner countries leads to a small spectrum of possible equity values, namely the spectrum, all developed countries have anyhow. And it was argued in Chapters IV and V, that there are good systemic arguments in favour of these empirical facts. Usually such countries succeed in having a small annual growth, also per person, with small drawbacks once in a while. **Growth rates usually lie between 0% and 3%**, with a certain up and down, but rarely go beyond 3%, particularly if the numbers are honestly computed, cf. Chapter VIII. What differs concerning the policy options of such states is some more or less extension, e.g. via more **immigration** or by bringing **more women faster** into the formalized economic process, or stimulating innovation even more, **but there is not a great spectrum left at the high end to increase growth at all**.

Looking into testimonial data concerning growth and growth per person in front running states, as given in Tab. 6 in Chapter V, led to insights already mentioned there as follows. There is more or less everything possible in the 45% to 65% equity range for front-running countries with growth rates between 0 and 3%. Obviously there is no clear correlation between equity level and growth potential, but overall, higher equity values, approaching 60 % seemed to be helpful in the past, when globalization didn't have the impact it has today. Other factors seem to be more important than equity levels in the range mentioned. Success seems to be very much a question of the individual logic and quality of governance of a particular country, and it is more about **putting things right** then to shift inequity if one

wants to extend growth. Success is about having the best innovative climate for a certain time and/ or for a certain product category and to have the **right clusters** in place and **keep those clusters agile**. E. g. **Finland with mobile phones** etc. did well for a time. Such factors seem to make the difference. Of course, one difference remains, it is extra input via drawing heavily on global resources without full compensation. Here, the US is always dominating the picture (green card, money inflow etc.), allowing far more inequity. But the US internally pays a high price for that. All in all, equity as such seems not to dominate the growth performance, once a country is in the right spectrum. Concerning issues of well-being, the picture is different, see again the Human development index [85] where the more balanced states all look better than the US.

2. How is the situation for catch-up countries?

Going over to catch up countries, the situation is completely different. We first know, that the best countries in that case may have an annual growth of up to 10%. Good performance countries often are **no democracies,** see over the last 40 years Singapore and over the last 20 years China with always around 10% growth per year. The most important thing, such countries can do, is attract **foreign investment**. This way productivity can be increased fast [15, 16, 17, 19, 20, 46, 48]. This should be combined with a so called "**leap-frogging**". That means just using the best solutions and technology available elsewhere, so one needs not to follow through all development steps, the rich countries had to go through in their historical development path to success. **Fiber optics and mobile phones instead of copper telephone lines** tell the whole story.

Leap-frogging includes a strategy of not investing so much into ones own innovations but having others investing into technology and then copying solutions (see Germany's recent "Transrapid" cooperation with China). Interesting enough, **rigid political structures** such as in Singapore and China seem to be helpful to organize such leap-frogging processes and the resulting economic improvements make such political structures acceptable for the great majority of people. Again Singapore is a good example for that. It may well be that **huge investments and leap-frogging** alone can bring up to a **5%-6% growth a year**, something that for front running countries is not possible at all. Also, there are usually much more opportunities for **extension processes in countries** such as China and India, for instance by bringing the **rural population** into the game. And then there is more input from resources of all kind possible, so there is a potential to get up to 10% growth, which means a top performance.

However, also other things can happen in such countries, in the end even leading to negative growth, be it a **corrupt leadership**, be it a disastrous **control regime** enforced by the International Monetary Fund (IMF). Here, the so-called **Washington consensus** [39, 56], one of the greatest successes of the market fundamentalists, has done a **lot of harm** to the world and needs to be replaced by an **eco-social**

consensus as soon as possible. One of the worst developments under the Washington consensus have been deals of the own elites of such countries, e.g. Argentina, with international power structures to the disadvantage of their own population. **Corruption** can easily eat 2-3% and more of the growth potential of 10% of growth possible, and if bad decisions, due to corruption, reduce the efficiency of what was invested, than **the advantage of leap-frogging is soon lost totally**, if not converted to the contrary.

So, when doing a correlation between equity and growth, there is everything possible from negative to positive growth in the group of catch-up countries, in spite of the high potential, that is available in this case. And the data shows, in fact, worse results on average for the developing countries than in developed countries, in spite of the huge potential, described. We could, for instance, see this happen in recent years once and again. The rich North had its share in these disappointing developments. For instance, the policy of the International Monetary Fund (IMF), in close cooperation with the elite's of certain countries that are on a middle level, but have not so much equity, led to disastrous results. This is true particularly for countries in Africa and Latin America. Here, we witnessed a cannibalization of the (lower) middle class via **international mechanisms of financing**, almost completely blocking further growth for quite same time. For that essentially means “stealing” income from the people in such a country by a tandem composed of power structures in the North and their elite partners in "control" of such developing countries. And the **Washington consensus**, as mentioned above, has added heavily to this kind of disastrous developments, however making the Rich richer, the Poor poorer, fully in line with the **moral hazard issue**, discussed in Chapter II. Consequently, people are not motivated at all and growth will finally collapse.

3. How is the longer time view for catch-up states?

If on a long run a catch up country wants to be in a good position, **it obviously has to invest massively into always more equity**, in particular in fully developing its human potentials and caring for a first class infrastructure. Parallel to its growth path and to caring for being attractive for foreign investors, such countries always have to invest into an always higher level of equity in the direction of 45 %-65 %, in the end not so different from the US or Europe. We see that happen today in Singapore and in China and India, too. Only with such an approach, there will always be enough people available, educated to always higher levels of productivity concerning the production of always more sophisticated goods and services. And only then, a country has the potential o being able over time to attract capital form all around the world to do the needed investments.

An **always higher level of education** is the basis for always more qualified types of investment. So, in a sense, **there is no chance for long term catch up, if equity is not increased to the typical front**

runner spectrum of about 45 % - 50% and more. Again, Latin America is a disappointing example, most African countries too, that show, that when not achieving a high equity, countries stay to be in a bad shape. **Countries in Latin America or Africa, as well as the world as a whole, are operating on a fraction of their possible GDP, so they remain poor countries**. That is because, as a consequence of high inequity, most people in such countries operate far below a globally competitive level of value creation, for this see the **future formula 10 ~> 4:34** in [53, 54]. That makes a country poor. Still, as was described above (Chapter II), a **moral hazard constellation** may motivate the elite's of such a country to keep things as they are.

What is missing then, is a **strong middle class**, and what is worse, is the situation of the poor. So we may have a 5 % or 10 % top positioned group of people in such countries, whose life style is on an international level, but GDP per person in the country as a whole is a fifth or less of a high international value, because of the many poor people.

As a consequence, the following seems to be clear: To get first class, what a catch-up country has to do is to drive equity sufficiently high by (1) attracting foreign investment and (2) a high internal share of money spared, (3) investing its own money into education, health care etc., (4) in doing so, always keep a balance, i. e. not overemphasizing, but also not undersizing social spending, in order to stay attractive for international investment but at the same time develop the own human potential fully. **And only with international investment, own investment and high human power, leap-frogging is possible**. And of course, by driving equity higher, always more people are integrated into the formalized economy: see again China's way of economic development.

Summarizing, this paper should have made clear, that the **connection between equity, wealth and growth** is not an easy one. There is first of all a lot of problems with how to measure value creation and growth at all, and that the present GDP has its well-known problems. In particular it makes countries look better, that strongly cannibalize social, cultural and ecological capital at home and abroad. So, in particular, the US state of affairs looks better than it is. And the recent drop of the value of the Dollar against the EURO has led to a certain correction in this respect. The second issue is, that the real topic is to look at the **Gross Domestic Product** (GDP) per person. When this is done, we make the observation, that we have to distinguish all countries certainly into two groups (not looking particularly into (developing) states sitting on huge, internationally urgently needed natural resources such as oil), namely front runner countries and catch up countries.

(1) Front-runner countries

These countries all have an equity between 45% and 65%. Within this group, there seems to be not so much correlation anymore between equity and growth, though in the past, before globalization stuck the rich countries, a higher equity within this range seemed to have a positive effect. More or less, though, growth seems to be a question of specific circumstance and pragmatic good policy. Note, that the major force for real growth on the long run for front runner countries is **innovation**, technical and societal.

(2) Catch-up countries

Catch-up countries, by definition, have a lower GDP per person then rich countries. Of course, starting from a lower level they have a particular chance of higher growth rates. Growth may go up to 10%. But often, via involvement in cannibalization processes in interaction with international financial markets and due to corruption etc., it can also be negative. It seems that the biggest growth potential for catch-up countries in this case results from **leap-frogging**. closely related to **value intensive investments**. Another potential is **getting more people into the formalized economy** (as part of an extension of inputs). Here it seems to be, that on the long run for systematic reasons, a real catch up process to top level **is only possible if a high equity (between 45% and 65%) is reached** along a way, by which in a leap-frogging progress always more people are needed that are well educated. Here, the strongest **empirical evidence** for this conclusion results from the fact, that the successful East and South East Asian countries do much better today than countries in Africa and Latin America. This is probably due to the much stronger insistence on equity in this part of the world. The higher investment into that topic, combined with a broad development of human potentials, seem to be the key to success.

(3) Why is China doing so well?

First of all, China is a big country. It is not fully open, it can force certain politics on industrial partners all over the world, who don't want to miss this huge market. But, China also does a very intelligent policy, with **great insight and patience**. China invests into equity in the sense of a broad education and some medical support and administrative support for all its people. Also, China cares for good infrastructures, eventually for all its people. But, may be, even more important, China does a very intelligent **zone concept**, where the highest level is in areas such as Hong Kong or Shanghai. Then with Shenzen there is a level below Hong Kong, close by, and then there is rural China. Every year a huge number of well selected people are allowed into the Shenzen area and from there a smaller number of even more promising people are allowed into Hong Kong. This is like an **internal Green Card system**. It is selecting motivated and educated people, and so being able to **supply a work force** of needed size on quite different but always higher levels of competence. This route allows China to have people on many different education levels available, so that is where part of the inequity comes from.

The great potential to offer, the long-term orientation of policy, the intelligent dealing with social differences, the level of inequity accepted, all this leads to a mixture that **makes investments attractive for outsiders**, if judged in the special context of the Chinese situation. The outsiders bring in fresh money and investments and with that the new technology for **leap-frogging**.

The Chinese also do a **massive extension process**. Of course the character of this process for the time being is different from rich countries bringing always more women into the formalize economy. This is because peasants are replaced by modern agricultural technology, so there is nothing lost in food production of what the peasants did before. To the contrary, this sector is brought to a much higher level of productivity , food production is growing fast, and still many peasants become free for other work. By that, they will become part of the formalized economy. This adds to leap-frogging and allows feeding always more people into building up always more new industries. Finally, China very intelligently draws on **Chinese human potential on a highest educational level, sitting in Taiwan, Hong Kong, Singapore etc**. all around the world in a very **deliberate form of networking**. This is an approach that India uses successfully in the software- and computer area and that Vietnam is now also following, trying to mobilize all around the world the former "Boat People", partly coming back and investing skills and money.

Final Remark concerning the issues dealt with in Chapter IX

China has a potential for becoming rich. Whether the US (or the rich world in general) will allow this, accepting 20 more years of 10 % growth a year, is another question. If the resource-dictatorial path into the future, described in [47, 55] will dominate the way into the future, certainly not. There are **many ways to destabilize such a process**, e.g. implementing too strict WTO requirements, that may lead to social unrest. Or "fighting" against the implementation of reproductive rights in poorer countries. This helps to keep poor countries poor. More on this issue can be found in [55]. Once more: Tough times ahead.

X. Recommendations for the current EU extension processes and the need for a Global Marshall Plan

Throughout this document the **EU is seen as one of the best examples, world-wide**, of how to organise societies and how to organise extension processes including a co-operation between richer and less rich countries. The EU **successfully masters a "small globalization process"** and shows, that such processes can be successful [55, 81]. The main idea followed in Europe is the **co-financing of the convergence of standards** combined with an open market and free movement of people to the advantage of all parties involved. This particularly includes certain balancing elements in the field of **agriculture** and elements such as **structural funds**, **funds for cohesion, funds to support SME** and a **joint policy to strengthen research**. It should be mentioned again that the special help for the **agricultural** field has an importance, as this is a very **sensitive field from a sustainability point of view**. Consequently, agriculture is not the right filed for a market fundamentalist strategy of open global markets. Among others, the wrong price structures in today's global markets, in particular concerning transportation, add an extra dimension of competition which would not exist if prices would be better in telling the truth. In any case, we know that the EU budget is limited to **1.27 % of the EU GDP by the EU contract** and that, at the moment, we stand about a little more than 1 %. The money goes at about one half into agriculture and about 5 % into research while the **structural funds**, probably the best part of it [29], make up for about **0.27 %**. Among the great winners of European extension processes in recent years was Spain which has had a 2.2 % average annual growth over the last twenty years. An overview concerning the performance of EU member states in the past is given in Table 10.

Gelöscht: mean

Gelöscht: sudden

Gelöscht:

Gelöscht: enjoined

Gelöscht: **strength**

Gelöscht: **?? and**

Gelöscht:

Gelöscht: .....

Gelöscht: ....

Gelöscht: es

Gelöscht: and to

Gelöscht:

EU member states		GDP				Population				Equity in % 2001	co-finanzing in billion € 2000
		total GDP in billion of US $ 2001	GDP per capita in US$ 2001	average annual growth rate 1975-2001	average annual growth rate 1990-2001	life expectancy at birth	annual population growth rate	population in millions 2001	% of EU + 10 inhabitants		
old members	Austria	188,50	23186	2,1	1,8	78,5	(.)	8,1	1,8%	56,5	-0,54
	Belgium	229,60	22323	2.0	1,9	78,8	0,1	10,3	2,3%	58,5	-0,33
	Denmark	161,50	30144	1,6	2.0	76,6	0,1	5,3	1,2%	60,6	0,17
	Finland	120,90	23295	2.0	2,6	78,0	0,1	5,2	1,1%	61,4	0,22
	France	1.309,80	22129	1,7	1,5	79,0	0,4	59,9	13,2%	53,8	-1,42
	Germany	1.846,10	22422	1,8	1,2	78,3	(.)	82,3	18,2%	56,8	-9,27
	Greece	117,20	11063	1.0	2.0	78,3	(.)	10,9	2,4%	53,8	4,37
	Ireland	103,30	26908	4,2	6,8	77,0	0,3	3,9	0,9%	50,3	1,67
	Italy	1.088,80	18788	2.0	1,4	78,7	-0,3	57,5	12,7%	59,9	0,71
	Luxembourg	18,50	42041	4.0	4,2	78,4	1,2	0,4	0,1%	(.)	-0,07
	Netherlands	380,10	23701	1,9	2,3	78,3	0,4	16,0	3,5%	54,1	-1,74
	Portugal	109,80	10954	3.0	2,6	76,2	(.)	10,0	2,2%	50	2,11
	Spain	581,80	14150	2,2	2,2	79,3	0,1	40,9	9,0%	53,8	5,06
	Sweden	209,80	23591	1,4	1,7	80,1	0,3	8,9	2,0%	62,9	-1,18
	UK	1.424,10	24219	2,1	2,5	78,2	0,2	58,9	13,0%	53,8	-3,77
	old members	**7.889,80**	**21.018**					**378,5**	**83,6**	**54**	
new members	Cyprus	9,10	12004	4,8	3,2	78,3	0,6	0,8	0,2%	(.)	(.)
	Czech Rep.	56,80	5554	(.)	1,3	75,4	-0,1	10,3	2,3%	61,7	(.)
	Estonia	5,50	4051	-0,5	1,6	71,7	-1,1	1,4	0,3%	46,7	(.)
	Hungary	51,90	5097	0,9	2,1	71,9	-0,5	10.0	2,2%	63,3	(.)
	Latvia	7,50	3200	-0,7	-1.0	71,0	-0,9	2,4	0,5%	53,8	(.)
	Lithuania	12,00	3444	(.)	-1,6	72,7	-0,6	3,5	0,8%	53,8	(.)
	Malta	3,60	9172	4,5	3,8	78,4	0,4	0,4	0,1%	(.)	(.)
	Poland	176,30	4561	(.)	4,4	73,9	-0,1	38,7	8,5%	55	(.)
	Slovak Rep.	20,50	3786	(.)	1,9	73,7	0,1	5,4	1,2%	69,4	(.)
	Slovenia	18,80	9443	(.)	3.0	76,3	-0,2	1,7	0,4%	58,1	(.)
	new members	**362,00**	**4.891**					**74,1**	**16,4**	**59**	(.)

Table 10: Development of EU member states 1975-2001 ((.) means no data available to the authors)

Now let us have a look into the **new integration round for Middle and East European countries**. The old EU with 378.5 million people in 15 states will now be enlarged to a new EU with 451.4 million people in 25 states (74.1 million new people entering), where the equity of the old EU is 54 %, for the new partners it is 59 %, and the equity in the new EU after integration will be 48 %. Now, if we look into that picture we see that we have an old EU which has about five times as many people and twenty times more wealth than the new EU partners, but the new EU partners have an internal equity even higher than the equity in the old EU. This situation is somewhat similar to the picture of **German reunification**.

As was argued above, countries can only be rich if they achieve a high equity. The nice thing in the present extension round is that the **Eastern Europeans did already achieve a high equity** - though on a comparatively low level of average income - coming from the communist past. So the difference within Europe today is not the difference in equity within countries, it is the difference in income between the rich old and the poorer new part. The question then is how to get the new partners as soon as possible onto a level comparable with the standard of living of the old members. Of course, **the newcomers essentially have to produce and earn this higher wealth themselves**. They also have to overcome the disadvantage of not being so much accustomed with open markets and of not being so strongly embedded into world markets, as the old EU members are in general. But an impressive adaption process has already happened over the last 10 to 15 years, so there is a good basis in general to start from. The income differences make the newcomers attractive for certain type of production and business. It is, of course not the most attractive jobs that move to the newcomers, it is e. g. the industrial production that moves first to such countries, but e. g. the **software field also shows huge opportunities**. Certainly, there is a big chance in the future for the **young people** in these countries, giving that reproduction rates are so low in the old EU.

So, many of the positive potentials of globalization in general we can also find realised inside the enlarged EU. And the EU shows that globalization can be fair, given that a fair social, cultural, and ecological contract is involved and **co-financing** and eventually **open markets** and a **free movement** of people are implemented.

Certainly, the aim in the present round of EU-enlargement must be to get the new countries onto a level of income comparable to that of the old EU countries as soon as possible. This would mean to increase, considerably, the average income in those countries, at the same time allowing for a somewhat lower equity level. It will be crucial for the future of the countries, now joining the EU, that they **keep up a good education for all their people**. Also, they must get fully integrated within the markets of the old EU and of the world in general. What they in particular need are **infrastructures and**

Gelöscht: .....
Gelöscht: e
Gelöscht: .....
Gelöscht: .....
Gelöscht: "Wiedervereinigung".
Gelöscht: How
Gelöscht: .....
Gelöscht: e
Gelöscht: European stead
Gelöscht: .....
Gelöscht: orm
Gelöscht: re
Gelöscht: true
Gelöscht:
Gelöscht: .....
Gelöscht: /
Gelöscht: a
Gelöscht: .....
Gelöscht: s
Gelöscht: e
Gelöscht: and
Gelöscht: a
Gelöscht: re

investments, because a significant gap exits today concerning these two topics. With this insufficient basis, these countries are not really equipped yet for the creation of a high wealth. Consequently, the EU should put money, in particular **co-financing funds**, into programmes of the type we followed for such purposes also within the old EU. This means massive investment of money in **building up infrastructure** and in **promoting SME's**. Here, the EU should also think about a **reasonable train-infrastructure** and not destroy what is still there only to go for even more streets while we in the old EU are thinking about how to stabilise or even revitalise the train system. We should also help with all kind of programmes that bring companies alive, that is to help with **entrepreneurship**, to help with investments in the private sector, to help in the area of innovations, to help with **partnerships in markets**.

In particular, all these European programmes for the new member states should be **sufficiently funded**, which is, unfortunately, not the case today. The aim of more funding must be to allow people from middle and south-east Europe to connect themselves better with old Europe, but also with the whole world, to find partners, understand markets better, and build up partnerships.

Another major effort should massively go into marketing, best practice, building partnerships among SMEs. Also, there is a huge chance in Eastern Europe with many people from these countries living abroad, either in Europe or even working world-wide. There should be special programmes to extend the connections to those **present or former citizens** living abroad, and, if possible, **to bring people back as high developed human potentials** with world-wide connections and personal networks or even to bring them back and have them invest into their country of origin and have them **built companies there**. This is what is happening today with networked Chinese and Indian people from all around the globe that go back to their countries of origin and invest there and help it organise transitions needed. We should strongly support the same pattern within the EU for our new member states. Consequently, **structural funds should be increased in volume and scope**. For many reasons, the EU in its present great enlargement process to Middle and Southeast Europe is much too reluctant to have a reasonable level of co-funding for the new partners as well as for the affected **border areas** of the old partners like Austria. And if we see the level of co-funding, particularly structural funds invested into Spain for about 20 years which turned out to be so successful, it is obvious that **we need more input also for the new member states**.

In the following, we give in Tables 11a - 11g a kind of parameter analysis, looking into the actual growth rates and assuming what could happen if the co-funding in Europe would be gradually extended. We assume a positive correlation between structural funds put in and growth rates resulting and we use a small part of that open window of 0.25 % by which the EU co-funding level could be extended easily. In this context, we assume for an analysis, that all that extra money would be invested

Gelöscht: u
Gelöscht: re
Gelöscht: a
Gelöscht: So
Gelöscht: c
Gelöscht:
Gelöscht:
Gelöscht: and
Gelöscht: g
Gelöscht:
Gelöscht: .....
Gelöscht: I
Gelöscht: er.....,
Gelöscht: e
Gelöscht: with
Gelöscht: .....
Gelöscht: a
Gelöscht: is
Gelöscht: t
Gelöscht: at
Gelöscht: a
Gelöscht:
Gelöscht: re
Gelöscht: d
Gelöscht: would
Gelöscht: re
Gelöscht: re
Gelöscht: a
Gelöscht: Now i
Gelöscht: in .....
Gelöscht:
Gelöscht: ed
Gelöscht: greatly
Gelöscht: so w
Gelöscht: .....

exclusively in the right way into the new partner States. Here, we furthermore assume for the old EU countries, the set backs from having to transfer more funds to the new partners **cancel out** with additional growth, indirectly induced in the old EU member states from more activities in the new member states. Also, to make things easier, we assume that population numbers will not change. Under this assumption, we try to estimate what that could mean for the growth rates in the new parts of the EU and, of course, in the EU as a whole.

Gelöscht: a

Going more into detail, we compare the actual situation with **six increases in co-financing** (Tables 11b – 11g) envisioned, each amounting to 0,01 % of the old EU's GDP, which is, at the beginning, roughly 0,8 billion $ a year. We assume that the implementation of these additional 0,01 % money inflows increase the GDP of the new member states each time by 0,5 % in each year considered. In the beginning, this amounts to 1,8 billion $, so the rough effect of the additional money input would be in the ratio 1:2,25, which seems reasonable. In the most far reaching case considered, we would add 0,06 % in co-financing, which is, in the beginning, 4,8 billion $ a year, increasing the EU's new members' GDP by 3 %, which is roughly 10,8 billion $. In such numbers we see **attractive potentials** for growth and more equity and want to hint to the responsible persons in polities, economy and society to this effect. The enlargement process is the right step, but it could bring even more positive aspects to Europe if only Europe would be willing to invest more into co-funding of the convergence of **standards** in its new member States. Such investments is the basic tool to use, as argued for throughout this paper, and would make Europe as a whole richer, the older part as well as the new part as well.

Gelöscht: . I

Gelöscht: sion

Absolute GDP (in billion US$) and GDP per capita in (US$) over the next 25 years in 5 years steps and income ratio old members/new members depending on an additional **0%** co-financing scenario with assumptions as described								
Year	Old EU members ε = 54% assumed annual growth rate 2% over 25 years		New EU members ε = 59% - 54% assumed annual growth rate = 3% over 20 years		EU +10 resulting annual growth rate 2,049 % over 25 years			
	total GDP	GDP per capita	total GDP	GDP per capita	total GDP	GDP per capita	Equity in %	Average income ratio
2000	7889	20843	362	5028	8251	18315	48	4,1
2005	8710	23012	420	5829	9130	20266	48	3,9
2010	9617	25407	486	6757	10103	22427	48	3,8
2015	10618	28052	564	7833	11182	24820	49	3,6
2020	11723	30971	654	9081	12376	27473	49	3,4
2025	12943	34195	758	10527	13701	30412	49	3,2

Table 11a: Additional co-financing 0%

Absolute GDP (in billion US$) and GDP per capita in (US$) over the next 25 years in 5 years steps and income ratio old members/new members depending on an additional **0.1%** co-financing scenario with assumptions as described								
Year	Old EU members ε = 54% assumed annual growth rate 2% over 25 years		New EU members ε = 59% - 54% assumed annual growth rate = 3,5% over 20 years		EU +10 resulting annual growth rate 2,078 % over 25 years			
	total GDP	GDP per capita	total GDP	GDP per capita	total GDP	GDP per capita	Equity in %	Average income ratio
2000	7889	20843	362	5028	8251	18315	48	4,1
2005	8710	23012	430	5971	9140	20289	49	3,9
2010	9617	25407	511	7092	10127	22480	49	3,6
2015	10618	28052	606	8423	11224	24915	49	3,3
2020	11723	30971	720	10004	12443	27620	50	3,1
2025	12943	34195	855	11882	13798	30629	50	2,9

Table 11b: Additional co-financing 0,1%

Absolute GDP (in billion US$) and GDP per capita in (US$) over the next 25 years in 5 years steps and income ratio old members/new members depending on an additional **0.2%** co-financing scenario with assumptions as described								
Year	Old EU members ε = 54% assumed annual growth rate 2% over 25 years		New EU members ε = 59% - 54% assumed annual growth rate = 4% over 20 years		EU +10 resulting annual growth rate 2,110 % over 25 years			
	total GDP	GDP per capita	total GDP	GDP per capita	total GDP	GDP per capita	Equity in %	Average income ratio
2000	7889	20843	362	5028	8251	18315	48	4,1
2005	8710	23012	440	6117	9151	20312	49	3,8
2010	9617	25407	536	7442	10152	22536	49	3,4
2015	10618	28052	652	9055	11269	25016	50	3,1
2020	11723	30971	793	11016	12516	27782	50	2,8
2025	12943	34195	965	13403	13908	30872	50	2,6

Table 11c: Additional co-financing 0.2%

Absolute GDP (in billion US$) and GDP per capita in (US$) over the next 25 years in 5 years steps and income ratio old members/new members depending on an additional **0.3%** co-financing scenario with assumptions as described								
Year	Old EU members ε = 54% assumed annual growth rate 2% over 25 years		New EU members ε = 59% - 54% assumed annual growth rate = 4,5% over 20 years		EU +10 resulting annual growth rate 2,146 % over 25 years			
	GDP in	GDP per capita	GDP	GDP per capita	GDP	GDP per capita	Equity in %	Average income ratio
2000	7889	20843	362	5028	8251	18315	48	4,1
2005	8710	23012	451	6266	9161	20336	49	3,7
2010	9617	25407	562	7808	10179	22594	49	3,3
2015	10618	28052	701	9730	11318	25123	50	2,9
2020	11723	30971	873	12126	12596	27959	50	2,6
2025	12943	34195	1088	15111	14031	31145	51	2,3

Table 11d: Additional co-financing 0.3%

Absolute GDP (in billion US$) and GDP per capita in (US$) over the next 25 years in 5 years steps and income ratio old members/new members depending on an additional **0.4%** co-financing scenario with assumptions as described								
Year	Old EU members ε = 54% assumed annual growth rate 2% over 25 years		New EU members ε = 59% - 54% assumed annual growth rate = 5% over 20 years		EU +10 resulting annual growth rate 2,186 % over 25 years			
	Total GDP	GDP per capita	total GDP	GDP per capita	total GDP	GDP per capita	Equity in %	Average income ratio
2000	7889	20843	362	5028	8251	18315	48	4,1
2005	8710	23012	462	6417	9172	20360	49	3,6
2010	9617	25407	590	8190	10206	22656	50	3,1
2015	10618	28052	753	10452	11370	25239	50	2,7
2020	11723	30971	960	13340	12683	28153	51	2,3
2025	12943	34195	1226	17026	14169	31451	51	2,0

Table 11e: Additional co-financing 0.4%

Absolute GDP (in billion US$) and GDP per capita in (US$) over the next 25 years in 5 years steps and income ratio old members/new members depending on an additional **0.5%** co-financing scenario with assumptions as described								
Year	Old EU members ε = 54% assumed annual growth rate 2% over 25 years		New EU members ε = 59% - 54% assumed annual growth rate = 5,5% over 20 years		EU +10 resulting annual growth rate 2,231 % over 25 years			
	Total GDP	GDP per capita	total GDP	GDP per capita	total GDP	GDP per capita	Equity in %	Average income ratio
2000	7889	20843	362	5028	8251	18315	48	4,1
2005	8710	23012	473	6571	9183	20343	49	3,5
2010	9617	25407	618	8588	10235	22673	50	3,0
2015	10618	28052	808	11224	11426	25312	51	2,5
2020	11723	30971	1056	14670	12779	28309	51	2,1
2025	12943	34195	1380	19173	14323	31730	52	1,8

Table 11f: Additional co-financing 0.5%

Absolute GDP (in billion US$) and GDP per capita in (US$) over the next 25 years in 5 years steps and income ratio old members/new members depending on an additional **0.6%** co-financing scenario with assumptions as described								
Year	Old EU members ε = 54% assumed annual growth rate 2% over 25 years		New EU members ε = 59% - 54% assumed annual growth rate = 6% over 20 years		EU +10 resulting annual growth rate 2,280 % over 25 years			
	total GDP	GDP per capita	total GDP	GDP per capita	total GDP	GDP per capita	Equity in %	Average income ratio
2000	7889	20843	362	5028	8251	18315	48	4,1
2005	8710	23012	484	6728	9195	20410	49	3,4
2010	9617	25407	648	9004	10265	22786	50	2,8
2015	10618	28052	868	12049	11485	25494	51	2,3
2020	11723	30971	1161	16125	12884	28598	52	1,9
2025	12943	34195	1554	21579	14496	32178	53	1,6

Table 11g: Additional co-financing 0.6%

The global picture

Of course, all what was said concerning Europe can and should then also be **extended to the globe** where the greatest challenges and risks are waiting for humankind. Given the recent disasters, from bubbles imploding to terror, war, increasing number of people starving etc., the call is now around the globe for something better to happen. This leads to the initiative for a **Global Marshall Plan**, organised in the spirit of a **planetary contract**, to implement the **UN Millennium Development Goals** until the year 2015 [6]. This initiative, inspired by the work with TERRA 2000, has by now gained a considerable momentum and is described in a separate TERRA paper (which will also appear as a book in 2004 in an extended version). This paper includes many further references. The inspiration for and scientific backing into the **Global Marshall Plan idea** could, on the long run, turn out as one of the greatest contributions of the TERRA 2000 project.

Concluding remarks

Looking into the issues of equity and growth has led to some interesting insights, particularly the need to differentiate between front-running countries and catch-up countries. And maybe the better issue would be wealth and growth because wealth (GDP per person) is what really counts and what distinguishes front-running from other countries. It is clear that from a low level of GDP per person one can have high growth rates. **But what is eventually wanted is wealth**. Here, it is unavoidable that high wealth goes along with lower growth rates because one then is a first-class performer. For principal reasons, the growth potential for front running countries is small in comparison to that of countries, that try to catch-up. Being a front running country means competition with the best countries of the world for **more innovations**, which is a costly and difficult process.

A further irritation in the whole debate is the fact that the GDP as a measure and growth as a measure are "corrupted". This concerns an insufficient reflection of sustainability issues, but also not formalised value creation aspects of a society, for instance within families. As the development of human potentials is one of the most crucial aspects for equity and for top economic performance as well, the **outmost importance of the education issue** becomes obvious. Certainly, all this makes the European States with their **eco-social market economies** look much better than the market-fundamental propaganda would suggest. Much more emphasis on research in these issues is needed because the topic of **equity and growth has a subtle influence on policy formation**. Is the **market-fundamental model the best solution for the world** in times of globalization or is the **eco-social ordoliberal model**, typical for the European states, the EU as a whole and the more successful Asian states, the best way to go? And how do elite's deal with the **moral hazard** issue, if their interest and the interest of the bulk of people in their countries do not coincide? The conclusions in this paper very much support the **eco-social European approach**. So let’s go for it, in Eastern and South Eastern Europe, in **incorporating Turkey into the EU** and in **fighting for a Global Marshall Plan** – let´s do it!

Related references

1. Alfred Herrhausen Gesellschaft für internationalen Dialog (ed.): Wieviel Bildung brauchen wir? Humankapital in Deutschland und seine Erträge. Frankfurt am Main, 2002
2. Aoyama, H., W. Souma, Y. Fujiwara: Growth and fluctuations of personal and company's income. Physica A 324, S. 352-358, Elsevier Sciences B.V., 2003.
3. Barabási, A.-L.: Linked. The New Science of Networks. Perseus Publishing, Cambridge/Mass., 2002
4. Bouchaud, J.-P., M. Mézard: Wealth condensation in a simple model of economy. Physica A, Vol. 282, 536 ff., 2000
5. Brodbeck, K.-H.: Beiträge zu Ethik und Wirtschaft. Dritte, ergänzte Auflage, Gröbenzell 2002.
6. Brown, G.: Speech by the Chancellor of the Exchequer Gordon Brown at the conference on "Making Globalisation Work For All – The Challenge Of Delivering The Monterrey Consensus, London, 16 February 2004, The full text of the speech can be found at:http:\\www.hm-treasury.gov.uk/Newsroom_and_Speeches/Press/2002/press_46_02.cfm?
7. Buchanan, M.: Ubiquity. Crown Publishers, New York, 2000/2001
8. Buchanan, M.: Nexus. Small works and the groundbreaking science of networks. W.W. Norton & Company, New York, 2002
9. Butterwegge, C.: Wohlfahrtsstaat im Wandel – Probleme und Perspektiven der Sozialpolitik. 3. Auflage, Opladen, 2001
10. Camerer, C., R. Thaler: Ultimatums, dictators, and manners. J. of Economic Perspectives 9, 209-219, 1995
11. Club of Rome (ed.): No Limits to Knowledge, but Limits to Poverty: Towards a Sustainable Knowledge Society. Statement of the Club of Rome to the World Summit on Sustainable Development (WSSD), 2002
12. Deaton, A.: Measuring poverty in a growing world (or measuring growth in a poor world). Research Program in Development Studies, Woodrow Wilson School, Princeton University, February 2004.
13. de Soto, H.: The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else. Basic Books, New York, 2000
14. Dohnanyi, K. von: Im Joch des Profits – Eine deutsche Antwort auf die Globalisierung. 2. Auflage, 1999
15. Eichhorn, W. (ed.): Models and Measurement of Welfare and Inequality. Springer Verlag, Berlin, Heidelberg 1994, XII + 1020 S.
16. Eichhorn, W.: Bildung und Wissenschaft in Deutschland. Studien zur Wissensordnung 2, (H. F. Spinner, ed.), Opladen 2002, 161-172, 2002.
17. Eichhorn, W., J. Aczél: Mathematics and Methodology for Economists. A Textbook.. Erscheint im Springer-Verlag Heidelberg/New York, 2005.
18. Eichhorn, W., R. Kümmel, D. Lindenberger: Energie, Wirtschaftswachstum und technischer Fortschritt. Physikalische Blätter 53, 869-875, 1997.
19. Eichhorn, W., R. Kümmel, D. Lindenberger: The Productive Power of Energy and Economic Evolution. Indian Journal of Applied Economics 8, 231-262, 2000.
20. Eichhorn, W., R. Kümmel, D. Lindenberger: Energie, Wirtschaftswachstum und Beschäftigung. In: Zur deutschen Energiewirtschaft an der Schwelle des neuen Jahrhunderts. (Wolfgang Brune, ed.), B. G. Teubner, Stuttgart, Leipzig 2000, 52-76, 2. Auflage 2001
21. Erhard, L.: Deutsche Wirtschaftspolitik – Der Weg der Sozialen Marktwirtschaft. Düsseldorf, 1962
22. Eucken, W.: Grundsätze der Wirtschaftspolitik. 6. Auflage, Tübingen, 1990
23. Eurydice – the Information Network on Education in Europe, http://www.eurydice.org/Doc_intermediaires/indicators/de/key_data.html
24. Farmer, J.D.: Physicists attempt to scal the ivory towers of finance. Computing in Science & Engineering, 1521, 26 ff., 1999

25. Fischer, S.: Globalization and Its Challenges. Revised version of the Ely Lecture presented at the American Economic Association meetings in Washington, DC, January 3, 2003.

26. Grahl, J.: Wachstumsfetischismus. Solarbrief 1/03 (Aachen 2003), S. 15 – 26, herausgegeben vom Solarenergie-Förderverein Deutschland e. V. (SFV), ISSN 0946-8684

27. Information Society Forum (ed.): The European Way for the Information Society. European Commission, Brussels, 2000

28. Johnson, S.: Emergence. The connected lives of ants, brains, cities, and software. Scribner, New York, 2001

29. Johnston, P.: Comments on the proposed Global Marshall Plan, 05-02-04, personal communication

30. Kämpke, T.: Overconstrained ordinary differential equations. Intern. Math. Journal, Vol. 2, no. 12, 1125-1139, 2002

31. Kämpke, T.: Self-similarity of Lorenz curves, FAW Technical Report No. 03002, Ulm, 2003

32. Kämpke, T.: Functional inequality measurement, Empirical Economics 23, to appear 2004

33. Kämpke, T.: Equity redistribution by regionalization. Final Report of the EU Project TERRA 2000, to appear 2004

34. Kämpke, T., M. Stark: Equality functions, submitted

35. Kämpke, T., R. Pestel und F. J. Radermacher: A computational conecpt for normative equity. Europ. J. of Law and Economics, No. 15, 129-163, 2003

36. Kapitza, Sergey P: Information society and the demographic revolution: the non-linear theory of growth of Humankind, Institute for Physical problems, RAS, Moscow, 2000

37. Keeney, R.L., H. Raiffa: Decisions with Multiple Objectives. John Wiley, New York, 1976

38. Keynes, J.M.: The General Theory of Employment, Interest, and Money. Macmillan Cambridge University Press, for Royal Economic Society, 1936

39. Khor, M.: Globalisierung gerechter gestalten. NWWP-Verlag, Stuttgart, 2002

40. Koch, J.: Megaphilosophie. Das Freiheitsversprechen der Ökonomie. Steidl Verlag, Göttingen, 2003

41. Küng, H., Senghaas, D. (ed.): Friedenspolitik: Ethische Grundlagen internationaler Beziehungen. Pier, München, 2003

42. Lampert, H., A. Bossert: Die Wirtschafts- und Sozialordnung der Bundesrepublik Deutschland. 14. Auflage, München 2001

43. Lausmaa, T.: About the structural complexity of an economy represented by its equity partition. Draft. Tallin Technical University.

44. Maier-Rigaud, F. P. und Maier-Rigaud, G.: Das neoliberale Projekt. Metropolis-Verlag Marburg, 2001, S. 201-306

45. Markandya, A.: Poverty alleviation and sustainable development. Implications for the management of natural capital. The International Institute for Sustainable Development, April 2001

46. Maußner, A., R. Klump: Wachstumstheorie. Berlin, 1996

47. Mesarovic, M.D., R. Pestel, F.J. Radermacher: Which Future? Manuscript to the EU Project TERRA 2000, FAW, 2003

48. Möller, U., Radermacher, F.J.: Riegler, J., Soekadar, S.R., Spiegel, P.: You can change the world – Global Marshall Plan Initiative: Überwindung der globalen Armut und Umweltzerstörung durch eine globale Ökosoziale Marktwirtschaft. For more information, see www.globalmarshallplan.org; paperback to be published, 2004

49. Müller, K.-W., W. Ströbele: Wachstumstheorie. München, 1985

50. Neirynck, J.: Der göttliche Ingenieur. Expert-Verlag, Renningen, 1994

51. Pestel, R., F.J. Radermacher: ICT and Sustainability: Is there a chance? Manuscript to the EU Project TERRA 2000, FAW, 2003

52. Radermacher, F. J.: Cognition in Systems. Cybernetics and Systems 27, No. 1, 1-41, 1996

53. Radermacher, F. J.: Die neue Zukunftsformel. bild der wissenschaft 4, S. 78-86, 2002

54. Radermacher, F. J.: Herausforderungen an den Standort Deutschland (2003): Keine einfachen Zeiten. FAW Ulm, 2003, www.faw.uni-ulm.de

55. Radermacher, F. J.: Balance or Destruction – Ecosocial Market Economy as the Key to Global Sustainble Development. Ökosoziales Forum Europa ,Vienna, January 2004, ISBN: 3-200-00079-1

56. Radermacher, F. J.: Global Marshall Plan/planetary contract. Eco-social Forum Europe, Vienna, Austria, 2004; abrufbar unter www.globalmarshallplan.org

57. Rawls, J.: A Theory of Justice, Oxford University Press, London, 1978

58. Reich, R.: The Future of Success – Wie wir morgen arbeiten werden. München, 2000

59. Riegler, J.: Antworten auf die Zukunft, Ökosoziale Marktwirtschaft 1990, Adolf Holzhausens Nfg., Wien, ISBN 3-900-518-05-X

60. Rigos, A.: Vorteil Fairness. Greenpeace Magazin / Nachrichten, GMP 4/03, www.greenpeace-magazin.de

61. Rüstow, A.: Das Versagen des Wirtschaftsliberalismus. Metropolis-Verlag Marburg, 2001, S. 19-200

62. Sala-i-Martin, X.: The disturbing „rise" of global income inequality. Working paper 8904, National Bureau of Economic Research, Cambridge, Mass., April 2002

63. Sala-i-Martin, X.: The World Distribution of Income. National Bureau of Economic Research, Working Paper 8933, Cambridge, MA, 2002

64. Samuelson, P.A., W.D. Nordhaus: Economics. McGraw-Hill/Irvin, 16th edition, 1998

65. Sanfey, Alan G., Rilling James K., Aronson, Jessica Al, Nystrom Leigh E., Cohen Jonathan D.: The Neural Basis of Economic Decision-making in the Ultimatum Game. Science Vol. 300, June 2003

66. Sen, A. K.: Poverty: An ordinal approach to measurement. Econometrica, Vol. 44 (2), 219-31, 1976

67. Sen, A. K.: Ökonomie für den Menschen – Wege zur Gerechtigkeit und Solidarität in der Marktwirtschaft. München, 2000

68. Sinn, H.-W.: Ist Deutschland noch zu retten? 2. Auflage, München 2003

69. Soros, G.: Die Krise des globalen Kapitalismus. Offene Gesellschaft in Gefahr. Alexander Fest Verlag, Berlin, 1998

70. Soros, G.: Der Globalisierungs-Report. Weltwirtschaft auf dem Prüfstand. Alexander Fest Verlag, Berlin, 2001

71. Souma, W.: Universal structure of the personal income distribution. Fractals 9, 463–470, 2001

72. Stark, M., T. Kämpke: The world income distribution and its equity, FAW technical report No 02004, Ulm, 2002, 14 S.

73. Statistisches Bundesamt: http://www.destatis.de/basis/d/gesu/gesutab1.htm

74. Stiftung für die Rechte zukünftiger Generationen (Hrsg.): Handbuch Generationengerechtigkeit. ökom Verlag München, 2003

75. Stiglitz, J. E.: Die Schatten der Globalisierung. Siedler, Berlin, 2002

76. Streminger, G.: Markt, Motive, Moralische Institutionen - Zur Philosophie Adam Smiths, Überarbeitete Fassung März 2004, zuerst veröffentlich in „Archiv für Geschichte der Philosophie", 74. Band 1992 Heft 3, hg. v. Rainer Specht, Verlag Walter De Gruyter, Berlin - New York, S. 272-302

77. Teusch, U.: Was ist Globalisierung? Ein Überblick. Darmstadt, 2004

78. Tinbergen, J.: Production, Income and Welfare: The Search for an Optimal Social Order. University of Nebraska, July 1985

79. Tinbergen, J.: World Security and Equity. Ashgate Publishing Company, 1990

80. Tinbergen, J., D.Fischer, J. Tinberger: Warfare and Welfare: Integrating Security Policy into Socio-Economic Policy. Palgrave Macmillan, 1987

81. Třebický, V., J. Novák, V. Ira, M. Huba, W. Stodulski, V. Eri: Road to Sustainability – Economic, Social and Environmental Dimension of Sustainability in Visegrad Countries. Institute for Environmental Policy, Prague, 2003, ISBN 80-903244-0-1

82. United Nations Development Program (ed.): Human Development Report, www.stone.undp.org/hdr/reports/global/2003

83. van Dieren, W.: Mit der Natur rechnen. Der neue Club-of-Rome-Bericht. Birkhäuser, Basel 1995

84. Voeller, J.: Im Laufrad des Standortwettbewerbs. uni ulm intern Nr. 267 (34. Jg.), März 2004, S. 10-13

85. von Weizsäcker, E.U., O. Young, M. Finger: Limits to Privatisation – How to Avoid Too Much of a Good Thing, to be published 2004

86. World Bank (ed.): World Development Report 2001, www.worldbank.org/poverty/wdrpoverty

87. YOIS (ed.): Wh@t´s next? The future of the information sociey – a youth perspective. Stuttgart, 2003

88. Yunus, M.: Grameen - Eine Bank für die Armen der Welt, Lübbe, 1999

89. Ziegler, J.: Die neuen Herrscher der Welt und ihre globalen Widersacher. C. Bertelsmann Verlag, 2003