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Well-being, democracy, and the economic system: an empirical analysis

I. Introduction

Many countries which were considered to be socialist at the end of the 1980s have abandoned the socialist system and the transition towards a market economy is well under way. This fact, however, does not mean that an analysis of the comparative performance of the socialist economies during the period of socialism has become less important. The collapse of socialism may even induce research concerning the socialist period, as it may contribute to, for instance, a better understanding why the socialist system was abolished in many countries, or to an improved knowledge about the situation of these countries at the eve of transition, which is important for a proper assessment of the current developments. This paper examines one aspect of the comparative economic performance of the socialist countries: the systemic influence on well-being, or, more in particular, the systemic influence on several well-being indices devised to measure aspects of the standard of living more directly than GNP per capita.

A number of scholars of comparative economic systems have examined the impact of the economic system on aspects of well-being of the population of a country, given the level of economic development. A first, rather crude, attempt was made by Horvat (1974), who used a specially designed rank analysis covering sixty countries and using data referring mostly to 1970. His first step was to construct ranks for four social indicators concerning life, education, and health. The country which had the best score on such an indicator got rank 1, the country with the second best score rank 2, etc. His next step was to average the ranks in order to obtain a ranking for what he called 'basic welfare'. Finally, he compared for different economic systems the ranking of the respective countries on basic welfare with the ranks resulting from per capita GNP figures. One of his findings was that the social ranking of the *etatist* countries on average substantially exceeded their

economic ranking, meaning that this group of countries had achieved higher relative basic welfare for her population than was generally the case in the chosen group of countries.¹

More recently, both Stuart (1984) and Burkett (1985) aimed to measure the systemic influence on the fulfilment of basic needs. They both used the Physical Quality of Life Index (PQLI) as the dependent variable in regression equations containing a dummy variable indicating whether a country was classified as capitalist or socialist as one of the explanatory variables. Stuart (1984) collected data for 1978 for 22 industrial market economies and 9 East European non-market economies and used dollar GNP per capita and the dummy variable as the sole explanatory variables. His ordinary least squares estimates showed that, given the level of economic development, the socialist industrial countries did not have a higher PQLI than the capitalist industrial countries (the *t*-value of the dummy variable in his equation 2 was only 0.82; Stuart 1984, p.50). This result was challenged by Burkett (1986), whose purpose was to identify those differences in data, specification, and estimation procedure that were responsible for the difference in empirical findings of Stuart and himself (Burkett 1985). Burkett (1986) showed that Stuart's results suffered from sample selection bias. Regression estimates on an expanded data set (data for 119 countries were added) of Stuart's model showed a significantly positive impact of socialism on PQLI, given the level of economic development.² Burkett (1985) estimated a more sophisticated model with an appropriate econometric technique on data for 116 countries for the early 1970s. He concluded that socialism appeared to enhance the provision of basic needs. His results suggested that the positive impact of socialism was higher for countries with an ethnic-linguistically fractionalized population, and lower for countries with high per capita incomes.

A framework for the comparison of economic systems which can be used in such analysis, and which was in fact used by Burkett (1985), is the one developed in Koopmans and Montias (1971) and further elaborated in Montias (1976). In this framework, (economic) outcomes should be regarded as the results of the environment, the system

¹ The countries which Horvat regarded as *etatist* are the socialist countries which in this paper are included in soc1 (see below), except for Yugoslavia which is included in soc1, but was not included in the group of *etatist* countries.

² Other criticisms of Burkett (1986) were that Stuart (1984) did not pay attention to eventual non-normality of the error terms and the possibility of the residuals being heteroskedastic, as well as that Stuart omitted some relevant explanatory variables. In his own study, Burkett (1985) replaced PQLI by its logit [$\log(\text{PQLI}/100 - \text{PQLI})$] as the dependent variable, used weighted least squares to correct for heteroskedasticity, and added a number of explanatory variables to the ones used by Stuart.

structure, and of the policies pursued by the participants under system structure s : $o = f(e,s,p_s)$ (Koopmans and Montias 1971, p.35; Montias 1976, p.31). Depending on the comparison to be made, the comparer may restrict himself to the narrower concept of the, however defined, economic system, rather than the broader 'system structure'. In case of the comparison of well-being this restriction might be ill-suited, considering the substantial work of political scientists and sociologists on the impact of political democracy on welfare policies and on well-being itself. One exponent of this work is Bertrand (1981), who sought to measure the impact of what he called liberal democracy and interest democracy, corrected for the level of economic development, on both welfare policies and income inequality, general well-being, and criminality in a study using data for 115 countries for the middle of the 1970s.

In this paper, both the economic system and the level of political democracy are regarded as potential influential factors for the level of well-being of the population of a country. In this sense, the approach taken in this paper can be seen as a combination of the approaches of Burkett (1985) and Bertrand (1981). Moreover, the analysis is extended to cover four years (1975, 1980, 1985, and 1988) so that regularities can be tested with greater confidence and developments over time can be assessed. The scope of this paper is restricted, however, to a comparative static analysis. Dynamic relationships are not subject of study. Another contribution of this paper is that, due to the fact that the analysis covers the (late) 1980s, the relative achievements of the group of developing economies that became socialist in the 1960s and 1970s are examined as well. Finally, apart from PQLI, two other indices measuring basic well-being are used as dependent variables. The data set contains the vast majority of countries with more than half a million inhabitants at the end of the 1980s.

The paper is structured as follows. In section II, some of the arguments why the economic system and the level of political democracy might have an impact on well-being are briefly discussed. Also, some of the limitations of this study are indicated in this section. Section III contains the empirical results. First, the well-being indices are described and it is indicated how they were constructed. Also, the theoretical basis for their connection with well-being is briefly touched upon. Second, some models are estimated and the main findings are discussed. In section IV, the effect of socialism is examined by comparing fitted well-being indices with the actual ones. As this is done for each country in the sample, it also can be seen which countries have relatively high (or low) scores on each of the well-being indices. Some concluding remarks are made in section V. Detailed information on the data is given in Appendix B.

II. Relevance and limitations of this study

Generally speaking, the Koopmans-Montias approach adopted in this paper assumes a significant systemic impact on economic outcomes and, hence, on the ultimate outcome of economic activity, well-being. More specifically, there are several reasons why socialist countries would have done relatively well in the provision of basic needs, as reflected in the various basic well-being indices used in this paper. Two reasons which are often given are that the socialist countries derived a great deal of their legitimacy from their efforts to meet basic needs concerning health, education and shelter, and that socialism appeared to have reduced income inequality (Stuart 1984, Burkett 1985). In addition, Burkett (1985, p.147) mentioned that socialist countries have sought to draw women into public life, which increases the knowledge and influence of the persons who usually have the most direct responsibility for nutrition and child care, and that the state and party apparatuses typical of socialist countries might have served to convey health services and education to remote areas that would otherwise have lagged behind in the upward movement of living standards. On the other hand, strong socialist governments have been able to carry out disastrous projects (like the Soviet collectivization of agriculture and the Great Leap Forward in China) which only reduced well-being.

The influence of political democracy on well-being (as measured by indices like PQLI) is generally assumed to be indirect.³ Although some studies seek to estimate the impact of democracy on well-being directly, most studies focus on the effect of democracy on governmental welfare policies, which themselves are expected to influence well-being. Political democracy is expected to be beneficial for the lower socio-economic groups. This stems from the idea that competition between political parties leads to one or more parties trying to win the votes of the 'have-nots', and eventually to the promotion of their interests. Also, the policies of the ruling party are regarded to be to a certain extent responsive both to political participation of various groups in society and to public opinion. Welfare policies (like government expenditures on health, education, housing, and social security) or the total redistributive impact of the state budget are assumed to be also dependent on economic development. For the latter, mostly income per capita is taken, sometimes supplemented with the level of urbanisation, industrialisation, and education. In some empirical studies it was concluded that only economic variables influenced welfare policies, while in others both economic and political democracy variables proved to be relevant.

³ The following is based on Bertrand (1981, p.66-84).

Having motivated this study concerning the impact of the economic system on basic well-being and the inclusion of political democracy in the analysis, some limitations of the analysis should be indicated. First, it has been argued that political freedom itself is a vital component of human development and should be included in any well-being index.⁴ On the other hand, it has been argued that a freedom index should not be confined to political freedoms, but should include economic and social rights as well. Those people point out that political freedom, like the right to vote, is of less value to someone who is starving or illiterate. These arguments are not disputed here. I agree, however, with those who emphasize that an index measuring basic economic and social rights should not be integrated with a political freedom index in one overall index. The arguments for keeping them separate are that they operate on very different timescales (the level of political democracy can change much more rapidly than social indicators such as life expectancy and illiteracy) and that the first index partly depends on a country's economic opportunities, while the latter does not. Or, using the words of the Janata Party in India: "Bread cannot be juxtaposed against liberty. The two are inseparable" (quoted in Gastil 1978, p.6). In this study, it is acknowledged that political freedom constitutes an element of (general) well-being, but this is not taken into consideration. Rather, the analysis is confined to more narrow measures of basic economic and social rights, and, in the models estimated in section III, the level of political democracy is merely used as one of the explanatory variables.

A second limitation of this study that should be mentioned is that the potential impact of the economic system and political democracy on well-being is examined in a static analysis. This means that indirect effects, through the impact of either the economic system

⁴ The following is based on HDR (1992, p.26-33) and Gastil (1978, p.3-13). The terminology used in this paper differs, however, somewhat from the terminology used in these sources.

or political democracy on economic growth, are not taken into account.⁵ A third remark concerns the causality of the correlation between political democracy and well-being. It can be argued that aspects related to the level of well-being of the population of a country (like the level of education) or factors influencing well-being, such as social equality, influence the political structure and the level of political freedom of a country. For instance, Marx claimed that the rise of the middle-class, which was accompanied by lower income inequality, explained the development towards political democracy in Western Europe. Although it is acknowledged that the causal relationship is not entirely clear and that some interrelatedness might exist, in this paper it is assumed, for the reasons given earlier in this section, that the causal relationship runs from political democracy to well-being.

III. Estimation results

The well-being indices used in this paper are taken from Van der Lijn (1995). A firm theoretical basis for the use of the social indicators making up these indices for the measurement and assessment of (basic) well-being is provided by Sen's functioning's

⁵ The estimation of a larger model in which the main variables are jointly dependent is beyond the scope of this paper. Empirical studies concerning the impact of political democracy on economic growth are inconclusive. Przeworski and Limongi (1993) reviewed 18 studies which generated 21 findings. Among them, eight found that democracy enhanced economic growth, eight found in favour of authoritarianism, and five found no difference. ... economic system and economic growth ... It is important to note that there are differing views regarding the causal relation between economic growth and well-being. Newman and Thomson (1989) distinguished four approaches in the literature: research that regards (a) social development to be a product of economic growth, (2) economic growth and social development to be unrelated events, (c) economic growth and social development to be interdependent, and (d) economic growth to be a result of social development. Their own empirical results, based on longitudinal data on 46 developing countries for 1960, 1970, and 1980, suggest that social development precedes, rather than follows, economic growth.

approach to well-being (Sen 1982, 1985, 1987; see also Van der Lijn 1995).⁶ PQLI is a weighted average of indices of life expectancy at age 1, infant mortality, and adult literacy. Another basic well-being index, BWI, covers a somewhat broader spectrum of education and comprises gross secondary school enrolment in addition to the indicators making up PQLI. Finally, HDI^S is the social indicators component of the *Human Development Index* (HDI), and, hence, a weighted average of indices of life expectancy at birth, adult literacy, and average years of schooling of the population over age 25. The indices are constructed comparable to the manner in which HDI is constructed in UNDP, *Human Development Report* 1994. They can be regarded to reflect the distance travelled from a minimum to a maximum level, the minimum and maximum level being constant over time. First, indices are obtained for each social indicator by rescaling the data on a scale from zero to 100. On each index, zero represents the minimum value and 100 the maximum value, except for the infant mortality index where it is vice versa. For the fixed minimum and maximum values used to rescale the respective social indicators, see Van der Lijn (1995). Subsequently, the rescaled social indicators are averaged to obtain the indices. HDI^S is constructed by giving life expectancy at birth, adult literacy, and average years of schooling the weights 1/2, 1/3, and 1/6. For PQLI and BWI the indicators have equal weights. Note that for HDI^S and BWI the health and education indicators have, in total, equal weights, while the health indicators make up two third of PQLI.

In the model, the systemic influence on basic well-being is examined for two groups of countries, soc1 and soc2. Apart from a dummy variable for the countries where the Communist party held power for at least three decades (soc1), a dummy variable for the developing economies which became socialist in the 1960s and 1970s (soc2) is used as a

⁶ In brief, the concentration on functionings and capabilities represents the selection of a particular class of relevant indicators, mainly objective social indicators measuring ends, not means. Out of the four social indicators used by Horvat (1974, see above) to construct his ranking on basic welfare, two fit well in Sen's approach, but the remaining two do not. Life expectancy directly refers to one of the most important capabilities - that of long life - and, hence, has a direct relation to well-being. The relative number of students enrolled in the third level of educational establishments also bears a direct relation to well-being as it concerns the possibility to receive higher education for the common man. The number of hospital beds and physicians per 10,000 of population, however, can be considered as an input in the health sector, but does not say much about the access to medical care of the masses and thus to capabilities and well-being.

regressor.⁷ The political democracy variable included in the model is the Political Rights Index (PRI) published in Gastil (various years). PRI is measured on a scale from 1 to 7, where 1 is freest and 7 least free. Freedom is defined primarily in terms of equality in ability to directly or indirectly influence the political process (Gastil 1978, p.6). More in particular, the ratings reflect whether there exists a fully competitive electoral process, whether those elected clearly rule, and, for those states where competitive electoral processes are not allowed, to what extent the rulers strive for consensus, respond to popular desire in some areas, or respect belief systems that are the property of the society as a whole (Gastil 1980, p.17-19). In order to smooth sudden changes in PRI and acknowledging that there is a time lag between policy and policy outcomes, averages of the 3-5 preceding years are used.⁸

Within the framework of Koopmans and Montias one has to choose, besides the system structure, policy and environmental variables as explanatory variables. As in Burkett (1985), the ethnic and linguistic homogeneity of a country (a low level is conceived as a barrier to the diffusion of health and education services) is expected to be a relevant environmental variable. The inclusion of the proper set of policy variables in the model is far from straightforward, most of all because of the lack of internationally comparable data. Moreover, policy is assumed to be related to both economic development and political democracy, and thus it is unclear which variable will capture the expected effect on well-being. A variable which is regularly used as a supplementary measure of economic development to income per capita is the level of industrialisation. Being related to economic development, the level of industrialisation is expected to have a positive impact on basic well-being. Unfortunately, data are lacking for a substantial number of countries.

⁷ The same classification of the countries that were considered to be socialist at the end of the 1980s is used as in Kornai (1992, p.6-7). The first group, soc1, includes Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, Soviet Union, Yugoslavia, China, Albania, Cuba, North Korea, Mongolia, and Vietnam. The second group, soc2, includes Angola, Benin, Congo, Ethiopia, Mozambique, Somalia, Zimbabwe, Nicaragua, Afghanistan, Cambodia, Laos, and South Yemen. For a number of these countries, no reliable estimates for purchasing power adjusted real GDP per capita are available (see Appendix B). For this reason, the 'small' sample contains only the first nine countries of soc1 and the first eight countries of soc2. The extended sample contains all countries, except for Cambodia.

⁸ This choice is highly arbitrary and mainly due to the fact that 1972 was the first year for which Gastil published PRI along with a Civil Liberties Index (CLI). The estimation results, however, proved to be insensitive to the choice of the period over which the averages were calculated. The models estimated below were also estimated with CLI instead of PRI as an explanatory variable. The results are very similar to the ones presented below.

TABLE 1 WLS estimates of model 1 for 1975 (n=117)

Dep. variable	PQLI	PQLI	BWI	BWI
Constant	18.72 (1.62)	-41.74 (4.16)	1.11 (0.10)	-66.66 (7.20)
PRI	-3.82 (5.35)	-	-3.34 (4.76)	-
Y	6.93 (5.46)	11.13 (7.96)	7.94 (6.26)	13.60 (9.79)
HOM	0.07 (1.95)	0.09 (2.03)	0.05 (1.45)	0.08 (1.83)
S1	29.18 (7.58)	13.84 (3.59)	31.79 (8.29)	16.64 (4.14)
S2	-4.08 (0.70)	-8.17 (1.30)	-3.23 (0.59)	-6.20 (1.20)
IND	8.25 (2.37)	-	12.15 (3.47)	-
HE	-0.03 (0.06)	2.24 (5.13)	0.31 (0.61)	2.25 (4.65)
Adj. R ²	0.7533	0.6738	0.7999	0.7474

Note. Figures in parentheses are (absolute) *t*-values; n is the number of observations.

An alternative is to use a dummy variable for the industrial economies, which is done below. The following model 1 was estimated on data for 117 countries for 1975:

$$\begin{aligned} \text{PQLI, BWI} = a_0 + a_1\text{PRI} + a_2\text{Y} + a_3\text{HOM} + a_4\text{S1} + a_5\text{S2} \\ + a_6\text{IND} + a_7\text{HE} + e \end{aligned} \quad (1)$$

where PRI is Gastil's Political Rights Index, Y is the logarithm of purchasing power adjusted real GDP per capita, HOM is ethnic-linguistic homogeneity, S1 is 1 for countries included in soc1 and 0 for other countries, S2 is 1 for countries included in soc2 and 0 for other countries (see footnote 7), IND is 1 for the 22 industrial market economies in the sample and 0 for all other countries⁹, HE is public expenditure on health and education as a percentage of GNP, and e is the error term. For two reasons, the socialist industrial economies are not included in IND. First, S1 is included in the model and contains all eight socialist industrial economies. (In the sample used in this section, only one developing country (China) is also included in soc1.) Second, there is no reason to believe that the socialist industrial economies' relative performance on well-being is better than the

⁹ The HDR classification is used. The countries which HDR classifies as industrial economies are Canada, USA, Israel, Japan, Australia, New Zealand, and all the countries of Europe.

relative performance of the socialist developing economies.¹⁰ Weighted least squares (WLS) estimates of equation (1) are given in Table 1.¹¹

From Table 1 it can be seen that political democracy has a strong positive impact on well-being (reminding that PRI is measured on a scale from 1 to 7, where 1 means freest and 7 least free). Also IND appears to be positive and significant, while the coefficient of the policy variable HE is not significantly different from zero. When PRI and IND are excluded, however, HE appears to have a positive impact on both PQLI and BWI.

There are a number of possible reasons why PRI and IND 'outperform' the policy variable HE.¹² First, the data on HE might not be very accurate, as there is "all too much room for national variation in definitions of public expenditure, health, and education" (Burkett 1985, p.162). Second, besides public expenditure on health and education there are other policy variables influencing well-being and they should be included as well. Third, and perhaps most important, political democracy is assumed to influence not only the size of governmental welfare policies, but also how they are distributed and to whom certain services are made available. For instance, the government may institute educational establishments of high quality for the elite, or make sure that everyone is able to enjoy education of at least some minimum standard. Hence, PRI might be regarded as a proxy for welfare policy, both in terms of its absolute size and in terms of distribution, and

¹⁰ In fact, the opposite hypothesis is more or less tested by including S1Y in model 3 (see below).

¹¹ Both the Park test and the Goldfeld-Quandt test (see, for example, Studenmund and Cassidy 1987, p.253-257) revealed that the residuals of ordinary least squares (OLS) estimates of equation (1) were heteroskedastic. The residuals for the poor countries proved to be significantly higher than the residuals for the rich countries. In fact, OLS residuals of all regression estimates proved to be heteroskedastic. For this reason, WLS is applied. The weights were obtained from regressing the logarithm of the square of the residuals of the OLS estimate on Y. The assumption of normality of the regression residuals could not be rejected. The LM_N -statistics calculated from the OLS residuals (see Jarque and Bera 1980, p.257/258) of the estimates of both equation (1) and equation (2) below, were well below the critical value. For this reason, there was no need to replace the dependent variable by its logit or another permutation. In order to save space, the estimates obtained by applying OLS are omitted from the tables.

¹² The industrial economies for which IND=1 can be considered as a specific group of democratic countries, as for most of them PRI is equal to 1. This means that the apparent impact of IND should be interpreted with care. Instead of concluding that there is a positive relation between industrialisation and basic well-being, it is more accurate to conclude that the group of democratic industrialised countries perform better on PQLI and BWI in 1975 than could be expected given Y, PRI, and HOM.

TABLE 2a WLS estimates of model 2, PQLI dependent variable (n=119)

Year	1975	1980	1985	1988
Constant	16.97 (1.58)	21.77 (2.12)	30.27 (3.20)	20.28 (2.42)
PRI	-3.79 (5.76)	-3.95 (5.44)	-4.16 (7.00)	-3.32 (7.06)
Y	7.12 (5.63)	7.16 (5.99)	6.64 (6.02)	7.70 (7.82)
HOM	0.07 (2.02)	0.05 (1.43)	0.05 (1.63)	0.04 (1.76)
S1	28.96 (8.24)	26.68 (7.61)	24.36 (8.53)	20.49 (8.47)
S2	-5.44 (1.01)	-2.67 (0.47)	-1.16 (0.22)	-2.48 (0.52)
IND	7.95 (2.60)	4.61 (1.41)	1.42 (0.56)	0.56 (0.28)
Adj. R ²	0.7601	0.7304	0.7639	0.7922

Note. Figures in parentheses are (absolute) *t*-values; n is the number of observations.

TABLE 2b WLS estimates of model 2, BWI dependent variable (n=119)

Year	1975	1980	1985	1988
Constant	3.64 (0.34)	5.01 (0.47)	-2.77 (0.27)	-13.38 (1.36)
PRI	-3.49 (5.37)	-3.35 (4.42)	-3.43 (5.24)	-2.73 (4.89)
Y	7.86 (6.28)	8.27 (6.64)	9.70 (7.89)	10.92 (9.32)
HOM	0.06 (1.54)	0.03 (0.83)	0.04 (1.27)	0.04 (1.21)
S1	32.76 (9.37)	29.74 (8.14)	25.31 (7.66)	21.09 (6.88)
S2	-4.45 (0.87)	-1.25 (0.21)	0.93 (0.18)	0.40 (0.09)
IND	13.20 (4.34)	10.42 (3.07)	5.15 (1.78)	3.39 (1.33)
Adj. R ²	0.8043	0.7584	0.7986	0.8173

Note. See Table 2a.

TABLE 2c WLS estimates of model 2, HDI^S dependent variable (n=119)

Year	1980	1985	1988
Constant	13.73 (1.34)	21.80 (2.27)	17.82 (2.06)
PRI	-3.89 (5.42)	-4.20 (6.96)	-3.76 (7.88)
Y	6.90 (5.77)	6.43 (5.74)	7.10 (7.06)
HOM	0.04 (1.19)	0.04 (1.30)	0.01 (0.62)
S1	27.35 (7.80)	26.27 (9.02)	23.63 (9.90)
S2	-2.74 (0.51)	-1.46 (0.28)	-2.56 (0.46)
IND	7.66 (2.35)	5.47 (2.13)	4.76 (2.35)
Adj. R ²	0.7554	0.7964	0.8256

Note. See Table 2a.

should be used as an explanatory variable as long as accurate data on welfare policies are not, or only very limited, available. For these reasons, HE is not used as an explanatory variable in the remainder of this paper.¹³ Hence, the basic (see below) model 2 examined in this paper is given by equation (2),

$$\text{PQLI, BWI, HDI}^S = a_0 + a_1\text{PRI} + a_2\text{Y} + a_3\text{HOM} + a_4\text{S1} + a_5\text{S2} + a_6\text{IND} + e \quad (2)$$

Tables 2a-2c contain WLS estimates of equation (2) on data for 119 countries for 1975, 1980, 1985, and 1988.¹⁴ The overall fit appears to be rather well and most coefficient estimates have high *t*-values (in absolute terms). As can be seen, the main results are not dependent upon the choice of either the well-being index or the year. A number of observations can be made. First, as expected, Y has a strong positive impact on every index. Second, also the level of ethnic-linguistic homogeneity (HOM) appears to be

¹³ Another, more pragmatic, reason is that reliable data on public health expenditures for more recent years are not available for a substantial number of countries. Data on public expenditures on education for the 1980s are available for most of the countries of the sample, but this variable did for neither year appear to have a significant effect on well-being.

¹⁴ This sample is referred to as the 'small' sample in footnote 7. The 119 countries included in this sample as well as the nine additional countries included in the extended sample are given in Table 4 below. See also footnote 7 for the socialist countries included in this sample. Equation (1) was estimated on the same sample excluding Mozambique and South Africa for which no data were available on public expenditure on education.

moderately positively related to PQLI, BWI, and HDI^S. The decreasing magnitudes of the estimates of a_3 probably reflect the fact that HOM refers to the situation in the beginning of the 1960s (see Appendix B). Third, given the level of economic development (as measured by Y), PRI proves to be a relevant explanatory variable. The level of political democracy seems to be positively related to basic well-being. Fourth, IND turns out to be positive and significant for a number of estimates. The estimates of a_6 are the lowest in the regressions with PQLI as the dependent variable and are, both for PQLI, BWI, and HDI^S, decreasing over time.

Fifth, the socialist countries included in soc1 have significantly higher scores on the well-being indices than what was to be expected given Y, PRI, and HOM. This effect of socialism on basic well-being is, considering that the socialist countries are undemocratic, relatively high compared to undemocratic capitalist countries, but much lower compared to democratic capitalist countries and especially so for the industrialised countries. Finally, the results in Tables 2a-2c show that, contrary to the countries included in soc1, the socialist developing countries included in soc2 did not significantly do better or worse than (undemocratic) capitalist countries. For 1975, which year to a certain extent can be regarded as the starting position¹⁵, and also for the other years, including 1988 which year can be used to evaluate the relative achievements, S2 does not significantly differ from zero.

Which cross-products of variables are worth considering to extend the model? Being primarily interested in the systemic impact on well-being, and because of the lack of any theoretical basis for including cross-products not involving the economic system, only two cross-products are of interest. First, it is of interest to examine whether the "effect of socialism" depends upon the level of economic development, or more precisely, whether the relative achievements of the poorer socialist countries differ from the richer ones. Second, it is of interest whether the effect of socialism is related to the ethnic-linguistic homogeneity of the population. As was mentioned in the introduction, Burkett's (1985) estimates of the effects of two cross-products in his model suggested that the positive impact of socialism was higher for countries with an ethnic-linguistically fractionalized

¹⁵ Reminding that the countries included in soc2 became socialist in the 1960s and 1970s.

population, and lower for countries with high per capita incomes.¹⁶ Burkett (1985, p.152) offered the following hypotheses:

"NES [net effect of socialism] may decrease as Y rises because, given sufficient income, people under all systems manage to satisfy their basic needs. NES may increase with ELF [ethnic-linguistic fractionalization] because in a fractionalized population there is no good substitute for a Leninist party as a mechanism for transmitting to remote areas central government initiatives in the area of basic needs."

Hence, the explanatory variables S1Y and S1HOM are added to the ones in model 2 to obtain model 3:

$$\text{PQLI, BWI, HDI}^S = a_0 + a_1\text{PRI} + a_2\text{Y} + a_3\text{HOM} + a_4\text{S1} + a_5\text{S2} \\ + a_6\text{IND} + a_8\text{S1Y} + a_9\text{S1HOM} + e \quad (3)$$

where S1Y is S1*Y, and S1HOM is S1*HOM.

Estimating model 3 revealed that, for all 11 regressions (cf. Tables 2a-2c), the coefficients of both S1Y and S1HOM were insignificant. In fact, the *t*-values of the coefficient estimates were very low and exceeded 1 in neither occasion. The estimates of model 3, in particular the estimates of a_8 and a_9 , might, however, be biased due to the fact that five socialist countries with relatively low incomes per capita (Albania, Cuba, North Korea, Mongolia, and Vietnam) are not included in the sample. The estimates of model 3 for 1980, 1985, and 1988 on an extended sample containing all countries included in soc1 and soc2, except for Cambodia, are given in Appendix A. Again, S1Y and S1HOM appear to be insignificant in all regressions. Moreover, the sign of the coefficient estimates is positive for some regressions and negative for others. It can be concluded that Burkett's second hypothesis is clearly rejected. Considering the estimates of a_8 , Burkett's first hypothesis is not supported either. When we take into account, however, that political democracy and economic development are positively correlated, support is found for a modified version of Burkett's first hypothesis. As can also be seen in section IV below, the achievements of the low-income countries of soc1 are on average better than the achievements of other, mostly undemocratic, low-income countries, while the socialist industrial

¹⁶ His results should be regarded as highly tentative. First, his analysis concerned only one year and only PQLI was used as the dependent variable. Second, Burkett (1985) had ten socialist countries in his sample and his model contained a dummy variable for the economic system and five cross-products involving the systemic dummy. This means that there were very few degrees of freedom, as these six variables are, basically, estimated on only ten observations.

countries do not perform significantly better than many of the, mostly democratic, medium and high-income countries.

IV. Relative achievements of individual countries

The expected values for PQLI, BWI, and HDI^S can, for each country i included in *soc1*, be calculated as $\hat{\alpha}_0 + \hat{\alpha}_1 \text{PRI}_i + \hat{\alpha}_2 Y_i + \hat{\alpha}_3 \text{HOM}_i + \hat{\alpha}_4$. As PRI is relatively stable for the socialist countries and does not depend on either Y or HOM , the same kind of predicted values can be calculated for all other countries. Subsequently, the achievements of the socialist countries included in *soc1* can be assessed by comparing these predicted values with the actual values. This is done for PQLI in Table 3, where the net effect of socialism (NES) is calculated for each country j as: $\text{NES}_j = [\hat{\alpha}_0 + \hat{\alpha}_1 \text{Avg}(\text{PRI}^{\text{S1}}) + \hat{\alpha}_2 Y_j + \hat{\alpha}_3 \text{HOM}_j + \hat{\alpha}_4]$ minus PQLI_j , where $\text{Avg}(\text{PRI}^{\text{S1}})$ is the average of PRI for the nine countries of *soc1* included in the sample. Note that NES can also be used for comparisons of the relative achievements of individual countries, given the level of economic development (as measured by Y) and the ethnic-linguistic homogeneity, as $\hat{\alpha}_0$, $\hat{\alpha}_1 \text{Avg}(\text{PRI}^{\text{S1}})$, and $\hat{\alpha}_4$ are constants. In Table 3, a distinction is made between developing and industrial economies, while a further distinction is made for capitalist and socialist countries. Within each group, the countries are arranged in order of increasing GDP per capita in 1988. NES is also calculated for Cambodia and for the nine countries which are included in the extended sample but are not included in the sample used in section III. As the purpose is merely to indicate the relative achievements of these countries, no effort is made to calculate standard errors of prediction.

From Table 3 can be counted for how many countries NES is positive and significant. Based on one-sided tests (the hypothesis is that the impact of socialism on basic well-being is positive) with 0.95 significance, the threshold value for $n=119$ of the t -statistic is 1.658. The number of capitalist countries for which NES is positive and significant for 1975, 1980, 1985, and 1988 is given in Table 4. The numbers of capitalist countries for which NES is positive and significant on BWI and HDI^S are obtained with the same procedure and are presented in Table 4 as well. It can be concluded that the number of countries which have significantly worse results on basic well-being than the socialist countries included in *soc1* has fallen from 1975-1988. The relative performance of socialism appears to be better on BWI than on PQLI and HDI^S.

TABLE 3 Net effect of socialism: predictions of PQLI minus actual achievements

	1975	1980	1985	1988
DEVELOPING ECONOMIES				
128 Guinea	41.0 (1.97)	39.0 (1.93)	40.4 (1.72)	33.9 (1.54)
127 Chad	40.8 (2.19)	35.6 (1.76)	34.3 (1.49)	29.0 (1.36)
126 Zaire	21.2 (1.19)	15.6 (0.79)	11.6 (0.53)	7.2 (0.35)
125 Tanzania	22.9 (1.22)	19.0 (0.98)	16.9 (0.80)	11.4 (0.60)
124 Niger	45.4 (2.55)	44.6 (2.62)	38.0 (1.93)	32.3 (1.70)
123 Malawi	36.9 (1.94)	34.4 (1.85)	32.0 (1.58)	27.0 (1.45)
122 Burundi	36.0 (1.79)	34.4 (1.76)	28.8 (1.44)	24.6 (1.34)
121 Burkina Faso	40.5 (2.04)	39.2 (2.02)	39.0 (1.95)	35.2 (1.95)
120 Mali	43.7 (2.18)	42.0 (2.20)	38.5 (1.93)	34.9 (1.94)
119 Central African Rep.	37.5 (2.18)	31.5 (1.82)	31.9 (1.71)	23.7 (1.35)
118 Burma	11.3 (0.54)	7.3 (0.38)	6.5 (0.34)	2.6 (0.15)
116 Togo	30.7 (1.73)	29.0 (1.73)	22.9 (1.24)	19.3 (1.16)
115 Gambia	46.4 (2.72)	44.4 (2.82)	40.9 (2.23)	36.4 (2.21)
113 Rwanda	33.9 (1.91)	30.1 (1.80)	30.8 (1.82)	25.2 (1.58)
112 Madagascar	31.9 (2.12)	25.5 (1.66)	17.3 (1.03)	12.7 (0.80)
111 Zambia	18.8 (1.35)	14.3 (0.92)	13.0 (0.79)	9.1 (0.59)
109 Nigeria	33.3 (2.25)	31.8 (2.24)	25.5 (1.63)	21.3 (1.42)
108 Uganda	24.2 (1.43)	24.6 (1.30)	23.3 (1.11)	23.4 (1.58)
107 Ghana	24.3 (1.55)	21.8 (1.40)	18.4 (1.11)	15.2 (1.04)
106 Nepal	37.2 (2.14)	37.1 (2.31)	36.3 (2.33)	32.3 (2.21)
105 Haiti	37.8 (2.34)	34.9 (2.30)	26.4 (1.69)	22.1 (1.52)
103 Liberia	31.9 (2.10)	27.1 (1.75)	24.2 (1.50)	25.9 (1.78)
100 Mauritania	46.7 (3.07)	42.0 (2.74)	38.6 (2.39)	35.2 (2.47)
99 Kenya	19.9 (1.24)	15.9 (1.01)	10.0 (0.60)	6.3 (0.44)
97 Sierra Leone	51.3 (3.52)	47.1 (3.12)	47.9 (3.04)	43.8 (3.16)
96 Lesotho	19.4 (1.15)	18.3 (1.18)	15.9 (1.04)	11.5 (0.85)
94 India	24.5 (1.46)	21.5 (1.30)	20.7 (1.35)	17.2 (1.32)
93 Sudan	39.2 (2.64)	36.0 (2.47)	35.3 (2.45)	32.4 (2.55)
92 Senegal	42.7 (2.94)	40.9 (2.79)	36.9 (2.66)	28.5 (2.28)
90 Guyana	-1.4 (0.12)	-2.2 (0.18)	-4.8 (0.36)	-3.2 (0.27)
89 Bangladesh	36.5 (2.42)	35.4 (2.42)	33.3 (2.40)	31.8 (2.68)
87 Pakistan	33.9 (2.18)	33.3 (2.26)	29.9 (2.25)	28.3 (2.48)
86 Cameroon	23.3 (1.52)	22.2 (1.60)	22.8 (1.85)	19.4 (1.71)
85 Ivory Coast	36.4 (2.86)	32.7 (2.52)	25.2 (2.10)	21.6 (1.91)
84 Honduras	19.7 (1.42)	16.1 (1.22)	11.5 (0.90)	7.4 (0.66)
82 Papua New Guinea	32.2 (2.60)	27.5 (2.16)	23.3 (1.95)	20.1 (1.86)
81 North Yemen	48.7 (3.18)	44.1 (2.96)	36.9 (2.83)	38.9 (3.69)
80 Bolivia	27.5 (2.25)	24.1 (1.99)	20.8 (1.83)	16.8 (1.64)

TABLE 3 Net effect of socialism - *continued*

	1975	1980	1985	1988
79 Philippines	3.4 (0.27)	3.7 (0.30)	0.9 (0.07)	-1.2 (0.12)
77 El Salvador	19.0 (1.60)	16.9 (1.40)	13.3 (1.19)	9.4 (0.95)
76 Indonesia	16.3 (1.07)	12.7 (0.91)	12.2 (1.06)	8.1 (0.82)
75 Egypt	32.5 (2.32)	28.1 (2.17)	25.4 (2.34)	21.3 (2.22)
73 Morocco	32.4 (2.49)	29.8 (2.44)	24.3 (2.25)	20.0 (2.18)
72 Guatemala	23.4 (2.06)	21.4 (1.95)	17.3 (1.67)	14.9 (1.66)
69 Sri Lanka	0.1 (0.01)	-2.0 (0.16)	-1.6 (0.16)	-3.0 (0.34)
68 Dominican Republic	14.9 (1.26)	12.8 (1.13)	9.2 (0.89)	6.9 (0.79)
67 Paraguay	3.2 (0.26)	3.9 (0.36)	2.3 (0.23)	1.5 (0.17)
66 Peru	17.8 (1.74)	14.6 (1.39)	12.8 (1.35)	8.7 (1.00)
64 Jamaica	-0.3 (0.03)	-4.3 (0.38)	-6.7 (0.66)	-6.8 (0.81)
63 Jordan	15.0 (1.15)	13.7 (1.25)	10.9 (1.20)	6.3 (0.75)
61 Tunisia	29.2 (2.48)	22.7 (2.05)	17.4 (1.91)	12.9 (1.65)
60 Algeria	33.2 (2.97)	28.1 (2.64)	23.7 (2.72)	19.1 (2.47)
59 Ecuador	12.4 (1.16)	10.6 (1.04)	8.1 (0.92)	5.7 (0.73)
58 Panama	1.7 (0.16)	0.1 (0.01)	0.3 (0.03)	-2.3 (0.30)
57 Botswana	22.8 (1.69)	18.9 (1.55)	15.5 (1.57)	15.1 (2.01)
56 Thailand	3.2 (0.25)	2.1 (0.18)	2.3 (0.24)	0.7 (0.09)
55 Colombia	11.3 (1.03)	8.4 (0.79)	7.3 (0.83)	4.2 (0.58)
54 Iraq	29.6 (3.53)	27.0 (3.44)	22.0 (2.89)	18.5 (2.59)
53 Iran	31.3 (3.67)	23.3 (2.28)	23.2 (3.09)	18.9 (2.65)
52 Turkey	25.0 (2.40)	19.3 (1.82)	14.8 (1.72)	13.0 (1.82)
51 South Africa	16.9 (1.74)	14.5 (1.47)	11.5 (1.40)	12.5 (1.76)
50 Costa Rica	2.2 (0.22)	-0.9 (0.10)	-2.0 (0.24)	-3.8 (0.55)
49 Argentina	2.8 (0.32)	1.6 (0.18)	0.1 (0.01)	-1.4 (0.21)
47 Gabon	41.9 (5.15)	35.7 (4.02)	31.6 (4.23)	28.1 (4.21)
46 Syria	26.8 (2.78)	22.4 (2.43)	18.8 (2.51)	15.2 (2.29)
45 Chile	5.0 (0.48)	1.1 (0.11)	-1.4 (0.16)	-1.4 (0.22)
44 Brazil	17.8 (1.83)	17.1 (1.85)	14.3 (1.88)	12.4 (1.94)
43 Uruguay	1.9 (0.21)	1.5 (0.17)	-0.7 (0.09)	-1.0 (0.16)
42 Malaysia	7.0 (0.65)	6.8 (0.71)	5.5 (0.74)	4.3 (0.69)
39 Mauritius	8.2 (0.86)	5.8 (0.61)	5.3 (0.71)	4.9 (0.86)
37 Mexico	13.1 (1.50)	12.0 (1.43)	8.2 (1.24)	7.3 (1.29)
35 South Korea	3.5 (0.31)	2.2 (0.22)	2.1 (0.29)	3.2 (0.60)
34 Venezuela	13.8 (1.84)	11.7 (1.51)	7.9 (1.28)	6.9 (1.29)
29 Libya*	-	38.3	32.0	26.7
28 Cyprus	-4.0 (0.39)	-0.8 (0.10)	-0.7 (0.12)	-0.1 (0.02)
27 Saudi Arabia	49.1 (6.83)	45.7 (7.41)	28.6 (5.48)	25.2 (5.42)
26 Oman	52.2 (6.31)	48.9 (6.30)	46.9 (9.16)	31.3 (6.77)

TABLE 3 Net effect of socialism - *continued*

	1975	1980	1985	1988
22 Trinidad & Tobago	4.0 (0.55)	5.5 (0.82)	4.0 (0.80)	3.2 (0.73)
20 Singapore	4.8 (0.56)	4.8 (0.61)	4.5 (0.84)	4.6 (1.13)
19 Kuwait	24.3 (4.77)	21.8 (4.24)	13.2 (2.93)	11.9 (2.97)
2 United Arab Emirates	30.7 (5.86)	28.3 (5.70)	23.0 (6.50)	23.7 (7.82)
DEV.EC. - SOC2				
129 Ethiopia	32.6 (1.43)	30.0 (1.34)	24.9 (0.94)	17.4 (0.75)
117 Afghanistan*	-	52.1	47.4	40.2
114 Angola	43.0 (2.52)	37.6 (2.13)	35.2 (1.98)	30.4 (1.88)
110 Mozambique	42.7 (3.00)	38.9 (2.48)	36.1 (2.09)	32.9 (2.15)
104 Laos*	-	34.6	32.8	22.6
101 Somalia	50.8 (3.24)	48.3 (3.01)	43.1 (2.56)	39.1 (2.72)
98 Cambodia*	-	-	38.9	33.3
95 Benin	41.2 (2.81)	39.6 (2.72)	38.1 (2.69)	33.1 (2.51)
91 South Yemen*	-	41.4	43.0	32.6
88 Zimbabwe	17.4 (1.28)	12.4 (0.87)	14.1 (1.04)	10.4 (0.90)
83 Nicaragua	22.2 (2.00)	15.1 (1.21)	8.8 (0.76)	4.5 (0.40)
65 Congo	23.1 (1.83)	18.9 (1.54)	22.6 (2.42)	23.5 (2.75)
DEV.EC. - SOC1				
102 Vietnam*	-	2.7	-1.6	-4.7
78 Mongolia*	-	-1.3	1.0	2.9
74 North Korea*	-	-0.8	-0.9	-4.3
71 China	6.2 (0.41)	5.0 (0.36)	5.9 (0.53)	4.3 (0.49)
70 Cuba*	-	-6.1	-7.3	-8.2
62 Albania*	-	5.9	3.3	0.4
INDUSTRIAL ECONOMIES				
33 Portugal	9.9 (1.10)	5.6 (0.64)	3.2 (0.47)	3.5 (0.67)
31 Greece	2.4 (0.29)	1.2 (0.15)	-0.9 (0.14)	-1.2 (0.23)
25 Ireland	0.6 (0.07)	-0.4 (0.05)	-0.6 (0.10)	0.8 (0.17)
24 Israel	2.9 (0.38)	1.4 (0.19)	0.3 (0.05)	0.3 (0.07)
21 Spain	0.4 (0.06)	-1.8 (0.24)	-2.1 (0.38)	-1.2 (0.27)
18 New Zealand	1.4 (0.22)	0.8 (0.12)	0.9 (0.20)	1.2 (0.33)
17 Italy	3.3 (0.45)	2.7 (0.39)	1.2 (0.25)	2.8 (0.76)
16 Austria	3.1 (0.44)	2.3 (0.34)	1.9 (0.41)	2.5 (0.67)
15 Netherlands	1.3 (0.19)	0.9 (0.14)	0.3 (0.06)	1.7 (0.46)
14 United Kingdom	0.7 (0.10)	-0.1 (0.01)	1.0 (0.22)	2.0 (0.56)
13 Belgium	-0.4 (0.06)	0.6 (0.09)	0.1 (0.02)	1.1 (0.32)
12 France	1.2 (0.19)	0.4 (0.06)	-0.1 (0.02)	2.7 (0.77)
11 Denmark	1.6 (0.24)	2.1 (0.32)	2.2 (0.51)	3.6 (1.04)
10 Japan	0.7 (0.09)	-0.3 (0.04)	0.9 (0.21)	1.8 (0.53)

TABLE 3 Net effect of socialism - *continued*

	1975	1980	1985	1988
9 West Germany	3.7 (0.55)	3.7 (0.58)	3.1 (0.72)	3.8 (1.10)
8 Finland	1.5 (0.22)	1.4 (0.20)	1.3 (0.30)	3.4 (0.99)
7 Sweden	1.4 (0.23)	1.6 (0.24)	1.3 (0.31)	2.9 (0.87)
6 Norway	0.5 (0.07)	1.8 (0.27)	1.9 (0.47)	3.3 (0.98)
5 Australia	1.5 (0.24)	1.6 (0.24)	1.4 (0.33)	3.2 (0.95)
4 Switzerland	0.1 (0.02)	0.7 (0.11)	0.3 (0.07)	2.3 (0.74)
3 Canada	-1.2 (0.20)	0.2 (0.03)	-0.7 (0.17)	1.7 (0.55)
1 USA	1.2 (0.20)	1.9 (0.33)	1.8 (0.48)	4.0 (1.33)
IND.EC. - SOC1				
48 Romania	-1.5 (0.15)	-2.2 (0.21)	-2.1 (0.27)	-1.1 (0.16)
41 Poland	0.2 (0.02)	-1.4 (0.16)	-1.1 (0.15)	-1.7 (0.29)
40 Bulgaria	-0.4 (0.04)	-2.0 (0.22)	-0.1 (0.01)	0.4 (0.06)
38 Yugoslavia	1.4 (0.16)	2.5 (0.33)	0.1 (0.01)	-0.6 (0.11)
36 Hungary	0.5 (0.05)	0.1 (0.01)	1.1 (0.17)	0.6 (0.11)
32 Soviet Union	-1.7 (0.20)	0.8 (0.11)	1.1 (0.17)	1.0 (0.20)
30 Czechoslovakia	-2.7 (0.33)	-1.4 (0.16)	-0.3 (0.05)	-0.4 (0.08)
23 East Germany	0.0 (0.01)	0.7 (0.08)	1.6 (0.29)	1.3 (0.29)

Note. $NES_j = [\hat{\alpha}_0 + \hat{\alpha}_1 \text{Avg}(\text{PRI}^{\text{S1}}) + \hat{\alpha}_2 Y_j + \hat{\alpha}_3 \text{HOM}_j + \hat{\alpha}_4] - \text{PQLI}_j$, where $\text{Avg}(\text{PRI}^{\text{S1}})$ is the average of PRI for the nine countries of soc1 included in the sample. For 1975 and 1980, $\text{Avg}(\text{PRI}^{\text{S1}})=6.6$, and for 1985 and 1988, $\text{Avg}(\text{PRI}^{\text{S1}})=6.4$. The number at the beginning of each line is the rank number of the corresponding country on Y in 1988 (1 means highest income per capita, 129 is lowest income per capita). Note that the standard error of prediction is relatively big for low-income countries, and relatively small for high-income countries. Countries not included in the sample used in section III are denoted with an asterisk.

TABLE 4 Number of capitalist countries for which NES is positive and significant (total=102)

	PQLI	BWI	HDI ^s
1975	45	56	-
1980	41	46	42
1985	35	43	39
1988	32	38	32

Note. Based on one-sided tests with 0.95 significance ($t > 1.658$). For PQLI, see Table 3.

A number of additional observations can be made. First, from Table 3 can be seen that NES is, although mostly positive, insignificant for all industrial market economies. It can also be seen that NES is insignificant for a substantial number of, mainly democratic, developing economies.¹⁷ Second, comparing the values of NES of the socialist countries which are not included in the sample (these countries are denoted by an asterisk in Table 3) with NES for the other countries included in soc1 and soc2, reveals that there is no reason to believe that the exclusion of these countries biases the results significantly. A third observation that can be made is that relatively high values for NES are not confined to the group of major oil-exporting developing economies. A considerable number of non oil-producing countries, often undemocratic and poor, perform equally badly on the fulfilment of basic needs.

V. Conclusion

This paper examined the impact of the economic system on basic well-being, corrected for the level of economic development. The approach adopted in this paper can be regarded as a combination of the approach taken by scholars of comparative economic systems, who studied the impact of the economic system on well-being, and political scientists and sociologists, who aimed to assess the effect of political democracy on well-being. A few models containing both the economic system and Gastil's Political Rights Index as explanatory variables were estimated for four years (1975, 1980, 1985, and 1988), while three indices measuring some sort of basic well-being (PQLI, BWI, and HDI^S) were used as dependent variables. The main empirical results proved to be not dependent upon the choice of the well-being index or the year.

The conclusion reached by Horvat (1974) and Burkett (1985) that socialism enhanced the provision of basic needs is confirmed, but additional insight is gained in three important ways. First, the level of political democracy, as measured by PRI, has a significantly positive impact on basic well-being. Hence, the effect of socialism is, considering that the socialist countries are undemocratic, relatively high compared to

¹⁷ The following developing economies perform relatively well: the African countries Kenya, Mauritius, Tanzania, Zaire, and Zambia, and the Asian countries Burma, Cyprus, Malaysia, Philippines, South Korea, Sri Lanka, Thailand, and the Asian countries included in soc1. Relatively many countries from the American continents perform well on PQLI. NES is even negative in 1988, apart from for Cuba, for Costa Rica, Jamaica, and Panama (North and Central America), and for Argentina, Chile, Guyana, and Uruguay (South America).

undemocratic capitalist countries, but much lower compared to democratic capitalist countries. In fact, the 'net effect of socialism' (NES), computed for every country in section IV as the difference between fitted well-being indices and the actual values, did not significantly differ from zero for all industrial market economies. Thus, the results earlier obtained by Stuart (1984) are confirmed using an approach that does not suffer from the objections put forward by Burkett (1986). Further, the developing economies included in soc2 performed not significantly better or worse on PQLI, BWI, and HDI^S than (undemocratic) capitalist countries. Contrary to the developing economies where socialism has matured, the choice for a socialist development strategy has in these countries not resulted in higher basic well-being than what was to be expected given Y, PRI, and HOM. Finally, the number of countries for which NES is positive and significant has decreased from about half of the capitalist countries in 1975 to about one third in 1988.

Appendix A

Estimates of model 3 on data for 128 countries are given in Tables A1-A3. The results are sensitive to the estimates of real GDP per capita for the socialist countries. When the income per capita estimates of Albania, Cuba, North Korea, Mongolia, and Vietnam are too low (high), the estimates of a_8 are biased downwards (upwards).

TABLE A1 WLS estimates of model 3, PQLI dependent variable (n=128)

Year	1980	1985	1988
Constant	22.63 (2.22)	29.87 (3.17)	21.83 (2.61)
PRI	-4.20 (5.93)	-4.29 (7.30)	-3.45 (7.53)
Y	7.15 (5.92)	6.69 (5.99)	7.53 (7.61)
HOM	0.05 (1.36)	0.05 (1.59)	0.04 (1.76)
S1	24.91 (0.60)	30.13 (0.82)	32.78 (1.04)
S2	-5.04 (1.05)	-4.53 (1.02)	-3.90 (0.92)
IND	4.16 (1.26)	1.33 (0.51)	0.60 (0.29)
S1Y	0.13 (0.03)	-0.66 (0.16)	-1.21 (0.34)
S1HOM	0.02 (0.21)	0.01 (0.14)	-0.01 (0.16)
Adj. R ²	0.7402	0.7719	0.7972

Note. Figures in parentheses are (absolute) *t*-values; n is the number of observations.

TABLE A2 WLS estimates of model 3, BWI dependent variable (n=128)

Year	1980	1985	1988
Constant	6.40 (0.62)	0.42 (0.04)	-13.37 (1.39)
PRI	-3.49 (4.81)	-3.53 (5.60)	-2.73 (5.06)
Y	8.12 (6.62)	9.35 (7.77)	10.87 (9.38)
HOM	0.04 (0.92)	0.04 (1.25)	0.04 (1.41)
S1	35.47 (0.82)	46.91 (1.21)	66.09 (1.86)
S2	-3.71 (0.72)	-2.71 (0.60)	-1.65 (0.40)
IND	10.20 (3.05)	5.36 (1.89)	3.36 (1.35)
S1Y	-0.30 (0.06)	-2.03 (0.46)	-4.61 (1.14)
S1HOM	-0.03 (0.29)	-0.04 (0.46)	-0.07 (0.77)
Adj. R ²	0.7646	0.7996	0.8200

Note. See Table A1.

TABLE A3 WLS estimates of model 3, HDI^S dependent variable (n=128)

Year	1980	1985	1988
Constant	15.35 (1.53)	21.59 (2.28)	17.10 (1.99)
PRI	-4.09 (5.89)	-4.29 (7.27)	-3.82 (8.21)
Y	6.78 (5.70)	6.46 (5.75)	7.16 (7.10)
HOM	0.04 (1.14)	0.04 (1.27)	0.02 (0.76)
S1	19.10 (0.48)	17.99 (0.49)	27.37 (0.83)
S2	-4.40 (0.96)	-3.93 (0.89)	-3.33 (0.70)
IND	7.41 (2.29)	5.39 (2.06)	4.66 (2.30)
S1Y	0.91 (0.20)	0.82 (0.20)	-0.37 (0.10)
S1HOM	0.02 (0.18)	0.03 (0.33)	0.00 (0.03)
Adj. R ²	0.7616	0.8001	0.8295

Note. See Table A1.

Appendix B

(1) Data for HDI^s, PQLI, and BWI are taken from Van der Lijn (1995). Detailed information on the original sources and methods of calculation is given in this paper (available upon request).

(2) Purchasing power adjusted real GDP per capita data come from Barro and Lee (1994). The original source is the PENN World Table (PWT), Mark 5.5 (see Summers and Heston 1991, for a description of PWT, Mark 5). All data are in 1985 international dollar prices. The level of prices is normalized so that the GDP of the USA is the same in international dollars as in American dollars. The figures for 1988 are the (weighted) averages of the figures for 1985 and 1989. Exceptions are described below. Data for 1989 for Ethiopia, Liberia, Tanzania, Nicaragua, Iraq, and Nepal come from UNDP, *Human Development Report* 1992 (HDR), and are recalculated in 1985 prices. A number of socialist countries included in PWT, Mark 4, are not included in PWT, Mark 5, because of the general perception that the data given for these countries were not reliable. The figures used in this paper for these and several other socialist countries not included in PWT, Mark 5, their sources, and methods of calculation are presented in Table B1. For comparison, also figures for a number of capitalist countries and for four socialist countries included in PWT, Mark 5.5, are given.

The estimates of real GDP per capita given in Table B1 for Bulgaria, Czechoslovakia, East Germany, Romania, and the Soviet Union can be regarded as sufficiently reliable. The estimates for 1980 and, for Bulgaria and East Germany, 1989 are based on thorough analysis (Marer 1985, PlanEcon), while the growth rates used to calculate the figures for the remaining years are not the official ones, but revised estimates based on serious research (Alton 1985, CIA, PlanEcon). The figures presented for the developing socialist countries are much less reliable. The estimates of real GDP per capita come mainly from HDR, and can be considered more as 'expert guesses' than the result of thorough analysis. Moreover, the growth rates used to construct the figures for 1980, 1985, and 1988 are mainly the official ones and their accuracy is uncertain. For these reasons, the figures for these countries should be regarded as tentative.

For some countries for some years for which no purchasing power adjusted real GDP per capita figures are available, dollar GDP's or GNP's based on national income statistics and official exchange rates are known. The results of the United Nations International Comparison Project show that exchange rates differ significantly from corresponding purchasing power parities, but also that they do so in a systematic way. The ratio of GDP based on exchange rates to purchasing power adjusted real GDP (the price level) of a

country is a rising function of its income or stage of development (Summers and Heston 1991). Hence, provided that this function is fairly stable, crude approximations of purchasing power adjusted real GDP (for short, real GDP) per capita might be obtained from exchange rate based GDP's/GNP's. For 104 countries from the sample, both real GDP per capita as exchange rate based GNP per capita are known for all years. Regression estimates of a double logarithmic function of the price level on exchange rate based GNP per capita, the latter expressed relative to that of the USA, are given in Table B2.¹⁸ In Table B3, approximations of real GDP per capita calculated from the regression estimates and World Bank GNP per capita data are presented for a number of countries. The fitted ratio of exchange rate based GNP to real GDP per capita are given in parentheses (this ratio is called the Exchange Rate Deviation Index by Marer 1985, and is referred to as the price level in Summers and Heston 1991). For comparison, also the figures for North Yemen from PWT are given in this Table.

The figures for 1975 and 1980 for Kuwait, Oman, Saudi Arabia, and United Arab Emirates are taken from Table B3. As the logarithm of real GDP per capita is used as an explanatory variable in the regression equation, confidence intervals can be constructed directly from the standard error of estimation given in Table B2. The maximum and minimum values of a 95% confidence interval are approximately equal to the logarithm of the estimates presented in Table B3 plus or minus twice the standard error of estimation given in Table B2. Hence, the effect of a too low or rather a too high estimate of real GDP on the predicted level of a well-being index can be assessed very easily.

(3) The Political Rights Index (PRI) and the Civil Liberties Index (CLI) are taken from Barro and Lee (1994).¹⁹ The figures used in the respective regressions are averages for 1972-74, 1975-79, 1980-84, and 1985-87, respectively. The indices seek to measure political and civil freedoms on seven-point scales. A rating of 1 is freest and 7 least free. The original source for both indices is Gastil, *Freedom in the World*, various years. The data for 1985-87 as well as all data for Libya, Cuba, Cambodia, North Korea, Laos, Mongolia, Vietnam, South Yemen, Albania, Bulgaria, Czechoslovakia, East Germany,

¹⁸ In Summers and Heston (1991, Figure 1), the same functional form was used. Instead of exchange rate based GNP, they used real GDP per capita as an explanatory variable.

¹⁹ It must be noted that in the description of the data set by Barro and Lee (January 1994, *readme* file) it is indicated that CLI can be found where in fact PRI is present, and vice versa. In this paper, PRI and CLI are not mixed up.

Romania, and the Soviet Union are taken directly from this source (in particular from Yearbook 1988-1989, Table 6, supplemented with Yearbook 1982, Table 8).²⁰

(4) The ethnic and linguistic homogeneity index comes from Kurian (1979). It measures the probability (in percentage, the scale is from zero to 100) that two randomly selected individuals would come from different ethnic-linguistic groups. The index is a slightly modified version of an index originally devised by the Department of Geodesy and Cartography of the State Geological Committee of the USSR Academy of Sciences which was published in *Atlas Narodov Mira*. The index was constructed for the beginning of the 1960s. The accuracy of the index is of course lower for the end of the 1980s than for the middle of the 1970s, but the ranking of the countries has probably not changed dramatically. No figures were published for Oman and United Arab Emirates. Both figures are set equal to 95, considering their homogeneous population and the figures for their neighbouring countries: Saudi Arabia 94, North Yemen 96, and South Yemen 99 (the alternative would be the removal of these two countries from the data set).

(5) Health expenditure data in dollars are taken from Kurian (1979). The data refer to 1976. Dollar GNP per capita data for 1976 taken from WBA were used to obtain the health expenditure as a percentage of GNP figures. Education expenditure as a percentage of GDP data refer to recurring expenditures. The data come from Barro and Lee (1994) and are given as averages of five year periods. The figures used refer to 1970-74. There are a number of exceptions. Data for Angola, Guinea, Burma (Myanmar), China, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, and the Soviet Union come from UNESCO, *Statistical Yearbook*, various years. The figures for Bulgaria, Czechoslovakia, East Germany, Hungary (for 1970), Romania (for 1970), and the Soviet Union are given as a percentage of Net Material Product. They are recalculated as a percentage of GDP using the GDP/NMP ratios for 1980 published in Marer et al. (1992, Table 8.1, p.71). The figures used for all countries, except for Angola and Guinea, are the averages of the figures for 1970 and 1975. For Angola and Guinea, the figures are the averages of the figures for 1971 and 1972.

²⁰ For a short discussion of how a certain value of PRI or CLI should be understood, see, for example, Gastil (1980, p.15-21).

TABLE B1 Estimates of purchasing power adjusted real GDP per capita for a number of socialist and capitalist countries (constant 1985 prices)

	1975	1980	1985	1988
Cuba		1922 ¹	2260	2185
Afghanistan		700	714	572
Cambodia			756	874
North Korea		1557	1874	1897
Laos		800	870	815
Mongolia		1260	1511	1722
Vietnam		715	778	832
Albania		2760	2790	2694
Bulgaria	4556	4699	4832	5033
Czechoslovakia	5811	6257	6548	6833
East Germany	6900	7801	8434	8570
Romania	3045	3538	3603	3725
Soviet Union	5255	5531	5799	6099
China	952	1240	1811	2170
Hungary	4533	5051	5309	5545
Poland	4678	4466	4204	4486
Yugoslavia	4403	5641	5250	5131
USA	13461	15101	16559	17903
West Germany	10122	12013	12543	13584
Greece	5194	5890	6184	6512
Portugal	4370	5048	5026	5964
Spain	7400	7496	7547	8865

Note. For each country, estimates of real GDP per capita are published for at least one year. Figures for the other years are calculated from (estimates of) national income statistics (in constant prices) and population data. All data are recalculated in 1985 prices, ensuring that the ratio of GDP per capita of country X to USA GDP per capita in constant prices is equal to that ratio in current prices. 1. This figure for Cuba refers to 1981.

Sources. Population data are taken from World Bank, *World Bank Atlas* (WBA), various years. For Cambodia, the population data come from Asian Development Bank (ADB, 1994). The figure for 1985 for Afghanistan is taken from Summers and Heston (1991, Table II). The figures for 1980 and 1988 are calculated by using per capita GDP figures (in constant prices, national currency) as published in ADB (1994, p.52-53). The figures for 1989 for Cuba, Cambodia, North Korea, Laos, Mongolia, and Vietnam come from UNDP, *Human Development Report* 1992 (HDR). The figure for 1990 for Albania is taken from HDR 1993. For North Korea, both GNP growth rates and population data are taken from Hwang (1993, Tables 3.10 and 3.11a). The GDP annual growth rates

used to construct the figures for 1980, 1985, and 1988 for Mongolia and Albania, for 1985 and 1988 for Cambodia, and for 1980 for Vietnam are taken from World Bank, *Trends in Developing Economies*, various years. GDP growth rates for Vietnam for 1985-90 come from Dollar (1994, Table 1; the growth rates for 1986-88 refer to growth of Net Material Product). For Laos, the GDP growth rates for 1980-85 come from Bourdet (1992, Table 5) and for 1985-89 from ADB (1994, Table 12). For Cuba, per capita total social product (in 1981 pesos) figures taken from United Nations, *Economic Survey of Latin America and the Caribbean*, 1988 and 1989, are used to construct the figures for 1981, 1985, and 1988. The figures for 1980 for Czechoslovakia, East Germany, Romania, and the Soviet Union are taken from Marer (1985, Table 3.19, "best" estimate). The figure for 1989 for Bulgaria and East Germany comes from *PlanEcon Report*, Number 52, 1990, Table 3. The figures for 1985 and 1988 for East Germany are estimated from the figures for 1980 and 1989 and the growth rates for 1980-89 of Net Material Product (taken from United Nations, *Economic Survey of Europe*, 1992; these growth rates were adjusted downwards by about 2.8% so as to make the growth rates compatible with the figures for 1980 and 1989). Growth rates of real GDP/GNP for 1980-89 for Bulgaria, Czechoslovakia, Romania, and the Soviet Union come from *PlanEcon Report*, Numbers 50-51, 1990, Table 1. These figures are CIA estimates, except for Bulgaria for which the figures are based on PlanEcon estimates of Bulgarian GDP. Growth rates for 1975-80 for the Soviet Union are CIA estimates taken from Harrison (1993, Table 1). Indices of real GNP (in constant prices) for 1975 and 1980 estimated by Alton (Alton 1985, Table 11) are used to obtain the figures for 1975 for Bulgaria, Czechoslovakia, East Germany, and Romania. The figures for China, Hungary, Poland, Yugoslavia, USA, West Germany, Greece, Portugal, and Spain come from Barro and Lee (1994).

TABLE B2 Regression estimates of the price level on exchange rate based GNP per capita (constant 1985 prices):

$$\ln(\text{GNP}/\text{RGDP}) = a_0 + a_1 \ln(\text{GNP}/\text{GNP}^{\text{USA}})$$

Year	a_0	a_1	R^2	Std.err. of est.	Number of observations
1975	0.051	0.250 (13.2)	0.63	0.251	104
1980	0.093	0.248 (12.5)	0.60	0.269	104
1985	-0.127	0.233 (12.0)	0.59	0.267	104
1988	0.034	0.287 (14.6)	0.68	0.299	104

Note. Figures in parentheses are t -values. The standard error of estimation is given in column 5. *Sources.* Dollar GNP per capita data for 1975, 1980, and 1985 come from WBA, various years, and for 1988 from World Bank, *World Development Report* (WDR) 1990.

TABLE B3 Crude approximations of purchasing power adjusted real GDP per capita in dollars (constant 1985 prices)

	1975	1980	1985	1988
Libya	10588 (0.987)	11974 (1.047)	10311 (0.734)	6860 (0.712)
Kuwait	22594 (1.271)	23912 (1.316)		
Oman	5519 (0.794)	7138 (0.883)		
Saudi Arabia	8320 (0.911)	14084 (1.105)		
North Yemen	934	1033	1267	1526
South Yemen	1038 (0.455)	1136 (0.481)	1369 (0.398)	1127 (0.344)
United Arab Emirates	20795 (1.236)	26796 (1.366)		

Note. Calculated from Table B2 and GNP per capita figures taken from WBA and WDR (see Table B2). The figures for North Yemen come from Barro and Lee (1994). The fitted ratio of exchange rate based GNP to real GDP per capita is given in parentheses.

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