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Globalisation and Inequality
World Income Distribution and Living Standards, 1960-1998

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Preface

This report is a summary of the main findings from a project undertaken by NUPI (Norwegian Institute of International Affairs) for the Ministry of Foreign Affairs in Norway. The main report in Norwegian[1] contains more detailed analysis of the subject, as well as a more comprehensive survey of research on possible links between globalisation and inequality.

This version is written by Arne Melchior, with contributions by Kjetil Telle (Sections 2 and 3.3), and with Sections 3.1 and 3.2 mainly based on the chapter on within-country inequality written by Henrik Wiig in the Norwegian report.

We thank the Ministry of Foreign Affairs for financial support, and we are indebted to the staff members in the ministry as well as colleagues at NUPI for comments and support during our work with the project. We also thank Chris Ennals for checking the language of the report. As usual, the responsibility for remaining errors stays with the authors.

Oslo, 25 September 2000.
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[1] Globalisering og ulikhet - verdens inntektsfordeling og levestandard 1960-1998 (Globalisation and inequality - world income distribution and living standards 1960-1998), Oslo: The Royal Ministry of Foreign Affairs, Aktuelle utenrikspolitiske spørsmål No. 6a/2000.

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Abstract

Is globalisation a process that creates winners and losers, and thus leads to greater inequality? Such arguments are frequently heard in the public debate, and they are supported by some reports published by, among others, the UNDP (United Nations Development Programme). In this study, we examine whether global inequality has increased or decreased during the period from the 1960s until 1998. Our conclusion is that on the whole, global inequality between countries has decreased during this period. This applies to the analysis of income gaps, and the analysis of some indicators of living standards.

In spite of this, there is considerable variation among regions. While countries in East and South East Asia have experienced strong growth in income and living standards and reduced their gap vis-à-vis richer nations, the development is weaker in other developing regions. After 1980, the development has been particularly weak in parts of Eastern Europe and Sub-Saharan Africa. The reduction in inequality between countries over time is partly caused by income growth at intermediate income levels; the gap between the few richest and the few poorest countries has in fact increased.

The conclusion on reduced income inequality between countries is based on figures for income per capita that are adjusted for differences in purchasing power. Some of UNDP's statements about increased inequality are based on income data that are not adjusted for price differences. Using such figures, one finds that inequality between countries increased during the period we study, except for the years after 1993 when inequality declined. There is, however, widespread agreement that if the purpose is to compare welfare or living standards, adjusted figures reflecting purchasing power should be applied.

The result on reduced inequality does not take into account the extent of inequality inside countries. Within-country inequality has been reduced in half the countries and increased in the other half. While rich countries have less inequality, the relationship between economic growth and inequality over time is unclear. There is little support for statements telling that economic growth is biased against the poor.

China is a populous country that strongly influences the global average; if we remove China from our sample, international inequality between countries has not changed substantially from 1965 to 1997. Due to the influence of China on the results, the development if inequality inside China is of special interest: Has the strong economic growth in China benefited the poor or not? The answer is yes; even if inequality in China has increased, economic growth has undoubtedly also benefited the poor.

The report shows, contrary to statements frequently heard in the public debate, that international inequality has on the whole been reduced since the 1960s. The analysis does not, however, render simple or final answers concerning how *globalisation* affects the extent of inequality. Globalisation is a complex process where some mechanisms may promote equality, and others not. Furthermore, this process occurs simultaneously with changes in technology and political conditions that affect inequality. Even if we have found that inequality has been reduced, we cannot conclude that "globalisation promotes equality". This requires research beyond the scope of this project. The report outlines some important issues for such research.

In spite of our conclusion about reduced global inequality, gaps in income and living standards between rich and poor countries remain huge, and some of the poorest countries lag behind. The fact that almost a quarter of the world's population still lives in poverty, is yet another reminder that the challenges related to inequality and poverty are still enormous.

Summary

Has globalisation led to more inequality in the world economy? Does international trade and investment make the industrial countries richer, and the developing countries poorer? Such statements are frequently heard in the public debate on globalisation and international trade policy. In the debate about on the World Trade Organisation (WTO), some critics maintain that free trade causes inequality to rise.[1] When the OECD tried to negotiate the Multilateral Agreement on Investment (MAI), some sceptics argued that international investment had a negative impact on developing countries. Attitudes concerning globalisation and inequality thus play an important role in debates on international policy.

In order to find out whether globalisation has led to more inequality, we should first find out whether inequality has increased or not. Next, we must analyse the causal links between globalisation and inequality. The extent of inequality is obviously influenced by other forces than globalisation. This report answers the first question; i.e. on whether global inequality has increased or not (Sections 2-4), and sketches out *possible* links between globalisation and inequality (Section 5). The main purpose of the report is to present a thorough examination of how inequality has developed over a long time period (1960-1998), comparing different measures and methods. The report summarises the main findings in Melchior et al. (2000), which contains (in Norwegian) a more detailed examination of the issues.

An important source for those who maintain that inequality has increased during the last decades, is the United Nations Development Programme (UNDP): In their Human Development Report (UNDP 1999, 3) they state that income inequality between rich and poor countries has widened continuously towards the end of the 20th century. In our report, we argue that the UNDP applies an inappropriate measure. With a more reasonable method, the conclusion is that inequality between countries in the world has been *reduced* since the mid-1960s. And even with the measure used by the UNDP, inequality across countries has decreased during parts of the *1990s*.

There is widespread agreement - including the UNDP - that if the purpose is to compare living standards in different countries, one should apply income figures that are adjusted for differences in purchasing power. In recent years, substantial effort has been made in order to provide such data. The data set used in Section 2 of the report includes such figures for 115 countries for the period 1965-98. The analysis based on these data in Section 2 reveals that, with some minor variations, *international income inequality has decreased continuously from the last part of the 1960s until 1997*. This conclusion applies if we compare incomes in the countries comprising the richest and poorest quintile of the world population, and it applies when we use statistical measures of inequality, e.g. the Gini coefficient.[2]

What, then, is the basis for UNDP's statements on increased international inequality? In UNDP (1999), only a few scattered (and sparsely documented) figures are provided, based on income figures that are not adjusted for purchasing power differences. These figures show the ratio between the income of the quintile of the world population living in the richest countries, and to the income of the quintile living in the poorest countries. According to UNDP (1999, 3 and 36),

[1] Some examples are mentioned in Dollar and Kraay (2000).

[2] A reservation is that satisfactory income data that adjust for purchasing power differences do not exist for the former Soviet republics, and these are not included. The impact of this omission has been checked by deriving measures of inequality based on data that are not adjusted for purchasing power, and which includes these countries. This check suggests that the omissions of former Sovjet republics has a modest impact on our results concerning changes in inequality over time.

this ratio increased from 30:1 in 1960 to 60:1 in 1990 and 72:1 in 1997. In the Human Development Report 1998 (UNDP 1998), the ratio for 1995 was said to be 82:1. According to this, inequality decreased during 1995-97. This was, however, not mentioned in UNDP (1999) - where globalisation and inequality was a main theme. As our own analysis based on similar figures for 1980-98 reveal in Section 2, inequality increased during 1985-93 but fell during the period 1993-98. As noted above, such results are less relevant since - for the purpose of analysing international inequality - one should use data that are adjusted for purchasing power differences.

UNDP has defended its method by referring to quality problems related to purchasing power-adjusted data, and with some less clear arguments telling that the dollar value of a county's income is more relevant for studying the marginalisation of poor countries in world trade and their power in international negotiations.[3] There are certainly problems with purchasing power-adjusted income data, and they exist for fewer countries than those that are not adjusted for price differences. In spite of this, there is widespread agreement that adjusted figures should be used when comparing international income differences. Such figures are also used by the UNDP when they construct their Human Development Index (HDI).

Section 2 also reveals that our results are in line with some other research contributions (that have analysed the development until ca. 1990). Research in the area suggests that international inequality increased until the 1960s, but this long-term trend was broken towards the end of the century. An important reason for this change has been growth in parts of Asia, and especially in China. If China is removed from our sample, the degree of international inequality has hardly changed over the period studied. China is a populous country, and it therefore has a considerable impact on the world average, as reasonable is.

International measures of inequality will necessarily hide important differences between the regions of the world economy. While the newly industrialised countries in East and South East Asia have experienced enormous economic growth and partly caught up with the richer countries, Sub-Saharan Africa has stagnated - especially after 1980. The collapse in Eastern Europe after 1980 has also been an economic tragedy in some countries. In spite of reduced international inequality, the gap between rich and poor countries is still enormous.[4] Our purpose is not to underestimate this gap, but to examine its development in an unbiased way, as a point of departure for discussing how the gap may be reduced. In this context, it is encouraging that the trend towards more inequality until the 1960s has been reversed towards the end of the century.

Our conclusion on international inequality is based on a comparison across countries, and thus neglects inequality *within* countries. If we take inequality inside countries into account, and calculate an index of global inequality *between persons*, the results might be different. Some unpublished results of this type suggest that global inequality increased from 1988 until 1993. Such studies face considerable challenges in terms of data and methodology, and more research covering a longer time period are needed in order to obtain a reliable assessment of trends over

[3] See UNDP (2000), Response to Mr. Castles' Room Document on Human Development Report 1999, accessible on www.undp.org. Here (page 5), wages and hotel prices in Geneva are even referred to as arguments for using income data that are not adjusted for purchasing power differences. This would certainly be relevant for an analysis of negotiation capacity in the WTO, but hardly for international comparisons of welfare.

[4] Problems of poverty are thus still huge. We do not present new results on this, but refer to available evidence. Results from the World Bank suggest that the number of poor people (living on less the one purchasing poverty-adjusted dollar per day), was at the same level in 1998 as in 1987, but with some reduction after 1993.

time. Other results suggest that 80-90 per cent of global inequality is captured by income differences across countries. For this reason, comparisons across countries make sense when measuring international inequality.

Nevertheless, a possible objection to our analysis is that it gives a rosy picture since intra-country inequality is neglected. Research on inequality in countries reveals that *rich countries have less inequality*. For changes over time, however, the examination in Section 3 shows that the relationship between economic growth and inequality within countries is complex. From the 1970s until the 1990s, inequality increased in approximately half the 80 countries covered by the data, and decreased in the other half. There were fluctuations over time, with more inequality towards the end of the period. Except for Eastern Europe, where inequality has generally increased, there is considerable variation between countries within the same regions. Such variation is also present among rich as well as poor countries. Some results suggest that economic decline is more likely to cause increased inequality. It is in accordance with this hypothesis that inequality has increased in Eastern Europe and Sub-Saharan Africa after 1980. Research in the field also suggests that there is no simple link between economic growth and inequality; high-growth countries experience less inequality in some cases and more in other cases. This lack of a clear link between growth and inequality also reduces the risk that comparisons across countries may give a biased picture of global inequality. A recent World Bank study (Dollar and Kraay 2000) suggests that economic growth benefits the rich and the poor in each country to the same extent.

Since measures of international inequality are strongly influenced by the development in China, it is of special interest whether growth in China has benefited the poor Chinese or not. Studies of this (World Bank 1997) reveal that economic growth in China has been particularly strong in urban areas and in the coastal regions, and this has contributed to more inequality within China after 1978. In spite of this, inequality in China is still below the high levels of Latin America and Sub-Saharan Africa. Income growth in China has also benefited the poor; particularly during 1980-84 and 1990-95, there was *substantial income growth also among poor Chinese*. Due to this, the number of poor people in China in 1995 was 250 millions below what it would have been without income growth for the poor.

Another possible objection to our conclusion on international inequality is that income is a too limited measure of living standards, and that other indicators of welfare should be taken into account. For this reason, Section 4 examines the development of other aspects of living standards, with focus particularly on life expectancy and education. Average world life expectancy increased from 55 years in 1962 to 67 years in 1997. The improvement was considerable for a number of poor countries. Part of the improvement can be attributed to economic growth, but a substantial part of the increase was unrelated to income changes, and could be caused by global progress in medical technology and knowledge about diseases. In the former Soviet Union and in Sub-Saharan Africa, some countries have experienced a reduction in life expectancy after 1987, due to economic decline, conflicts or AIDS. On the whole, however, the trend during 1962-97 has been towards *more global equality with respect to life expectancy*.

For education, *substantial progress in school participation* occurred between 1960 and 1995. While developing countries still lag considerably behind rich countries for higher education, the relative difference in combined school participation (primary, secondary and tertiary education) has been narrowed during the period. An exception from this trend is Sub-Saharan Africa after 1980, where combined school participation did not increase. Our analysis of education does not take into account quality differences in schooling, which are also important if we want to obtain a more precise picture of the education gap between rich and poor countries.

Life expectancy and school participation increase with the income of each country. Together with income and literacy, these variables enter into the calculation of the so-called Human Development Index (HDI), reported annually by the UNDP. Calculations of such indexes over time (undertaken by the UNDP and other researchers) indicate that poor countries are catching up with the rich ones. In fact, *the HDI provides a picture of trends in international inequality that is even more positive than the one we have obtained based on income data* alone. This, together with our analysis of education and life expectancy, supports our conclusion concerning reduced global inequality during the last decades. It also indicates that the picture derived from purchasing power-adjusted income data is not "too positive".

The analysis of income and living standards thus point in the same direction. Since income, life expectancy and education are also correlated, it is also the case that the HDI index itself is strongly correlated with income. For 1997, variations in income statistically explain 84% of the variation in the HDI. We therefore conclude that the HDI makes us a little - but not too much - wiser. In order to draw attention to the analysis of living standards, however, the HDI has been a success.

The empirical analysis of the report thus indicates that during the last decades of the 20th century, international inequality has been reduced, while inequality within countries follows a mixed pattern. The next question is then: How can these changes be explained by "globalisation"? The analysis falsifies simplified allegations about globalisation and inequality. On the other hand, the analysis does not allow us to conclude that "globalisation reduces inequality". Such a statement would also be far too simple. Globalisation is a complex process where some mechanisms may contribute to greater equality, while others may promote more inequality. Furthermore, globalisation occurs simultaneously with other important phenomena that may affect the extent of inequality, e.g. technological and political changes. In order to derive causal links, such other influences have to be taken into account. An analysis of the causal links between globalisation and inequality is thus a large-scale project beyond the limits of this report. In Section 5, we sketch out possible links between globalisation and inequality; as a framework for the interpretation of empirical facts, and as an indication of important issues for further research. The survey is based on theory as well as empirical research. In some cases, the theories are supported by empirical research; in many cases, however, research is still not able to give precise answers.

Globalisation is a process with faster changes in the global division of labour. "Low-cost imports" - especially from East and South East Asia - have already replaced some of the OECD countries' own production of e.g. clothing and electronics. The integration of poor and populous countries like China into the world economy pushes the process further: When China takes over larger shares of the world market for e.g. clothing, other Asian countries have to move into other industries, and the challenges are increased for other developing countries that want to enter this market. Increased trade is a two-way process; when China sells clothing to rich countries, the rich countries may sell more machinery to China. Increased trade thus leads to restructuring within each country: While textile workers in the OECD lose their jobs, thousands of new textile workers are hired in China. While the machinery industry in the OECD grows, inefficient plants in China are closed. Trade may be to the advantage of both rich and poor countries, but some groups inside each country may lose. According to the theory, trade may reduce the income gap between rich and poor countries, while leading to more inequality within rich countries and less in poor countries.

If the textile workers in the West get new jobs or they are educated to other professions, restructuring may take place without losers. In the West, however, it has been observed that the

gap (in terms of income or unemployment) between skilled and unskilled workers has increased during the last two decades. Is globalisation the cause of this? Research in the field suggests that globalisation is partly to blame, but that an even more important reason for the gap is technological change that increases the demand for skilled labour in most industries. A substantial amount of research has been undertaken for the OECD, but surprisingly little on the impact on developing countries. Furthermore, there is too little research that sheds light on how the entry of China (and gradually India) into the world economy may affect other developing countries.

Research on the impact of globalisation on low-skilled workers in rich countries illustrate that globalisation occurs together with radical changes in technology that may reshape the world economy. Recent research on economic growth focuses particularly on innovation as a source of economic growth, and the spread of technology as an important determinant for the extent of inequality between countries. The development for electronics since 1960 illustrates that while innovation has primarily taken place in rich countries, some poor countries have developed through copying technology, and gradually became major exporters. Globalisation increases the potential for the spread of technology through trade (especially imports of capital equipment) and international investment. The slicing up of the value added chain within multinational corporations allows poor countries to produce some of the goods with a limited technological base. Research in the area suggests that multinationals contributes positively to the international diffusion of technology; but only under the precondition that the receiving country has a certain minimum standard in terms of education and technology, or a certain "absorptive capacity" or "social capacity". An important issue is whether information and communication technology raises the threshold for poor countries. The spread of such technology so far reveals a considerable gap between rich and poor countries, but things change rapidly, and countries like India and Taiwan have already demonstrated that information technology is not reserved for the rich.

The term "social capacity" in research on technology has relevance in other fields as well. If e.g. countries have too weak institutions to handle structural adjustment and social change, they may be losers in the global competition. Such "institutional failure" may be a part of the explanation of the weak development in Sub-Saharan Africa and parts of Eastern Europe after 1980.

Another possible explanation why some regions develop favourably while others stagnate, may be that both are part of a common process that creates winners and losers. Recent research on economic geography and growth tell us some such stories about globalisation creating agglomeration or "industrial clusters" some places, and decline in other areas. Economies of scale of various kinds, or "cumulative causation" (good or bad circles), may lead to such asymmetries. So far, however, there is no empirical research that suggests e.g. that "growth in Asia and stagnation in Africa are two sides of the same coin". Research in the area has not confirmed that such a global link is present. A more plausible hypothesis is that agglomeration or regional integration in parts of the world economy may cause local "damage"; e.g. that regional integration may hurt surrounding countries that do not participate. More research is needed in order to confirm whether this is true - or theoretical speculation only.

For inequality within countries, the public sector is important. In the debate on globalisation, some critics have warned that global competition may erode the tax base and lead to a "race to the bottom" that undermines public welfare policy. The literature in the field shows, however, that internationalisation in the West has been accompanied by a continuous expansion of the public sector, and that open economies have a larger public sector than closed ones. Research also suggests that public income has been maintained, and that the state's room of manoeuvre

for redistributive policies has not been substantially reduced. Public expenditure that is directly related to the production system (education, infrastructure etc.) is better for growth than pure redistribution. In spite of this, it is not necessarily true that competition leads to cuts in welfare expenditure: Some researchers have argued that globalisation may create more demand for redistribution and lead to an expansion of public expenditures. Concerning state income, some reallocation has taken place from capital taxation to taxation of labour. Increased international capital mobility is a possible explanation of this.

The survey in Section 5 illustrates that it would be pure guesswork if we - based on our result about reduced global inequality - concluded that "globalisation leads to more equality". In order to draw such conclusions, more specific analyses are needed. We hope to be able to undertake such research in the future.

1. Introduction

Has globalisation led to more inequality in the world economy? Does international trade and investment make the industrial countries richer, and the developing countries poorer? Such statements are frequently heard in the public debate on globalisation and international trade policy. In the debate on the workings of the World Trade Organisation (WTO), some critics maintain that free trade causes inequality to rise.[5] A premise for the Non Governmental Organisations (NGOs) demonstrating in Seattle at the time of the Ministerial Meeting of the WTO in December 1999 was that "economic disparities between nations and within them have deepened, and poverty has increased while the rich have become richer" (Singh 1999, 1). When the OECD tried to negotiate the Multilateral Agreement on Investment (MAI), sceptics expressed similar concerns regarding international investment. Attitudes concerning globalisation and inequality thus play an important role in debates on international policy. Beliefs or perceptions concerning this relationship form part of the "ideological background" for evaluating more specific policy questions.

The Human Development Report 1999 (UNDP 1999) published by United Nations Development Programme (UNDP) draws a gloomy picture of the development of global inequality and poverty in the age of globalisation. They are not alone in stating as a fact that "Inequality between countries has (..) increased" (UNDP 1999, 3). The United Nations Council on Trade and Development (UNCTAD) analyses poverty and inequality and refers to an "enormous increase in the income gap between the richest and the poorest quintiles of world population" (UNCTAD 1997, 81). In this report, we examine the foundation of such statements and present our own calculations, and compare to others, in order to check whether such statements are correct or not.

Hence the main purpose of this report is to examine carefully whether it is true or not that global inequality has risen. Covering the period 1960-98 (with some variation depending on data availability), we analyse income differences between countries (Section 2), changes in income distribution within countries (Section 3) and differences in living standards between countries (Section 4).

In the report, we distinguish between the *descriptive* issue concerning whether inequality has increased or not, and the *analytical* issue concerning *causal links* between globalisation and inequality. Sections 2-4 provide an answer to the descriptive question: has inequality increased or not. On causal links, the report sketches out *possible* links between globalisation and inequality (Section 5). Since we do not explicitly test hypotheses concerning globalisation and inequality, we do not jump to conclusions about causality. Inequality is influenced by other forces than globalisation. Furthermore, globalisation is a multi-faceted phenomenon and we should not expect to find a simple and unifying mechanism that relates it to inequality. We expect that globalisation comprises different processes and mechanisms, where some may promote equality while others may not. For example, export-led growth has contributed to increased income for some countries in Asia, and these have narrowed their income gap vis-à-vis richer countries. In this case, "globalisation" contributes to more equality. On the other hand, exports from the same Asian nations may have contributed to weakening the position of unskilled labour in rich countries, thus promoting more inequality inside richer countries. The position of the unskilled is, however, also strongly affected by technological change that increase the demand for skilled labour. This occurs simultaneously with globalisation, and illustrates the difficulty in sorting out what is due to globalisation and what is due to other factors. Similarly, it may be difficult to measure the impact of globalisation in stagnating

[5] Some examples are mentioned in Dollar and Kraay (2000).

countries in Sub-Saharan Africa, given the presence of political and military conflict, disasters and diseases in many countries. Questions about how globalisation affects inequality thus constitute a vast research area. We survey some important issues in Section 5, and explore possible links rather than prematurely drawing firm conclusions. In Section 6, the conclusions are summarised and some policy implications are addressed.

2. Income inequality between countries

In 1998, the richest country in the world possessed 115 times the per capita income of the poorest. The 20% richest of the world's population had a per capita income 13 times that of the 20% poorest.[6] Almost a quarter of the world's inhabitants live in poverty. The extent of global inequality is thus massive. Most of us would agree this is unfair and should be changed. But if we want to do so, it is important to understand how the current world economic order affects inequality. A first step in this direction is to examine how global inequality and poverty have *developed* in the age of globalisation. Has the world become a better or worse place? In order to make the right decisions concerning the world economic order, politicians should be accurately informed about the development of inequality and poverty. For the sake of the world's poor, the debate on globalisation and liberalization of trade and investment should be based on correct premises. Our aim is to contribute to better information on these issues.

How should global inequality be measured? In most cases, comparisons of income are applied for this purpose. Ideally, we should have income data for every single person or household living in the world, and use this as the basis. Since data on income distribution within countries are not available for many countries over a long time period, a common approach is to compare per capita incomes of countries. This section presents measures of inequality on this basis. In Section 3, we explore further whether income inequality *within countries* may modify the conclusions. Could it, for example, be the case that economic growth only benefits a rich minority inside countries, so that comparisons of average income in countries give a biased picture. As we shall see, it is not likely that this is the case. In Section 4, we examine whether inequality with respect to living standards has developed differently compared to income inequality. Could income comparisons be biased because income is a poor measure of living standards? As we shall see, trends in global inequality are similar in the two cases.

2.1. How should inequality be measured?

Given that we want to measure international income inequality using data on per capita income of countries, further methodological issues arise. How should inequality be expressed? An extreme choice would be to compare the incomes of the richest and poorest country for each year. A measure of this kind is sometimes referred to in the public debate. [7] It is, however, of limited interest since it neglects all changes that occur between the extremes. A somewhat better choice is to rank countries by income, and then compare the income in countries including the top and bottom half, third, quintile or decile of the world population. Unless we compare the top and bottom half, we will also here have the problem that information on countries in the middle of the distribution is neglected. Since the success stories among developing countries have occurred for countries that were originally not among the poorest, it

[6] These comparisons are based on income data that are adjusted for differences in purchasing power.

[7] This measure is often referred to in the HDR 1999. UNDP reports an increase in the ratio from 44 in 1973 to 72 in 1992. Our data (PPP) show an even greater increase in the preceding years: up from 66 in 1992 to 115 in 1998! But the data support what is said about the instability of the measure, as the reason for the increase is Luxembourg bypassing the per capita income of the USA and the extreme economical situation of Congo (Zaire).

matters greatly whether these are included in the low-income denominator of the ratio. A measure frequently used, for example by the UNDP, is a ratio using quintiles (i.e. countries comprising the richest and poorest 20% of the world population). In this case, some fast-growing poor countries are included in the denominator, and this contributes to making this measure "representative". Had we chosen the top and bottom 10% instead, we would more likely find increased inequality over time.

An even better approach to measuring inequality is, in our view, to use a statistical approach that exploits the information in the whole sample, and does not depend on one or a few observations. Different methods and measures exist, for example regression analysis and the Gini coefficient (which will be explained in more detail later). We apply the Gini coefficient since it is widely applied and allows comparison to other studies. In addition, we also present results using the top and bottom quintile ratio, as described above, since it has been applied in some other influential reports. In fact, we find that this measure and the Gini coefficient produce relatively similar results concerning changes in inequality over time.

2.2. Should income data be adjusted for price differences?

Having decided which measures to use, the next crucial issue arises. Should we just pick the numbers on GDP per capita in local currency, convert them into dollars, and go ahead with our calculations? This method, however, suffers from at least three weaknesses:

- First, the living standards of individuals in a country are barely influenced by changes in the exchange rate if the daily consumption does not contain imported goods. This may be the situation for the majority of the population in big or poor countries. Price levels differ considerably across countries; a hamburger may cost 2 US$ in China and 5 US$ in Norway.[8]
- Second, short-time fluctuations in the exchange rate may occur without corresponding changes in the welfare of a country's inhabitants.
- Finally, it may be difficult to choose a reasonable exchange rate in cases where exchange markets have been significantly regulated.

To make up for these weaknesses, a considerable effort has been made since 1967 to produce income data that are adjusted for differences in purchasing power across countries (UN 1994, Summers and Heston 1991). Such purchasing power parity (PPP) data are not strongly influenced by short-term fluctuations in the exchange rate, and they are more appropriate for comparing welfare across countries since they take into account price differences.

There are still practical problems involved when estimating PPP-figures, although the methods have improved since this work started in 1967.[9] For this reason, PPP figures have their weaknesses. In spite of this uncertainty, most researchers (see e.g. Firebaugh 1999, 1609, Schultz 1998, 319) agree to choose the principally best measure, i.e. GDP adjusted for purchasing power (PPP). Major institutions like the World Bank also prefer such figures, when the purpose is to compare the incomes of different countries.[10] We share this view, and

[8] For a discussion of why prices differ, se e.g. Rødseth (1998).

[9] Radetzki and Jonsson (2000, 55 ff.) show examples of how the PPP-estimates may vary considerably, and use this as an argument for choosing unadjusted figures in calculations on inequality. In this context, it should be recalled that very unreasonable results also can occur using exchange rates (Firebaugh 1999, 1610).

[10] The UNDP also applies such figures for contructing their Human Development Index (HDI), see Section 4.3 below.

therefore apply GDP(PPP) figures supplied by the World Bank.[11] In order to allow comparison with studies using unadjusted GDP data, we also include some calculations based on unadjusted data.

In fact, it is of crucial importance for the results whether we use PPP-adjusted income data or not. Using unadjusted figures, the result is obtained that international inequality has increased over time. With PPP-adjusted figures, however, the reverse is true. It is not a coincidence, therefore, that statements about increased inequality are frequently based on results obtained using unadjusted income data.

An important source for those who maintain that inequality has increased during the last decades is the United Nations Development Programme (UNDP): In their Human Development Report (UNDP 1999, 3) they state that income inequality between rich and poor countries has widened. In UNDP (1999), a few scattered (and sparsely documented) figures are provided. A measure applied is the ratio between the income of the quintile of the world population living in the richest countries, and the income of the quintile living in the poorest countries, based on income data that are not adjusted for purchasing power differences. According to UNDP (1999, 3 and 36), this ratio increased considerably from 1960 to 1997. As noted above, such results are less relevant since - for the purpose of analysing international inequality - one should use data that are adjusted for purchasing power differences.

UNDP has defended its use of unadjusted GDP data by referring to quality problems related to purchasing power-adjusted data, and with some less clear arguments maintaining that the dollar value of a county's income is more relevant for studying the marginalisation of poor countries in world trade and their power in international negotiations.[12] There are certainly problems with purchasing power-adjusted income data, and they exist for fewer countries than those that are not adjusted for price differences. In spite of this, there are in our opinion strong reasons for using PPP-adjusted figures when comparing international income differences. This is especially true when the purpose implicitly is to use income as an indicator of welfare. This is also acknowledged by the UNDP, who apply PPP data when they construct their Human Development Index (HDI). When UNDP refer to the income ratio of the richest and poorest country (UNDP 1999, 3), they also apply PPP-adjusted data.

For these reasons, we should be on solid ground when we maintain that conclusions on international income inequality should be based on PPP data. In the following, we use a data set (see footnote 7) covering 115 countries during 1965-97. For comparison, we also show results with unadjusted income data for 136 countries during 1980-98. A problem is that reliable PPP data for the former Soviet Union are not available for the whole period. For this reason, we also use unadjusted data (which include the former Soviet Union) to check whether this omission may unduly influence the results.

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[11] The dataset in unadjusted US dollars covers 136 countries and was most kindly e-mailed us by W. Prince in the World Bank. Early figures for USSR originates from WB1993, see Melchior et al. (2000). The PPP-set consists of 115 countries and was downloaded from the World Bank Internet site in December 1999. Unfortunately, the lack of comparable data for the USSR/FSU for the whole period forced us to exclude most of these countries from the sample. In general this increases the Gini coefficient, but apart from this it does not seem to influence the results substantially, see Melchior et al. (2000).

[12] See UNDP (2000), Response to Mr. Castles' Room Document on Human Development Report 1999, accessible on www.undp.org. Here (page 5), wages and hotel prices in Geneva are even referred to as arguments for using income data that are not adjusted for purchasing power differences. This would certainly be relevant for an analysis of negotiation capacity in the WTO, but hardly for international comparisons of welfare.

2.3. International inequality measured by the Gini coefficient

The Gini coefficient may be computed with or without weighting for population size. It is obvious that a one-dollar increase in per capita income in China is of greater importance to world welfare than a similar increase in income in a small country. Hence, we will be weighting for population size in all our calculations.

Diagram 2.1 illustrates what the Gini coefficient measures.

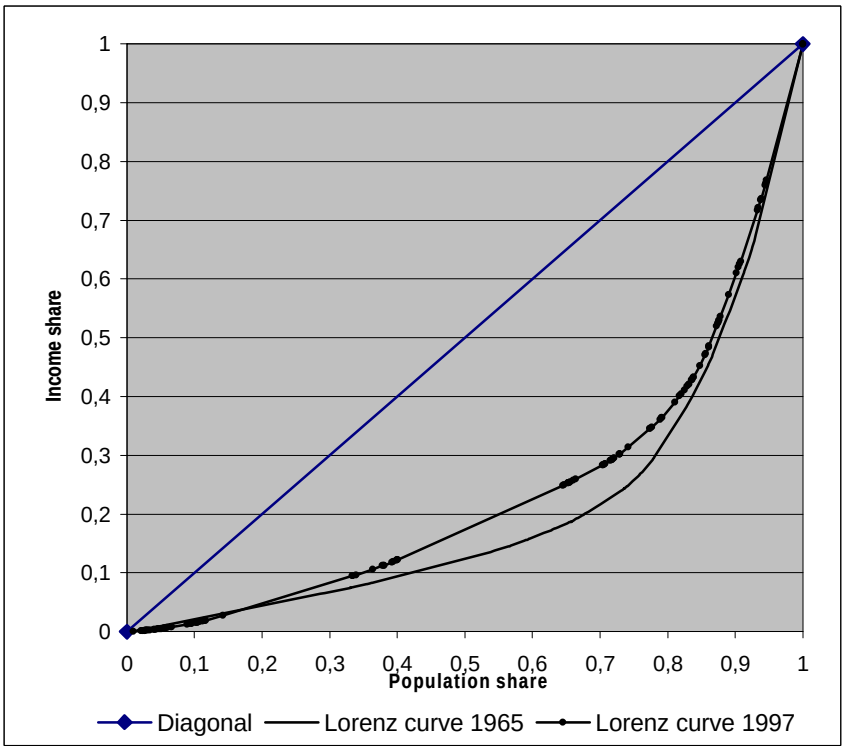

Diagram 2.1: Lorenz curves for 1965 and 1997, based on PPP-adjusted data on income per capita for 115 countries.
Data source: WB99 (see references).

For constructing the diagram, we have ranked the 115 countries according to income per capita (PPP). The horizontal axis measures the cumulative share of the world population, and the vertical axis the cumulative share of world income. If all countries had the same per capita income, these "Lorenz" curves would coincide with the diagonal. Due to income inequality, the Lorenz curves become gradually steeper. We see, for example, that the poorest countries including 50% of the world population had a share of world income between 10 and 20% in 1965 as well as in 1997, but that this share was higher in 1997. The countries including the lowest decile (10%) of the world population, however, had a lower share of world income in 1997 compared to 1965. This illustrates, as noted earlier, that it matters whether we compare the richest and poorest decile, quintile, third or half. If we compare the top and bottom 10%, we will find that world inequality has increased. If we compare the top and bottom third, the reverse will be true.[13]

[13] When the World Bank (2000, 51) compares average income in the 20 richest and the 20 poorest

The Gini coefficient measures the relative size of the area between the diagonal and the Lorenz curves. If income per capita in all countries had been equal, the coefficient would be zero. If one (very small) country had all the world's income, the Lorenz curve would follow the horizontal axis until the cumulative population share approached 1, and the index would approach 1. The Gini coefficient thus varies between 0 and 1, with high values indicating more inequality. [14] If the income of all countries increases in the same proportion, the Gini coefficient is unchanged. If poor countries have the highest income growth, the index falls, and if the relative income growth is highest for rich countries, inequality increases. An important implication of this is that for some intermediate income, the Gini coefficient is unaffected by a change for countries at this level. This value depends on the global income distribution, and thus changes over time. An implication of this is that during the first part of the period 1965-97, strong growth in Asian NICs contributed to less global inequality, while towards the end of the period, their growth contributed to increasing the Gini coefficient. This, in addition to their relatively small total population, is a reason why growth in Asian NICs (not including China) is not a major reason for changes in the Gini coefficient over the whole period. Towards the end of the period, countries in Eastern Europe are above the critical value, and their income fall should thus contribute to lowering the Gini coefficient. The omission of the former Soviet Union in one of our data sets should thus not imply that we exaggerate trends towards reduced world inequality.[15] The lack of influence of intermediate countries also implies that the Gini coefficient may give results that are similar to e.g. comparing upper and lower quintiles or thirds.

Diagram 2.2 shows the development of the Gini coefficient from 1965 to 1997 using PPP data (the lower curve) and from 1980 to 1998 using unadjusted income data (the upper curve). It should be observed that the upper curve includes the former Soviet Union, while the lower one does not, due to lack of data.

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countries in 1960 and 1995 - excluding China from the poorest 20 in 1960 - they find that the income gap (measured in GDP-PPP) has increased. This is because the poorest 20 countries (excluding China) represent less than 10% of the world population.

[14]Tungodden (1999), section 2.3.2, discusses how different distributions are reflected in the magnitude of the coefficient, and welfare implications related to this.

[15] These examples illustrate that an index of this kind is descriptive and not a measure of welfare; obviously we would not conclude that "growth in Asia during the 1980's was a bad thing" or that "the stagnation in the former Soviet Union is great since it lowers global inequality"!

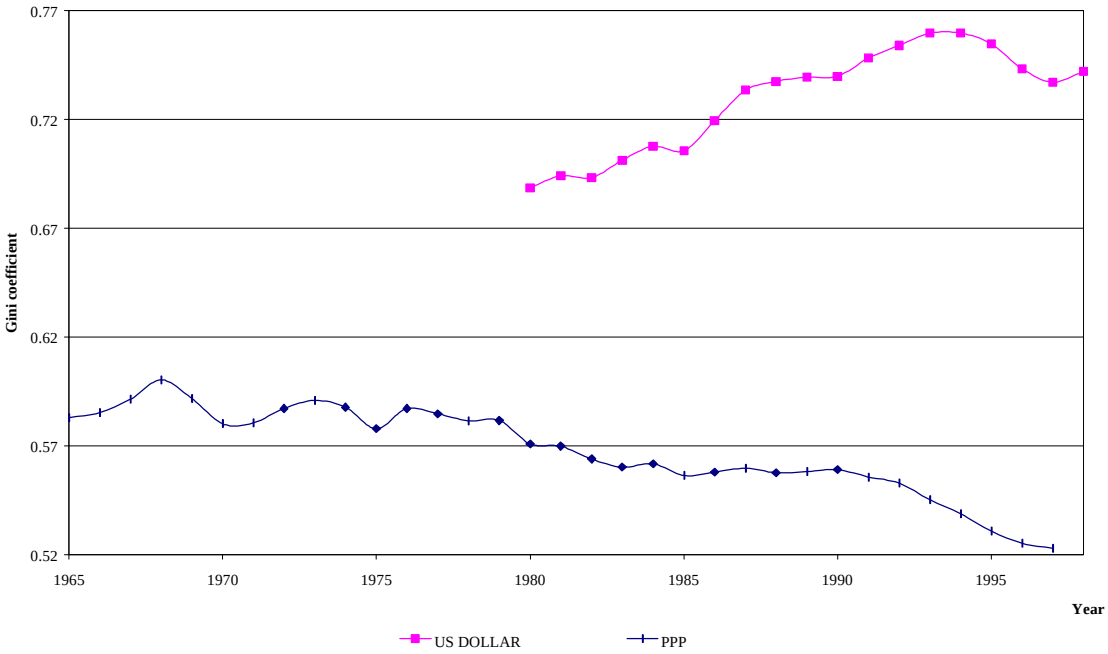

Diagram 2.2: Gini coefficients for the world income distribution, using PPP-adjusted income data (1965-97) or unadjusted data (1980-98).
Data sources: WB99 and WB00 (see references).

The diagram illustrates how strongly the results depend on whether PPP data or unadjusted data are used. With unadjusted data, world inequality increased from 1980 to 1993 and fell thereafter. The decline in 1993-97 may partly be explained by reduced income in one of the world's richest nations (Japan) during these years.

When income more reasonably is measured with PPP data, the Gini coefficient declined[16] between 1965 and 1997. It decreased from 0.59 to 0.52; a fall of more than 10 %.[17] From the peak of inequality in 1968, the fall was even greater. The results thus show that, with some fluctuations over time, world inequality declined continuously during the three decades from 1968 to 1997.

Which developments were behind this reduction in world inequality? A more detailed examination and decomposition of the result[18] are contained in Melchior et al. (2000). Relative income changes in large countries are important. Economic growth in China thus made a significant contribution to lowering the Gini coefficient over time. USA also contributed to the decrease since its share of the world population was shrinking over time. If China and the USA are removed from the sample, the fall in the coefficient is turned into an increase. After 1990, lower economical growth in Japan also contributed to the coefficient's decline, together with the increasing prosperity of the world's second most populous nation, India. Observe that the economic growth in newly industrialising countries in East and South Asia during the period is

[16] A simple linear regression gives a significant (negative) slope coefficient for the trend variable.
[17] There is little reason to believe that the decline depends on our choice of inequality measure (the choice of measure hardly influences the results in other studies, e.g. Schultz 1998 and Firebaugh 1999). This is confirmed by a similar decline in inequality when measured by the variance of the logarithm of income (VarLog, 15%, Figure 5.1 in Melchior et al. 2000), and when measured by the income ratio of the world's richest and poorest fifth (15%, section 2.4).
[18] Decompositions of the Gini coefficients were made using the method of Firebaugh (1999).

not a major reason why the Gini coefficient fell over time. Possible reasons for this were referred to above.

A possible overall interpretation may be that inequality is reduced because the rich (USA and Japan) are getting relatively fewer and relatively less rich, while the poor (China and also India towards the end of the period) are getting relatively richer.

2.4. The income ratio of the richest and poorest fifth of the world's population

As noted earlier, the ratio between the average income per capita in the countries comprising the richest quintile of the world's population, compared to the poorest quintile, has been used by the UNDP as a measure of world inequality. Diagram 2.3 shows how this measure developed over time, based on PPP data (the lower curve) and unadjusted income data (the upper curve).

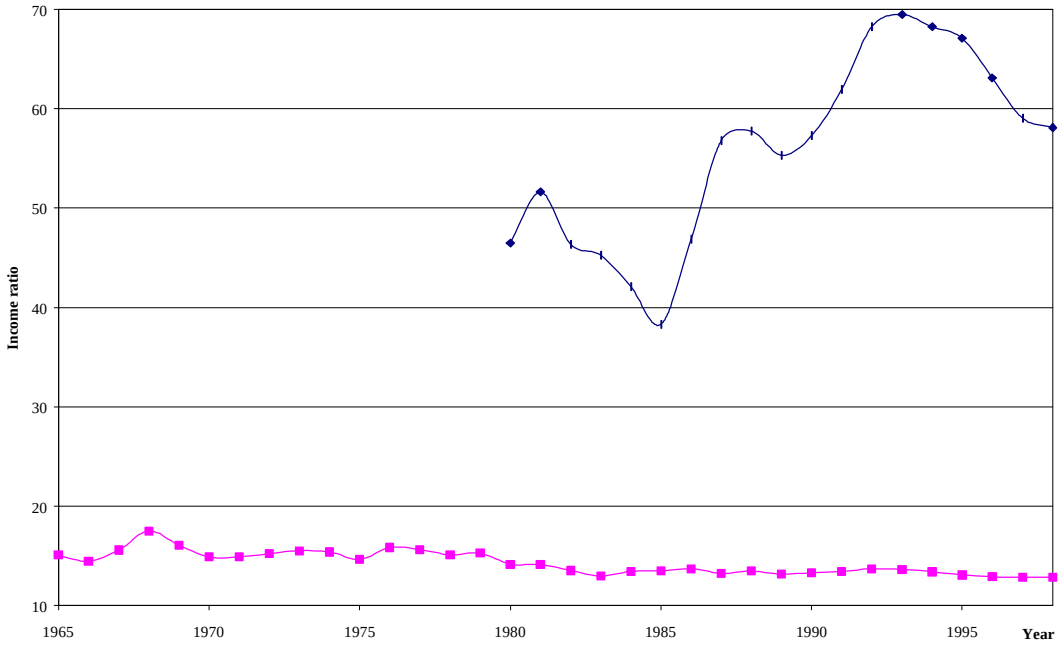

Diagram 2.3: The income ratio between the countries including the richest and poorest 20% of the world's population. Data sources: WB 99 and WB00.

The measure based on unadjusted US dollars (the upper curve) corresponds to the figures presented by UNDP as evidence on increased global inequality, and referred to in paragraph 2.2 above. UNDP (1999, 3 and 36) referred to the *increase* of this ratio from 30 in 1960 to 60 in 1990, and finally to 74 in 1997.[19] Our results show that there was an overall increase in this ratio from 1985 to 1993. After 1993 the ratio fell. In fact, this fall is also documented by the UNDP since they reported the ratio to be 82 for 1995 in UNDP (1998, 29). According to UNDP's own figures, there was a fall from 1995 to 1997. This was not mentioned in the Human Development Report for 1999, which focused on global inequality! Such a selective memory is surprising. Notwithstanding UNDP's important and useful other contributions in the

[19] The absolute values differ between ours and UNDP's results although the trend is similar. Since UNDP's calculations are not well documented, we are not able to check whether this is due to data, country coverage or other aspects.

field, it demonstrates that some of UNDP's statements about increasing world inequality were based on a very limited analysis.

Turning to the results based on a more reasonable measure of income (PPP), we observe in Diagram 2.3 (the lower curve) a small but more or less monotonous decline in the ratio from 1968 to 1998.[20] The smaller difference between the world's richest and poorest fifth is caused by a higher economic growth among the poor than among the rich. The per capita income of the poorest fifth was 551 dollars (PPP) in 1965. In 1998 the income was more than doubled (1137). The income of the richest 20% increased by approximately 75%, from 8 315 to 14 623 dollars (PPP).

2.5. Comparison with other studies

Diagram 2.4 shows the Gini coefficients presented in this report, compared to results by other authors. The upper curves depict results based in income data that are not adjusted for price differences, the lower bundle of curves are based on PPP data.

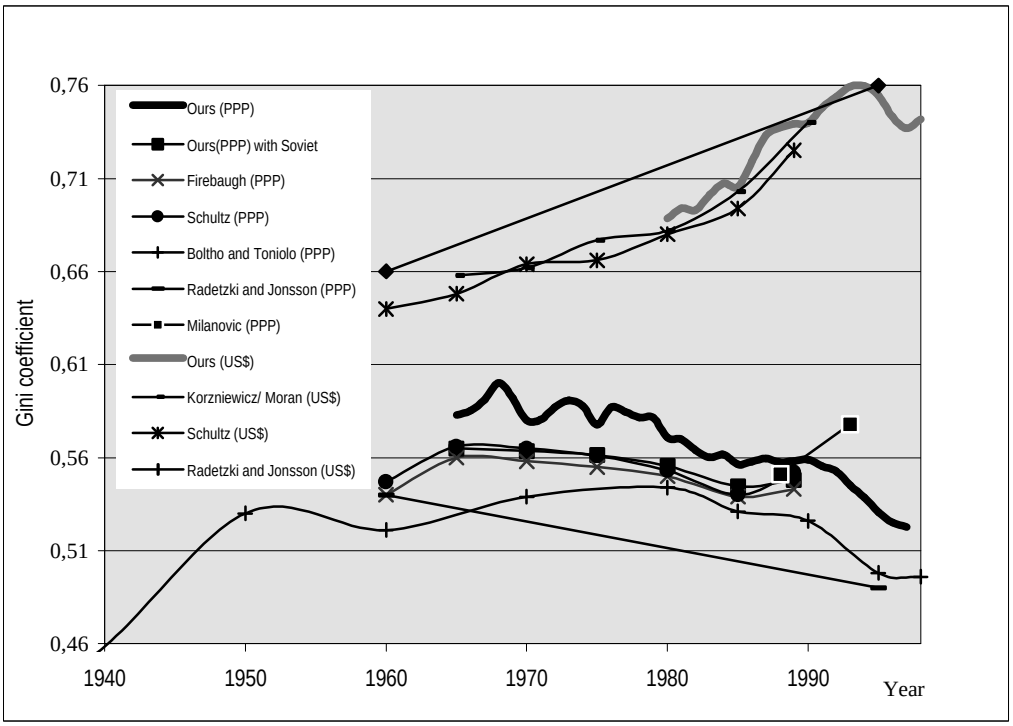

Diagram 2.4: Gini coefficients in different studies.[21]

Studying inequality based on income data in US dollars, Korzeniewicz and Moran (1997) and Radetzki and Jonsson (2000) conclude that world inequality has increased. As discussed in section 2.2, most researchers agree that PPP is better suited when studying inequality. Acknowledging this, it is interesting to observe that our results are broadly in accordance with the results of Firebaugh (1999), Schultz (1998), and Boltho and Toniolo (1999) for the period

[20] There was an increase from 1966 to 1968, and this also applies to the whole period 1960-68. The period 1960-64 is not included here due to missing data for some countries.

[21] Our Gini coefficients generally lie above the coefficients of the other studies (Diagram 2.4). This tendency generally disappears if we include USSR in our sample, see the graph "OurPPP with USSR included". The observations for USSR are from the Penn World Table 5.6 and included in WB99 (Georgia and Latvia are excluded). We have observations from 1965 to 1989.

1965-90.[22] They all conclude that a modest decline in inequality can be observed from the mid-1960s to around 1990.

The only alternative study that covers the period 1990-97 is Boltho and Toniolo (1999), although with only two observations after 1990 and with data from different sources. They obtain, nevertheless, a trend for the 1990s that supports our results.

We thus observe that Gini coefficients and income ratios based on PPP data both suggest that world inequality has decreased over the last three decades.[23] Our results are supported by other contributions in the area. Some researchers have objected to the use of PPP data, based on data limitations. We acknowledge that some uncertainty exists due to this, but maintain that results based on unadjusted data give a biased picture, since they do not adjust for price differences across countries. Based on the currently available data, we thus conclude that world inequality has decreased.

2.6. Inequality and income changes

Reduced inequality does not necessarily imply that everybody is better off. Recalling from Diagram 2.1 that the Lorenz curves for 1965 and 1997 crossed, it is evident that the poorest part of the world population had a smaller share of world income in 1997 than in 1965.[24] Although their *share of world income* declined, however, *income* increased on average for this group. In fact, the average income per capita for the countries including the poorest quintile of the world's population more than doubled. Also in Africa, average per capita income increased considerably, although less than for other regions.[25] For most countries, there was a substantial income increase during the period studied.

This general picture is, unfortunately, not without exceptions. As later sections will also show, parts of Eastern Europe and Sub-Saharan Africa are regions where the development has been less favourable, especially after 1980. These two negative stories are indeed very different since Eastern Europe started from a relatively high level of income and living standards, while parts of Sub-Saharan Africa stand out as the tragedy where the poor got poorer. Based on PPP data, 12 countries in Sub-Saharan Africa, and 16 countries worldwide, experienced a reduction in income from 1965 to 1997. In the world's poorest country in 1998, Congo (Zaire), income was reduced by more than 60% from 1965 to 1998. Some countries thus experienced a deterioration of their welfare levels during the period. The reason why our measures of inequality show more equality in spite of such tragedies, is that the development was better most other places. While media attention frequently focuses on the negative stories, global measures also account for the positive things. It is important to maintain this balance, even if we always should bear in mind the deep problems facing some nations and their people.

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[22] Milanovic (1999) is basing his analysis solely on data from household surveys. He reports an increase in between-country inequality between his so far two observations (1988 and 1993). A very special definition of "nation" in this study makes it incomparable both to our study and to the other studies referred to here. Because of this incomparability and because we have not yet been provided access to the dataset, we are not able to confirm his results. Even so, we look forward to examining further analysis based on this methodology.

[23] In Melchior et al. (2000), an alternative statistical measure (VarLog) was also applied, giving similar results.

[24] In order to be exact: The two curves cross when the cumulative share of world poulation is 17%.

[25] For more details, see Melchior et al. (2000).

3. Poverty and income inequality within countries

The conclusion on reduced world inequality is based on average income data for each country. Could it be the case that such data give a biased picture? Could it be the case that economic growth only benefits a handful of rich people in each country, so that average figures are grossly misleading? In this section, we address such questions, partly based on other research contributions, and partly based on our own examination of available data on income distribution.

3.1. A "true" Gini?

As noted earlier, the ideal thing would be to have income data for every person in the world, and construct inequality measures, for example a Gini coefficient, based on this. Given that this is not possible because of data availability, we have used data on average income in each country. The question is then: How large is the bias due to the omission of within-country inequality? And, secondly, are there changes in within-country inequality over time that change the bias due to country averaging?

Assume, hypothetically, that we had a "true Gini" based on every person's income, and then recalculated the index based on country averages. How much information would be lost? The literature in the field suggests that the main contribution to inequality in the world is observed between, not within, countries. Korzeniewicz and Moran (1997, 1017) are supported by other studies (Li et. al. 1998) when they conclude that "the between-country distribution of world income can indeed be used as appropriate indicators of inequality". Quantitative estimates indicate that 80-90% of world inequality is captured by the between-country component.

Such observations support the use of country averages, but do not exclude the possibility that changes in the within-country component of inequality may change over time so that estimates based on country averages do not fully capture the true development of global inequality. If there are massive changes in within-country inequality over time, such a bias is more likely to occur. In the next paragraph, we shall therefore examine trends in within-country inequality.

A second possible approach is to apply household surveys as a basis for constructing a true global Gini coefficient. The World Bank and other institutions have invested considerable effort in producing such surveys. Such data now exist for many countries, although not for many observations over time. The data also involve some problems related to comparability etc. Nevertheless, studies based on such data offer us a new option that may provide valuable insight. Milanovic (1999) constructed a "true Gini" based on household surveys for 87 countries, covering 1988 and 1993. He found that the Gini coefficient increased from 63 to 66%. A decomposition of the Gini coefficient into between-country and within-country components revealed that almost 90% of global inequality was captured by the between-country component. The between-country component also increased by three percentage points, suggesting that the result of Milanovic is not due to within-country inequality. Milanovic, however, splits China, India and Bangladesh, respectively, into an "urban" and a "rural" country. This procedure, or different data, may explain why his result is different from ours. The results of Milanovic necessitate a question mark related to our results for two selected years, but do not invalidate our general conclusion. When more work is done based on household surveys, and observations for more years are added, we may evaluate to what extent such data modify the conclusions concerning long-term trends. Also in our results, we find short-term fluctuations that deviate from the long-term trend.

3.2. Within-country inequality

Data on the income distribution within countries are now available for an increasing number of countries. Still, however, data coverage is limited, especially for developing countries, and the number of observations over time is limited for many countries. Furthermore, national data differ greatly in terms of how data are collected and expressed. Should data be on income or consumption; gross income or taxable income; household income or individual income; and so on? Are data based on a limited survey or do they cover the whole population? Since data quality and methods vary greatly across countries, it is a puzzle to construct a data set where the observations are comparable and reliable. Deininger and Squire (1996) have examined a wide range of national studies and provided a "state-of-the art" dataset where observations are comparable and classified in terms of their reliability. We used this data set to examine trends in income inequality for 80 countries. The data do not include a complete time series, so averages of available observations within each decade are used for evaluating changes over time.

Diagram 3.1 shows regional averages (population-weighted) of Gini coefficients for the four last decades. A reservation is that the number of country observations may be limited for some regions and decades, so there is some uncertainty about the representativity of the figures.

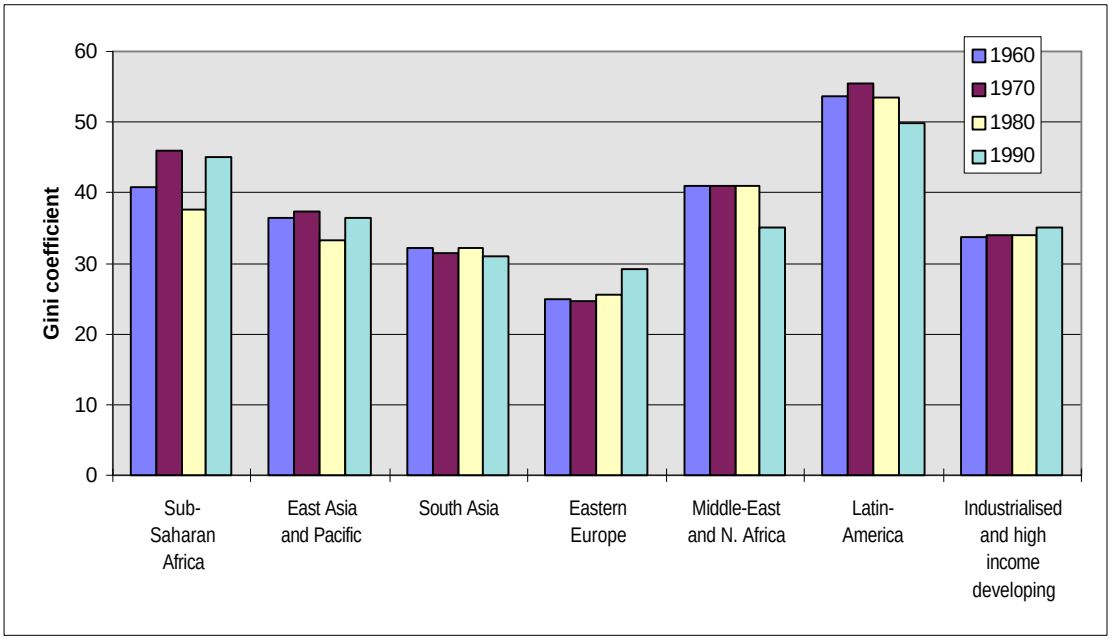

Diagram 3.1: Regional Gini coefficients.
Population-weighted averages based on available country observations within each decade.
Data source: Deininger and Squire (1997).

The diagram shows that:

- Inequality in Latin America is high but falling over time.
- Inequality in Sub-Saharan Africa fell during the 1980's but has increased considerably in the 1990's.
- Inequality in Eastern Europe has increased, but from a low level, and still this is the most "egalitarian" region.
- In Asia and in rich countries, inequality is at an intermediate level and the average has not changed much over time.

These averages hide that within regions, there is considerable variation, and within most regions there are countries that differ considerably from the regional average. In Africa, the most recent country observations of Gini coefficients vary between 0.32 (Egypt) to 0.53 (Zambia). In Latin America, there is a substantial difference between Caribia (e.g. Jamaica, 0.38) and South America (e.g. Brazil, 0.60). In East Asia, there is a wide gap between e.g. Taiwan (0.31) and Thailand (0.52).

In fact, a main message from our own examination of the data, as well as from other research, is that for within-country inequality, the picture is confusing - with few simple regularities. This suggests that within-country inequality and its change over time, is determined in a complex way, with domestic institutions and political changes playing an important role. This is not surprising since the income distribution within countries is a composite measure that reflects differences between capital and labour; between different parts of the labour force; between those who work and those who do not, and between the wealthy and those who own little. In each case, inequality is influenced by regulations, institutions, tax rules and redistributive policies in addition to market developments.

For individual components of the income distribution, it may be easier to find regularities or causal links between economic development and the income distribution. In the OECD, for example, the gap between unskilled and skilled labour has increased over the last two decades and contributed to more inequality in some countries. A considerable amount of research on the issue has been carried out, suggesting that low-cost imports are a contributing factor but that technological change, which increases the demand for skilled labour, is even more important (see Melchior et al. 2000 for a survey). The impact of this phenomenon on the income distribution depends on labour market institutions as well as the social security system; while the skilled-unskilled wage gap has increased in the USA, this has not happened in Europe, where unemployment among the unskilled has been more important.

Another aspect of the income distribution which may be influenced by "globalisation" is the capital-labour income distribution. Some types of capital are more internationally mobile, and this may affect taxation and contribute to equalisation of capital income. In the OECD, taxation has changed so that labour now contributes a relatively larger share of tax income than before, relative to capital (Schulze and Ursprung 1999). Still, however, taxation in the OECD plays a redistributive role; in fact it has increasingly done so over the last two decades (Gottschalk and Smeeding 1997). Increased capital income, together with the skilled-unskilled gap, contributes to explaining trends towards more inequality in some OECD countries during the last two decades. A study covering 13 OECD countries shows that inequality increased in 9 out of 13 cases (Oxley et al. 1997).

For the study of global inequality, a crucial issue is whether there is a systematic relationship between economic growth and within-country inequality. If that were to be the case, our result in Section 2 would more likely be biased due to the neglect of changes in inequality within countries. Research in the area suggests, however, that there is no simple relationship between economic growth and within-country inequality. While rich countries on average have more equality, the relationship between inequality and economic growth is not so clear. Deininger and Squire (1996) examined 88 cases with positive economic growth, and found that inequality increased in one half of the cases and was reduced in the other half. Ravaillon and Chen (1997) obtained some empirical support for the proposition that economic growth leads to more equality, but the result was not very robust. Both the studies referred to found some support for the hypothesis that negative economic growth leads to more inequality. The development in Eastern Europe and Sub-Saharan Africa after 1980 (see Diagram 3.1) is in conformity with

this. Dollar and Kraay (2000), however, found that economic growth tends to increase the income of rich and poor alike. If the proportional increase in the income of rich and poor in a country is similar, economic growth may lead to more equality. The results of Dollar and Kraay thus do not contradict results telling that growth promotes equality.

Some research in the area poses another question: how does inequality affect economic growth? Different theories give different predictions (some propositions are surveyed in Melchior et al. 2000, Chapter 3). Barro (1999) found that inequality is bad for growth in poor countries, and good for growth in rich countries. The results of Li et al. (1998) support the view that inequality is bad for economic growth. The relationship between growth and inequality is thus complex, and causality may shift in either direction (from growth to inequality and vice versa).

Since our result in Section 2 is heavily influenced by economic growth in China, it is of special interest to examine how this growth has affected inequality in China. Has economic growth in China left the poor behind, so that average income figures for China give a biased picture? Inequality in China has no doubt increased; the Gini coefficient changed from 0,28 in 1981 to 0,38 in 1995 (World Bank 1997). Economic growth in China has been strongest for rural and coastal areas, and this contributes to more inequality. This could be interpreted in the light of the so-called "Kuznets hypothesis". Kuznets (1955) suggested that growth could take the form of sequentially including the population in the part of the economy with higher income, thus leading to more inequality during early stages of growth, and more equality later. While Kuznets found empirical support for his proposition, later research has cast more doubt on the general validity of this hypothesis (for more discussion, see Melchior et al. 2000, Chapter 1). While it may fit for some countries, it is hardly a "law" that generally applies.

In spite of increased inequality, the income of poor people in China has certainly increased (World Bank 1997, Yao 2000), and also contributed to a substantial reduction in poverty (see below). Income growth for the poor was strongest in 1978-84 and 1993-95, while growth during the period 1985-92 had less positive effects for the poor (ibid.). For the whole period taken together, growth in China led to a substantial income increase also for the poor part of the population (Yao 2000).

3.3. Poverty

If economic growth does only benefit the rich, inequality will increase and the number of people living in poverty may not be reduced. The extent of poverty is thus another indicator that may tell us whether our comparison of average income in countries may give a biased result. The answer to this question partly follows from the paragraph above: Since economic growth does not lead to more inequality (or it may promote equality), economic growth also leads to a reduction in poverty.

When assessing the number of people living in poverty, it is important to take into account population changes. Even if average income and its distribution in a country are constant, population changes may affect the number of people living in poverty. For China, for example, calculations by the World Bank (1997) suggest that the number of poor people in China in 1995 was 250 millions lower than what it would have been without economic growth. Yao (2000) argues that Chinese official statistics underreported the extent of poverty in earlier years, and that the reduction in poverty in China has been even greater.

The study of Ravaillon and Chen (1997) confirms that increased average income in a country leads to a reduction in poverty. The results of Dollar and Kraay (2000) also indirectly support this proposition (although they do not explicitly analyse poverty). They find no difference

between poor and rich countries concerning how income growth affects the rich and poor parts of the population. When global income has increased and inequality between countries has been reduced (cf. Section 2), we should thus expect a reduction in poverty. Population changes have, however, pulled in the opposite direction so that the absolute number of poor people has not changed dramatically.

The World Bank has estimated the number of people worldwide living on less than one dollar (PPP) a day to 1.2 billions in 1998[26] (World Bank 2000, 23). The number is similar to the level in 1987, but approximately 100 millions lower than in 1993. We have not found global estimates for the period preceding 1987, but evidence for selected countries in World Bank (1990, 41 ff.) suggest a considerable reduction in the *proportion* of poor people in developing countries, but - due to the population increase - only a modest change in the absolute number. From 1987 to 1998 the proportion of poor in the world declined from 28 to 24% (World Bank 2000, 23). Most of the decline occurred in East Asia, and particularly in China (ibid.). Ravallion and Chen (1997) report only minor changes in the proportion of poor between 1987 and 1993 in their data set. As noted above, this was a period when poverty in China was not reduced. The most recent estimates of global poverty that we have found, i.e. for 1998, show a very small increase from 1996. The Asian crisis from 1997 onwards caused a considerable income reduction in some countries (for example Indonesia, but not China) that is likely to have caused an increase in the number of poor people. The extent to which this is the case, is however difficult to evaluate from the figures that we have. It is also evident that economic decline in parts of Eastern Europe and Sub-Saharan Africa has contributed to an increase in poverty.

It is undoubtedly a difficult task to measure exactly the number of poor people in the world. It is, for example, the case that there are many people with income close to the cut-off level of 1 PPP dollar per day. Small measurement errors or small changes in this reference level may thus affect the number considerably. Some more robust measures exist (see, for example, the discussion in World Bank 1990, Chapter 3). Data on living standards apart from income may also reveal useful information about the extent of poverty. This will be discussed in Section 4.

3.4. Concluding comments

The study of within-country income distribution and poverty reveals a complex relationship between economic growth and within-country inequality. While some studies suggest that changes in the average income of a country on the whole seem to affect rich and poor alike, other studies indicate that economic growth (weakly) promotes equality. Underlying these "average" conclusions, however, we find considerable variation between countries, and it is not difficult to find examples of countries where economic growth has been accompanied by more inequality. There is, however, no doubt that economic growth generally also benefits the poor.

An implication of the weak relationship between growth and inequality is that changes in between-country inequality over time are not likely to be systematically biased due to the neglect of within-country inequality. Due to this, it is less likely that changes in the within-country component of global inequality invalidate our result from Section 2. A final answer to this question may, however, not be provided until we have time-series data on within-country inequality that cover many countries over a longer time period.

[26] In surveying poverty, additional measures (besides the number of people living on less than one dollar (PPP) a day) should also be used. UNDP (2000) elaborates on this. On the number of malnourished people, see Section 4.4.

4. Inequality in living standards and the Human Development Index

Another possible objection to our result on reduced world inequality is that income is an unreliable or imperfect indicator of welfare, and that other measures of welfare or living standards should be taken into account. For such reasons, the UNDP introduced in 1990 its Human Development Index (HDI) (UNDP 1990). The HDI is an average of indicators reflecting income, life expectancy and education. Hence it is not all-encompassing since there are certainly other indicators of welfare that might be relevant and could be included (for example, democratic freedom). Nevertheless, the HDI includes fundamental aspects of well-being. Life expectancy is, for example, affected by nutrition and health conditions and thus indirectly captures the impact of a number of more specific components of welfare.

It is certainly true that income is not a perfect indicator of welfare. The main reasons for this are:

- There may be diminishing returns to income in the sense that a dollar of increased income raises welfare more for poor people than for rich ones.
- Technological change or technological differences may imply that "welfare per dollar" may change over time or differ across countries. Improvements in medical technology may, for example, affect health positively even if income is unchanged.
- Income figures do not capture economic activity outside the market economy: in private households, in the black economy or in the "informal" sector of the economy. Such activities are likely to be more important in poor countries.
- Subjective perceptions of welfare are affected by social conditions and need not be perfectly correlated with income.

While subjective perceptions of welfare are beyond the scope of this study, the other aspects will be implicitly taken into account when we study the development in indicators of welfare other than income.

An important issue is to what extent other indicators of welfare are correlated with income. Is life expectancy or education a simple function of income, so that the development of these two is accurately predicted by income? As we shall see, this is to some extent, but not fully, true. It is partly true since rich countries generally have higher life expectancy and better education than poor ones, and simple functions of income capture a large part of the variation between countries in the other indicators. It is not fully true since there are important changes in, for example, life expectancy that are not related to income. Furthermore, the causality may go either way; more money can buy better health but better health may also increase productivity and thus raise income. The same is even more true for education. Health and education are also inter-related, since knowledge about diseases and health is important and is affected by education (Caldwell 2000, 127). There is thus a complex functional relationship between income, health and education. It is not our ambition in this study to examine these causal links, but to examine statistically international inequality in terms of life expectancy and education, and compare this to the conclusions from Section 2. The development for some other indicators of welfare will also be briefly surveyed, based on existing research. Finally, the development of the Human Development Index (HDI) will be addressed. The following two main questions are asked in our analysis: Has inequality between countries increased or decreased, and do indicators of welfare other than income give a picture that is different from the one we have observed based on income data?

4.1. Life expectancy

Diagram 4.1 shows, based on World Bank data, the development of the global average life expectancy, and a Gini coefficient for inequality between countries with respect to life expectancy, for 1962-97.[27]

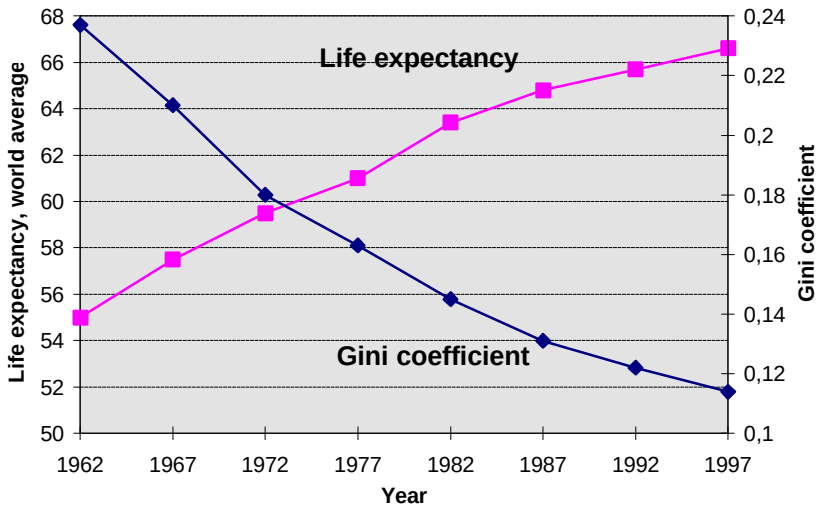

Diagram 4.1: Global average life expectancy, and Gini coefficients for inequality between countries with respect to life expectancy, 1962-1997.

Table 4.1 shows the numbers:

Table 4.1: Global average life expectancy, and Gini coefficient for inequality between countries with respect to life expectancy, for 1962-97

Year	Gini coefficient	Life expectancy, global average
1962	0.237	55.0
1967	0.210	57.5
1972	0.180	59.5
1977	0.163	61.0
1982	0.145	63.4
1987	0.131	64.8
1992	0.122	65.7
1997	0.114	66.6

[27] Data are from World Bank Development Indicators 1999 (CD-Rom). See Section 2 for an explanation of the Gini coefficient. Instead of "cumulative share of world income" as in Section 2, we construct a similar measure for life expectancy (with the sum of life expectancy times population for all countries as the denominator) to define the vertical axis when the Lorenz curve is described. We use 30 years as a minimum life expectancy, since the lowest observation is close to 32 years.

Global average life expectancy has thus increased from 55 to 67 years during the period, and inequality between countries has been considerably reduced. The improvement was stronger during the first half of the period. While the Gini coefficient does not give much intuition about how much inequality was reduced, an illustration is that average life expectancy for developing countries in 1960 was at 60% of the level of industrial countries, and 82% of that level in 1993 (UNDP 1996, 151).

A closer examination (see Melchior et al. 2000, Chapter 4 for details) reveals that there were considerable improvements for all groups of countries. Diagram 4.2 shows the development for different country groups. The groups mainly corresponding to a classification frequently used by the World Bank are:

– WEST - Western Europe, USA and Canada (27 countries)[28]
– EURAS - Eastern Europe and Central Asia (29 countries)
– LAC - Latin America and The Caribbean (42 countries)
– EAS - East Asia and the Pacific (34 countries)
– NAFR - North Africa and the Middle East (20 countries)
– SORAS - South Asia (8 countries)
– AFR - Sub-Saharan Africa (50 countries).

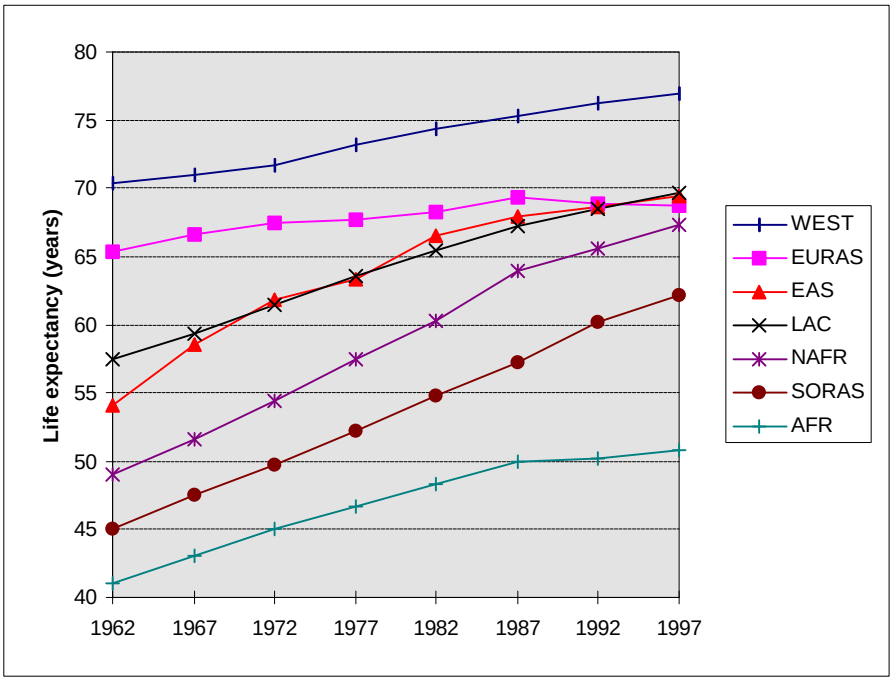

Diagram 4.2: Average life expectancy for different country aggregates, 1962-1997.
Data source: World Development Indicators 1999.

During the period 1962-87, there were considerable increases for all groups of developing countries, and a more modest increase for Western Europe, North America and Eastern Europe/ the former Soviet Union. After 1987, this trend continued for all groups except Sub-Saharan Africa and Eastern Europe, where a deterioration set in. While Sub-Saharan Africa only experienced slow growth in average life expectancy during this decade, there was even a decline in Eastern Europe.

[28] The number in brackets indicates how many countries are included in the group. Due to missing data, the number of countries actually covered may be lower.

The HIV/AIDS epidemic caused a reduction in life expectancy during 1987-97 in some African countries, with Botswana as an extreme case where life expectancy fell by 13,5 years during this decade (UNAIDS/WHO 1998).

A statistical analysis (see Melchior et al. 2000, Chapter 4 for details) reveals that 65% of the changes in life expectancy in different countries during the period 1962-97 are explained by an equation that includes, as explanatory variables, income changes, the spread of AIDS, and a time trend. As an example, countries with an income per capita of less than 2000 PPP dollars in 1962 experienced an increase in life expectancy of 15 years. The statistical analysis suggests that approximately 1/3 of this increase was due to increased income, 2/3 was due to a time trend that was unrelated to income, and approximately 0.7 years were cut off due to the HIV/AIDS epidemic. Economic growth thus contributed to higher life expectancy in poor countries, but a large part of the change was due to other factors. Changes in medical technology, and improved knowledge about diseases, are possible explanations for the considerable change over time that is unrelated to income changes. Consequently, the development for poor countries was better than what is predicted by income alone. For this reason, the development towards less global inequality is stronger than observed when income data are used.

4.2. Education

For education, data coverage is more limited than for life expectancy, and the quality of the data is also less certain. Furthermore, data on school enrolment - which will be used here - do not account for differences in the quality of schooling, which may be considerable between countries. Although the message from the analysis of school enrolment is roughly similar to the one we have seen for life expectancy, the trend towards less global inequality cannot be stated as unambiguously in this case. In terms of basic indicators like primary school enrolment and literacy, it is certainly true that poor countries have narrowed the gap towards rich ones. Nevertheless, a substantial gap remains for secondary and especially tertiary education. For life expectancy, the gap has been reduced in relative as well as absolute terms. For education, it is more appropriate to say that the gap between rich and poor countries has remained the same in absolute terms, although it has decreased in relative terms. This relative change, however, implies that international inequality with respect to school enrolment has decreased over time.

Diagram 4.3 shows the development of world averages (weighted by population) for gross enrolment in primary, secondary and tertiary education.[29]

[29] Data are also in this case from World Development Indicators 1999, CD-Rom (World Bank 1999). Gross enrolment ratios measure the number of participants at the relevant level, divided by the number of people in the relevant age group. Due to participation by adults etc., the numbers may exceed 100%.

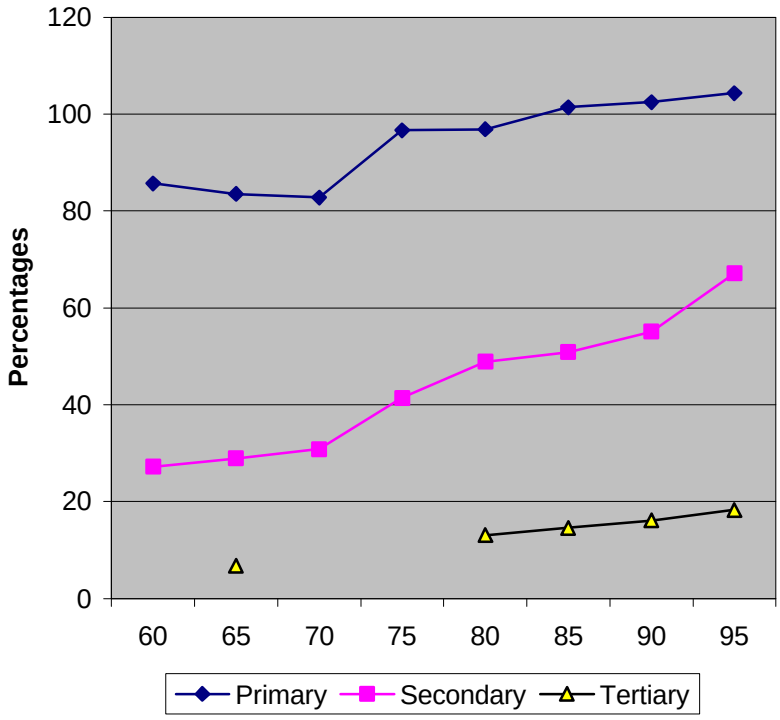

Diagram 4.3: Global average gross enrolment in primary, secondary and tertiary education 1960-1995 (population-weighted).
Data source: World Development Indicators 1999.

After a slow start during the 1960's, considerable improvements have occurred after 1970. The time trend is thus different from what we observed for life expectancy, where improvements were considerable also during the 1960's.

For primary education, rich countries had universal participation already in 1960, while this was more or less obtained for all groups of developing countries except Sub-Saharan Africa during the period. In 1995, primary enrolment was close to 100% for all country groups except Sub-Saharan Africa, where it remained at 71%.

For secondary education, the average world enrolment ratio increased from 27 to 67% from 1960 to 1995. Diagram 4.4 shows the development for different regions.

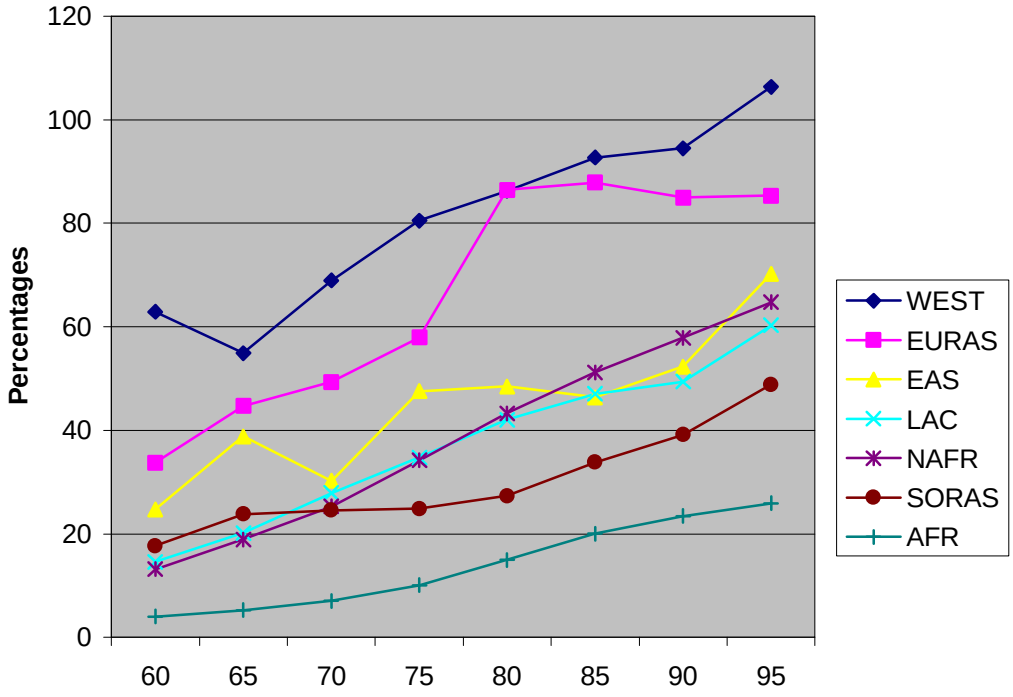

Diagram 4.4: Secondary school enrolment for different country aggregates, 1960-1995.
Data source: World Development Indicators 1999.

The picture resembles the one seen for life expectancy in Diagram 4.2, with the important modification that the absolute gap between rich and poor countries is more or less unchanged, and also that South Asia lags more behind East Asia, Latin America and North Africa. Also in this case, setbacks in Eastern Europe/ the former Soviet Union occur towards the end of the period, as well as slower improvements in Sub-Saharan Africa. Most developing country groups, however, have witnessed considerable improvements in secondary enrolment during the period.

For tertiary education, the absolute gap between industrialised and developing countries has increased, although the relative gap has been narrowed. The gap in 1995 between rich countries at 62%, and Sub-Saharan Africa at 3%, or South Asia at 6%, or other developing regions in the range of 12-18%, is still massive.

Hence, while the relative gap between rich and poor countries has been narrowed over time for all three types of education, this is not true for the absolute gap - which has increased for tertiary education, decreased for primary education and remained more or less unchanged for secondary education. World inequality, which is a relative measure, has certainly been reduced for education as a whole.[30]

[30] Due to variations across countries in the length of schooling, we do not calculate a Gini coefficient in this case.

4.3. The Human Development Index

Our examination of life expectancy and schooling support the picture obtained from income data: there were considerable improvements on a global basis during the decades after 1960. In all cases, a deterioration for Sub-Saharan Africa as well as Eastern Europe/ the former Soviet Union is observed towards the end of the period. Since improvements for other developing regions were considerable during most of the period, however, world inequality was reduced.[31]

It is, therefore, no surprise that the Human Development Index (HDI), reported annually by the UNDP, also supports the conclusion that global inequality has been reduced over time. As noted above, the HDI is an average of indicators of income, life expectancy and education (see text box for a technical explanation).

How is the HDI calculated?

The calculation of the index has changed slightly over time, see e.g. UNDP (1993, 110-114) and Anand and Sen (1994) for a discussion of this as well as criticism of the index. In UNDP (1999) the HDI is calculated as an unweighted average of three different indicators:

- The logarithm of real GDP per capita, PPP
- Education
- Life expectancy

The indicator for education is in turn an average of (a) the adult literacy rate (2/3 weight) and (b) the gross enrolment ratio for primary, secondary and tertiary education (1/3 weight).

All the three indexes are normalised to vary between 0 and 1. For education, this condition is automatically satisfied, since the data are ratios (except for gross enrolment ratios above 1, that are cut off). For life expectancy and income, a formula of the type $(X_i-X_{min})/(X_{max}-X_{min})$ is applied. Here X refers to the variable in question, i refers to the country in question, while max and min refer to maximum and minimum values that in the 1999 report are defined as fixed values outside the observed range (for income: the logs of 100 and 40 000 PPP $; for life expectancy: 25 and 85 years). For a country with life expectancy of 65 years, the indicator will thus be (65-25)/(85-25)=0.667.

Since maximum and minimum values have been changed over time, HDIs for different years may not be comparable (unless they are recalculated with a common formula). The use of logs for income implies that income differences above a certain level will have modest influence. This, combined with the strong weight given to literacy, implies that the HDI is a coarse instrument for measuring differences between developed countries.

Diagram 4.5, based on UNDP (1996), shows the change in the HDI index for the OECD and the developing countries during 1960-93.

[31] A similar pattern emerges from studying other indicators of living standards. Some other data and studies are surveyed in Melchior et al. (2000), Chapter 4.

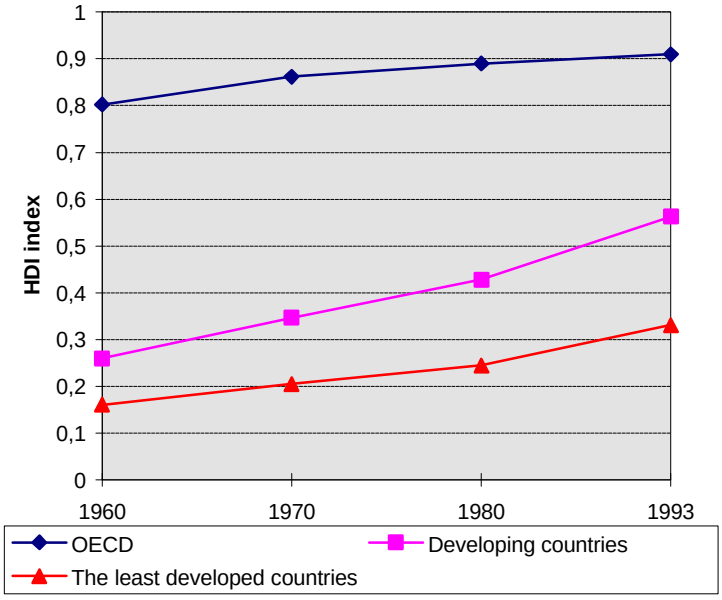

Diagram 4.5: Changes in the Human Development Index 1960-1993.

In 1960, the ratio of HDIs between OECD and the developing countries was 0.80/0.26 = 3.08, while in 1993 it was 0.91/0.56 = 1.63. UNDP's own calculations thus indicate that inequality between rich and poor countries, when measured by the HDI, has been strongly reduced over time. Other research contributions in the area (Crafts 1997, 1999) support this conclusion. The extent of convergence may be a bit overstated due to the methodology underlying the HDI (see text box), which implies that differences between countries above a certain development level are compressed. The UNDP has, however, defended the methodology behind the HDI as appropriate for global welfare comparisons. For this reason, it is a paradox that the UNDP maintains that global inequality has increased, based on the crude income measures that we referred to in Section 2. Observe also that the UNDP uses PPP-adjusted income figures when calculating the HDI, while they argue that unadjusted figures are appropriate for discussing global inequality.

Diagram 4.6 shows the relationship between the HDI index and PPP-adjusted income per capita figures, based on figures from UNDP (1999).

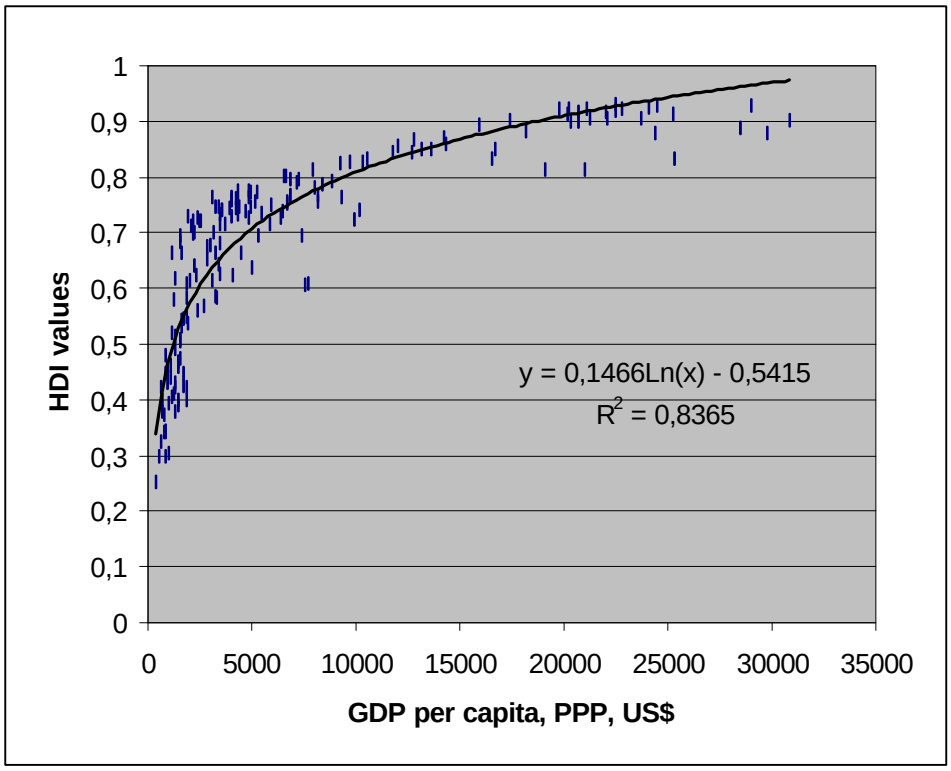

Diagram 4.6: The Human Development Index (HDI) versus income.
Data source: UNDP (1999).

The trend line shows a logarithmic function of income, which captures 84% of the variation in the HDI. This shows that Kelley (1991, 315) had a point when he concluded that the index "offers only limited insights beyond those obtained by small modifications to simple measures of economic output". Nevertheless, we have seen from the analysis of life expectancy that living standards are not simply a function of income. The HDI has been successful in terms of drawing attention to the development in living standards other than income. Income, education and life expectancy are all correlated, however, and the HDI does not contribute much to explaining the relationship between them.[32] Because of this, the HDI does not make us very much wiser, just a little. The HDI is also a somewhat crude measure, and its relevance may be questioned when the UNDP uses the HDI ranking of countries and the countries' movement up and down the ranking in order to evaluate individual country performance (for a discussion, see Castles 1998).

4.4. Poverty and living standards

Our examination of life expectancy and education, as well as the HDI, are based on average country figures that do not take within-country inequality into account. Such inequality certainly also matters for living standards. Especially for education, within-country inequality varies considerably. Filmer and Prichett (1999) find that especially in South Asia and some countries in Western and Central Africa, the education gap between rich and poor is large. In southern and eastern Africa, however, inequality with respect to schooling is moderate in most cases. An extreme negative example is India, where children from the richest 15% of the population gets ten years longer education than children from the poorest 15%.

[32] See Melchior et al. 2000, Chapter 4, for an analysis of the correlations between income and life expectancy, and between income and school enrolment.

Data on living standards also provide a useful check on global poverty. Data on food consumption are useful in this context. According to FAO (1999), the number of undernourished people in developing countries was reduced from 960 millions in 1969-71 to 791 millions in 1995-97. Taking into account the population increase during this period, the share of the undernourished in the developing countries' combined population was reduced from 37 to 18%. The development was particularly impressive in East and South East Asia, where the number fell from 504 to 241 millions and the share from 43 to 13%. At the other extreme, we find Sub-Saharan Africa, where the share fell from 34 to 33% but the number increased from 89 to 180 millions. Since economic stagnation in Sub-Saharan Africa has been combined with increased inequality within many countries, the adverse development in terms of nutrition is no surprise.

Nutrition data thus conform to the picture given in earlier sections, but leave a slightly more favourable impression with respect to global poverty than the figures based on income data referred to in Section 2. This conforms to the general impression that data on living standards render a somewhat more positive perspective on global inequality and poverty compared to income data.

4.5. Concluding remarks

The analysis of living standards supports the conclusion in Section 2 concerning reduced international inequality. The main difference is that indicators of living standards suggest an even stronger trend towards equality than obtained on the basis of income figures alone. The strong correlation between indicators of living standards and PPP-adjusted income figures also suggest that PPP-adjusted income figures do not give a systematically biased picture of international inequality.

5. Globalisation and inequality

The empirical analysis of the report thus indicates that during the last decades of the 20th century international inequality has been reduced, while inequality within countries follows a mixed pattern. The next question is then: How can these changes be explained by "globalisation"? The analysis rejects simplified allegations about globalisation and inequality. On the other hand, the analysis does not allow us to conclude that "globalisation reduces inequality". Such a statement would also be far too simple. Globalisation is a complex process where some mechanisms may contribute to greater equality, while others may promote more inequality. Furthermore, globalisation occurs simultaneously with other important phenomena that may affect the extent of inequality, e.g. technological and political changes. It is, for example, evident that the changes in Eastern Europe and Sub-Saharan Africa are strongly affected by political changes or conflicts. As we have seen from the analysis of life expectancy, changes in medical technology are important for the extent of global inequality. Global competition and the income of different countries and groups within them are also strongly affected by technological change. In order to derive causal links, such other influences have to be taken into account.

An analysis of the causal links between globalisation and inequality is thus a large-scale project beyond the limits of this report. In this section, we briefly sketch out possible links between globalisation and inequality: as a framework for the interpretation of empirical facts, and as an indication of important issues for further research. The survey is based on theory as well as empirical research. In some cases, the theories are supported by empirical research; in many cases, however, research is still not able to provide precise answers.

Globalisation, in its widest definition, may include all aspects of international integration; economic, political or cultural. In order to narrow down the range of topics, we focus in the following on the real side of the economy, mainly international trade, investment and technology flows. We thus do not examine short-term capital flows or the world financial system, although these topics are surely also of interest for global inequality (e.g. the Asian crises). It goes without saying that conclusions related to global trade or investment do not necessarily apply to financial liberalisation.

5.1. Globalisation, regionalisation and trade integration

Is globalisation different from regionalisation, where countries within some geographical region are more closely integrated? Our answer to this question is no; these are two sides of the same coin. An illustration of the point is provided by Diagram 5.1, based on Anderson and Norheim (1993). The diagram shows, for different geographical regions, the share of their trade that takes place with countries outside the particular region.

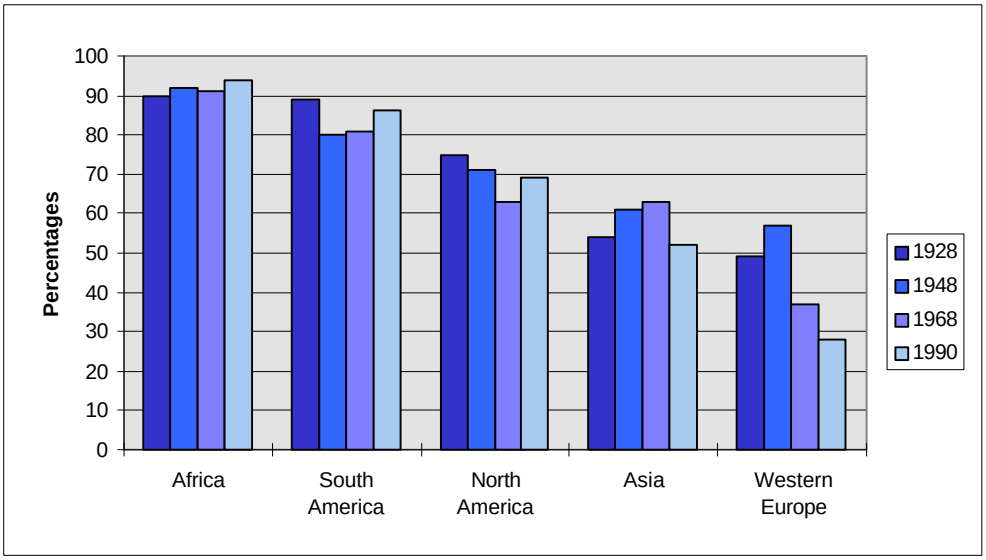

Diagram 5.1: Trade with countries outside the region as a share of total foreign trade, for different geographical regions, 1928-1990.

If "globalisation" is taken to imply relatively more trade with other regions of the world economy, it paradoxically looks as if Africa is most "globalised" - and increasingly so. Behind this pattern for Africa, however, we find low growth, weak intra regional economic integration, and a small volume of specialised trade, where commodities are exchanged for industrial goods, and the proportion of intra-industry trade (two way trade in similar goods) is low. In contrast to this we have the stories of strong economic growth in Asia after 1968, and Western Europe after 1948 (especially before 1968), which were accompanied by increasing "regionalisation" (a falling share of trade with other regions). In the foreign trade of these regions, the share of intra-industry trade has also increased - especially in intra-regional trade. For these two regions, increased intra-regional trade did not lead to a reduction, but an increase in the volume of trade with other regions. Growth in East and South East Asia has been acompanied by a sharp increase in this region's share of world trade. Globalisation and regionalisation have thus proceeded in parallel, and the fact that the share of trade with other regions has declined does not prove that there was "regionalisation but not globalisation".

The analysis in previous sections has highlighted the contrast between stagnation in Sub-Saharan Africa and parts of Eastern Europe (especially during the last half of the period) and growth in East and South East Asia, with other developing regions somewhere between these two extremes. In the bad cases we have weak intra-regional economic integration, limited integration into the world economy, and a small share of intra-industry trade in foreign trade. In the good cases we have increased intra-regional integration, increased integration into the world economy, and an increasing share of intra-industry trade. In Asia, intra-regional integration has not mainly been created by political agreements, it has to a large extent been a result of economic forces. Gradually, however, the political processes of regional integration gained importance in Asia. The numerous examples of less successful regional integration schemes among developing countries illustrate that regional economic integration cannot always be created by decree. The development in Asia shows that it can also be created without decrees; by means of increased trade and investment within the region.

The emergence of regional growth clusters may be promoted by mechanisms described in recent theories of international trade, growth and economic geography. In many of these theories, market access plays an important role due to the existence of some form of scale economies at the firm level or industry level. Such scale economies may be due to learning, sunk costs or externalities (i.e. that output growth in one firm affects productivity in other firms). Preferential access to regional markets, due to political agreements or geographical distance, may - according to some of the theories - act as an engine of economic growth, and as a platform for industrial development and exports also to markets outside the region. In modern growth theories, the diffusion of technology also plays an important role. If the diffusion of technology is limited by geographical distance, countries within a region may tend to grow (or stagnate) in parallel. According to modern trade theories which take into account scale economies and imperfect competition, the formation of regional trading blocs is good for those who participate, but may have an adverse impact on those that do not (see, for example, Baldwin and Venables 1995, or Puga and Venables 1997). To the extent that geography matters, we do not expect that this adverse impact on outsiders hurts remote countries; only countries close to the regional bloc will be adversely affected (Melchior 1999). These theories provide interesting hypotheses for the study of regional growth clusters, but empirical research is lagging behind theory and it is therefore too early to assess the empirical validity of the predictions.

For developing countries, it is also of importance that the new trade theory focuses on the size of domestic markets as a source of economic growth. Since many developing countries are very small in economic terms, this may limit their development (see, for example, Puga and Venables 1998). While the size of domestic markets has become less important in the OECD over the last decades (some evidence is provided in Melchior 1998), more research is needed in order to assess its importance for developing countries. It is possible that globalisation, by reducing transaction costs and the role of national borders, may gradually reduce the significance of country size as an obstacle to growth in developing countries. This is an interesting research issue that deserves more attention.

According to the new trade theories, it is not automatically the case that trade liberalisation benefits all countries alike. There is no reason to doubt that increased trade integration was beneficial for the growth successes in Western Europa and Asia, but this does not necessarily imply that trade liberalisation is always good for all countries. Some research suggests that trade liberalisation is good for economic growth (see, for example, Edwards 1998), but there are also researchers who maintain that these results are not convincing (Rodriguez and Rodrik 1999). The debate concerning this focuses on methodological aspects that we will not address

here. More importantly, we should not ask whether trade liberalisation is always good for all, but "when and under what circumstances is trade liberalisation good?". According to recent trade theories, for example, access to foreign markets is always good, while the opening of one's own market is not necessarily a prerequisite. Empirical research should thus distinguish between questions concerning export market access and import liberalisation. Whether import liberalisation is good for growth, depends partly on whether imports imply transfer of technology that promotes growth. Research on trade liberalisation and growth suggests that this is the case (Edwards 1998). This does not exclude the possibility that countries with restrictive trade policies may grow, provided that they have access to international markets. While the growth countries in Asia were allowed to expand in OECD's markets (in spite of selective protectionism), their own markets were - especially at earlier stages - not always so open. In international trade policy, import liberalisation may also be a precondition for obtaining better access to export markets. While old trade theory sometimes was taken to imply that international trade negotiators were fools and "mercantilists" who did not understand that trade liberalisation (even unilateral) was always the best thing, modern theory provides a rationale for the tradeoffs made in international negotiations. It may also be the case that some countries have a technological base that is too limited for the purpose of exploiting technology transfer through imports; this may reduce the benefits of import liberalisation. While such liberalisation generally has a positive welfare effect due to lower prices, the total effect depends on its impact on productivity and industrial structure. For such reasons, we cannot guarantee that trade liberalisation is always good for all. There is, however, every reason to believe that increased international trade will be important for new developing countries that wish to accelerate their economic growth. Hence, these reservations concerning the effects of trade liberalisation do not imply that such liberalisation should not be pursued, but they may be relevant for the timing and pattern of trade liberalisation for individual countries.

5.2. Technology, global integration and the skill gap

Globalisation is a process with faster changes in the global division of labour. "Low-cost imports" - especially from East and South East Asia - have already replaced some of the OECD countries' own production of e.g. clothing and electronics. The integration of poor and populous countries like China into the world economy pushes the process further: When China takes over larger shares of the world market for e.g. clothing, other Asian countries have to move into other industries, and the challenges are increased for other developing countries that want to enter this market. Increased trade is a two-way process; when China sells clothing to rich countries, the rich countries may sell more machinery to China. Increased trade thus leads to restructuring within each country: while textile workers in the OECD lose their jobs, thousands of new textile workers are hired in China. While the machinery industry in the OECD grows, inefficient plants in China are closed. Trade may be to the advantage of both rich and poor countries, but some groups inside each country may lose. According to traditional trade theory, trade may reduce the income gap between rich and poor countries, while leading to more inequality within rich countries and less in poor countries. Neoclassical growth theory suggests a similar mechanism concerning inequality between countries; since the productivity of capital is greater in countries with relatively little capital, these will grow faster and eventually catch up with the richer ones. These theories provide plausible alternative hypotheses concerning the growth in Asia, but the missing catch-up for other regions suggests that neoclassical growth theory is only part of the whole story.

If the textile workers in the West get new jobs or they are educated to other professions, restructuring may take place without losers. In the West, however, it has been observed that the gap (in terms of income or unemployment) between skilled and unskilled workers has increased during the last two decades. Is globalisation the cause of this? Research in the field (for a

survey, see, for example, Burtless 1995) suggests that globalisation is partly to blame, but that an even more important reason for the gap is technological change that increases the demand for skilled labour in most industries. A substantial amount of research has been undertaken for the OECD, but surprisingly little regarding the impact on developing countries. Furthermore, there is too little research that sheds light on how the entry of China (and gradually India) into the world economy may affect other developing countries. Some researchers argue that the integration of large labour-abundant countries into the world economy makes it more difficult for other developing countries to succeed with export-led growth like some Asian countries did. Wood (1997) (see also Wood and Ridao-Cano 1998) provides some evidence concerning Latin America. This issue also needs theoretical elaboration; while a substantial amount of research has been carried out in order to check whether neoclassical trade theory holds when there are many goods or factors of production, the case with more than two countries needs further clarification.

Research on the impact of globalisation on low-skilled workers in rich countries illustrates that globalisation occurs together with radical changes in technology that may reshape the world economy. Recent research on economic growth focuses particularly on innovation as a source of economic growth, and the spread of technology as an important determinant for the extent of inequality between countries. The development of electronics since 1960 illustrates that while innovation has primarily taken place in rich countries, some poor countries have developed through copying technology, and gradually became major exporters. Globalisation increases the potential for the spread of technology through trade (especially imports of capital equipment) and international investment. The slicing up of the value added chain within multinational corporations allows poor countries to produce some of the goods with a limited technological base. Research in the area suggests that multinationals contribute positively to the international diffusion of technology, but only under the precondition that the receiving country has a certain minimum standard in terms of education and technology, or a certain "absorptive capacity" or "social capacity" (Abramovitz 1986).[33] An important issue is whether information and communication technology raises the threshold for poor countries. The spread of such technology so far reveals a considerable gap between rich and poor countries (see, for example, UNDP 1999). Things change rapidly, however, and countries like India and Taiwan have already demonstrated that information technology is not reserved for the rich.

5.3. Globalisation, inequality and the state

Related to globalisation and inequality, the state plays an important role for two reasons. The first is because the state is a provider of institutions, political stability, education and infrastructure that are vital for production, trade and growth, and thus for inequality between countries. The second is related to welfare policies and the redistributive role of the state, which is important for inequality within countries. Both are topics of great importance, but we limit ourselves to a few remarks.

The importance of the first reason is obvious. If e.g. countries have too weak institutions to handle structural adjustment and social change, they may be losers in global competition. Such "institutional failure" is likely to be part of the explanation of the weak development in Sub-Saharan Africa and parts of Eastern Europe after 1980.

[33] On average, multinationals also contribute to increasing wages and improving working conditions in developing countries. For a discussion, see UNCTAD 1994, pp. 194 ff., or the discussion in Melchior et al. 2000, pp. 32 ff.). Due to space limitations, this discussion is left out here.

In the debate on globalisation, some critics have warned that global competition may erode the tax base and lead to a "race to the bottom" that undermines public welfare policy and the nation state. The literature in the field shows, however, that internationalisation in the West has been accompanied by a continuous expansion of the public sector, and that open economies have a larger public sector than closed ones. Research also suggests that public income has been maintained, and that the state's room for manoeuvre as regards redistributive policies has not been substantially reduced (for a useful survey, see Schulze and Ursprung 1999). Public expenditure that is directly related to the production system (education, infrastructure etc.) is better for growth than pure redistribution (Kneller et al. 1999). In spite of this, it is not necessarily true that competition leads to cuts in welfare expenditure: Some researchers have argued that globalisation may create more demand for redistribution and lead to an expansion of public expenditures (Rodrik 1997). Concerning state income, some reallocation has taken place from capital taxation to taxation of labour. Increased international capital mobility is a possible explanation of this.

6. Concluding remarks

The former section has briefly surveyed some, but surely not all, of the numerous possible links between globalisation and inequality. It leaves the overall impression that a lot more research is needed in order to draw firm conclusions concerning globalisation and inequality. Since national and regional institutions necessarily have a bias towards local, national or regional research issues, there is a danger that demand for research on the broad global issues is too limited. While some global institutions, e.g. the World Bank, have made a considerable effort in order to provide new knowledge on global issues, more work is needed. If not, the debate may be left open to popular misconceptions concerning globalisation.

This report provides knowledge that should have been provided long ago. Instead, the popular belief has spread that global inequality has risen. By correcting this perception, we hope to contribute to a more balanced approach to these issues. Excessive pessimism is not needed in a world where the remaining problems of inequality and poverty are indeed huge. Not everything has turned out badly; in fact there has - in spite of the setbacks in some regions and in spite of population growth - been considerable global progress during the last decades.

The policy implication of this report is mainly indirect, in the sense that it addresses perceptions that play a role for forming political attitudes. We are careful in the sense that we do not draw the conclusions too far, for example by using our results as a proof that every aspect of globalisation is positive. The credibility of research and analysis as an input in the public policy debate crucially hinges on our willingness to face the facts that fit into our perceptions, as well as those that do not. We hope to be able to pursue, at a later stage, research on some of the more specific issues related to policy.

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