Misers

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Abstract

We propose a new index called the miser index. It builds on a measure of the degree to which extreme poverty is unnecessary, but yet persists. The index is a proxy for the implicit social attitudes that allow poverty in the midst of affluence. It attaches a weight to the relative number of people below the poverty line. This weight is higher the higher the average income in society relative to the average income short fall of the poor. The weight measures the extent to which poverty is unnecessary. Multiplied by the actual number of poor people as a fraction of the total population we obtain an indication of revealed miser attitudes. We use the index to rank developing countries according to their revealed miser tendencies. Finally we show that the world as a whole has become more miserly over the last 20 years.

1 Introduction

While a miser, according to the dictionary, is a person who hoards wealth and lives miserably, a miserly society must be one where the rich hoard wealth and let the rest live miserably. In this paper we try to measure how stingy societies are as indicated by by their revealed willingness to let people live miserably in spite of a financial ability to provide for all. One purpose is is to rank countries according to their miser tendencies. Another is to see how miser tendencies evolve over time as countries grow richer. Is the world becoming more or less parsimonious over time?

To measure miser tendencies we first have to decide what it means to live miserably. In this paper we focus on the extremely poor – those who live below one or two dollars

a day. Next, since a miser would not have to live miserably if he reallocated some of his wealth for consumption, we have to account for similar allocation failures at the society level. High poverty in a wealthy society is an allocation failure. It is an indication that the social institutions of the country favor the rich at the costs of the poor. When extreme poverty in this way is inexpensive to alleviate, but nevertheless persists, we claim that the country is miserly. We interpret these miser attitudes as caused by a revealed lack of empathy with the worst off by the better off in society.

These statements are built on the normative claim that the easier it is to relieve the poor from their sufferings, the less poverty there should be. More specifically the lower the costs of poverty relief measured as a share of total income, the higher the level of revealed miser attitudes per poor person counted. Miser tendencies show up as unused abilities to alleviate poverty. The new index that we propose builds on a measure of the degree to which extreme poverty is unnecessary, but yet persists.

Our index is meant to be a proxy for the implicit social attitudes that allow poverty in the midst of affluence. It attaches a weight to the relative number of people below the poverty line. This weight is higher the higher the affluence in society and in particular the higher is the average income of the non-poor in society. The weight measures the extent to which poverty is unnecessary. Multiplied by the actual number of poor people as a fraction of the total population we obtain an indication of revealed miser attitudes - the miser index.

The miser index is increasing in the weight attached to each poor person and in the relative number of poor people. Thus a society is considered to be more miserly (i) the more unnecessary any poverty would be; and (ii) the higher actual poverty is. Our index is completely unrelated to the misery index proposed by Robert Barro in 197x. His index is simply equal to the inflation rate plus the unemployment rate of a country and is meant to be a proxy for economic and social costs of bad macro economic policies. The miser index that we propose is not a direct proxy for the social costs of bad policies. It is a rough indication of how bad the actual policies are as measured by the resulting poverty weighted by how unnecessary it is.

Below we first establish a miser index by a simple axiomatic exercise. We then use the derived measure to rank countries. Since we focus on extreme poverty we first rank developing countries according to their implicit miserly attitudes. We then correlates this measure

of miser attitudes by other social indicators such as health care, military spending, foreign aid, life expectancy, fertility and education. We also derive the impact of institutions and governance; and we discuss the relationship between miser attitudes and economic growth. Since moral concerns should not follow national borders we also incorporate the developed countries that do not have extreme poverty themselves, but nevertheless should be concerned with the extent of extreme poverty in other countries. We thus conclude by a discussion of whether the world as a whole in fact has become more or less miserly over time.

2 Miserly measured

To fix ideas consider a society of rich and poor members. The rich have a marginal utility of income μ_r and the poor have a marginal utility of income μ_p. Clearly, the poor evaluate extra income more highly than the rich, hence $\mu_p > \mu_r$. The social concern of the rich for the poor is denoted α and the head count measure of poverty is h with a constant absolute poverty line z. A marginal transfer δ from the rich to the poor represents a cost $-\mu_r\delta$ to the each of the $(1-h)$ rich and a gain $\mu_p\delta\left(1-h\right)/h$ to each of the h poor. The gain to the poor is evaluated with the weight αh by the rich. Hence, a situation where the rich hoard wealth and let the rest live miserably is a society where the rich have a too low social concern for the poor to transfer incomes to reduce poverty. Formally,

$$-\delta\mu_r + \alpha h\mu_p\frac{\delta\left(1-h\right)}{h} \leq 0 \tag{1}$$

This inequality is equivalent to

$$a \leq \frac{\delta\mu_r}{\delta\left(1-h\right)\mu_p} = \frac{\mu_r}{\left(1-h\right)\mu_p} \equiv \tilde{\alpha} \tag{2}$$

The righthand side of this inequality is the relevant cost-benefit ratio of a rich person with the power to decide on behalf of all rich to transfer an equal amount from each of them to the poor. His marginal utility of money $\delta\mu_r$ constitutes the cost, the benefits are $\delta\left(1-h\right)$ - the total amount of resources transferred from the rich - multiplied with the marginal utility of money of the the poor. The $\tilde{\alpha}$ in (2) is the highest value of the social concern that is consistent with no poverty relief. Hence, (2) states that the rich has lower social concern for the poor than this threshold value of the cost-benefit ratio of poverty relief. The lower this

cost-benefit ratio is - i.e. the lower is $\tilde{\alpha}$ - the less social concern the rich must have for the poor in order for there to be no sizeable poverty alleviation.

We will utilize this in our suggested measure of social miser attitudes. The idea is to compare the cost benefit ratio of poverty relief to the actual poverty rates. A high poverty rate in spite of a low cost benefit ratio of poverty relief must be an indication of severe miser attitudes. Thus we suggest a miser measure m as the ratio of the poverty rate relative to the cost benefit ratio, that is

$$m = h\frac{1}{\tilde{\alpha}} = h\frac{(1-h)\,\mu_p}{\mu_r} \tag{3}$$

In the last expression of (3), the poverty rate h is multiplied by the implicit benefit-cost ratio of poverty relief – expressing the same social attitudes as above. In other words, a miserly society has high poverty in spite of high benefit-cost ratio of poverty relief.

To have a clear distinction between being poor and non-poor we define the income of the average rich person as i_r that is the sum of the poverty line income z and their excess income y_r beyond the poverty line. Hence, $y_r = i_r - z$ if $i_r \geq z$, and zero otherwise. Using this we obtain an operational measure of revealed miser attitudes in a simple way by assuming a utility function of the rich as $U(y_r) = z + \log y_r$ implying that their marginal utility is $\mu_r = 1/y_r$. Consequently, if both the rich and the poor have the same utility function, the marginal utility of the poor equals, $\mu_p \equiv 1$ as their incomes are below the poverty line.

Applying these assumptions in (3) we obtain the following simple measure of miser attitudes

$$m = h\,(1-h)\,y_r \tag{4}$$

Does this measure captures what we consider basic intuitions about miserly behaviors?

Our basic intuition is that poverty in the midst of affluence is an indication of miser attitudes. The higher the affluence for a given poverty rate, the higher the miser attitudes. This intuition is captured by (4) as the total resources controlled by the rich, $(1-h)\,y_r$, indicates the total affluence of society and the measure m is increasing in this indication of affluence. It is also appeals to intuition that for a given affluence the revealed miser attitudes are higher the more poverty there is. Again this intuition is captured by our measure since m is increasing in the degree of poverty h for a given affluence $(1-h)\,y_r$.

If two societies have the same poverty rates but different incomes per rich person, our intuition states that the society with the higher income is more miserly than the other.

Clearly, this intuition is also captured by (4) since the value m is increasing in the incomes of the rich y_r. As the rich get richer the cost of transferring resources to the poor declines. If a substantial fraction in society nevertheless remains miserably poor, it is an indication of miser attitudes - just as our measure states.

Intuition also tells us that the impact of a higher y_r on the revealed miser attitudes should not be particularly high when either the poverty rate is extremely high or extremely low. When the poverty rate is extremely high there are consequently few contributors to poverty relief and the burden on each of them becomes high. To denote a rich person a social miser if he does not contribute under these circumstances, may therefore require that he has a higher income y_r than in cases with lower poverty rates and more potential contributors. When the poverty rate is extremely low the impact of a higher y_r on the revealed miser attitudes should be low as the poverty problem is less severe. All in all this implies that for a given income y_r of each rich person, the revealed miser attitudes should be highest at intermediate levels of poverty. This is captured my our measure as m is highest when $h = 1/2$ which implies that the dependency ratio $h/(1-h)$ the number of poor relative to non-poor members is equal to 1.

Finally, intuition tells us that any transfers from the rich to poor should reduce the miser measure. To see that this intuition indeed is captured by our simple measure (4) requires a little more formalism. Consider the case where the rich transfer resources to the poor that helps a fraction $\epsilon < h$ of the population out of poverty. Poverty is reduced from h to $h^* = (h - \epsilon)$. Each person in the targeted group obtains resources x that costs each of the rich $\epsilon x/(1-h)$. Let the average income of the poor prior to the transfer be y_p. The transfers that we consider must therefore be so high that $x + y_p \geq z$. After the transfer the average excess income of the non-poor becomes

$$y_r^* = \frac{\epsilon(x + y_p) + (1-h)(i_r - \epsilon x/(1-h))}{(1-h+\epsilon)} = \frac{(1-h)y_r - \epsilon(z - y_p)}{(1-h+\epsilon)}$$

Hence, the affluence decline as

$$(1-h^*)y_r^* = (1-h)y_r - \epsilon(z - y_p) < (1-h)y_r$$

The new value of the miser measure becomes

$$m^* = h^*(1-h^*)y_r^* = (h-\epsilon)(1-h)y_r - (h-\epsilon)\epsilon(z-y_p) < h(1-h)y_r = m$$

The new value of the miser measure m^* is lower than the old m as $h^* < h$ and $(1-h^*)\, y_r^* < (1-h)\, y_r$.

If the transfer to the poor is not high enough to bring anybody in the targeted group above the poverty line, we have $x + y_p < z$. In this case the head count measure of poverty becomes unaffected by the transfers, but the income of the rich declines by the transfer to the poor. The excess income of each rich person becomes

$$y_r^* = y_r - \epsilon x / (1-h) < y_r$$

Hence, also in this case the new value of the miser measure is reduced when the rich transfer resources to the poor

$$m^* = h\,(1-h)\, y_r^* < m$$

Let us then consider changes over time. In a society where the income of the rich grows with a certain rate we might be interested in knowing how fast poverty has to decline in order to have a constant measure of miser attitudes? From (4) we obtain

$$\frac{\dot{m}}{m} = \frac{\dot{y}_r}{y_r} + \left(\frac{1-2h}{1-h}\right)\frac{\dot{h}}{h}$$

implying that

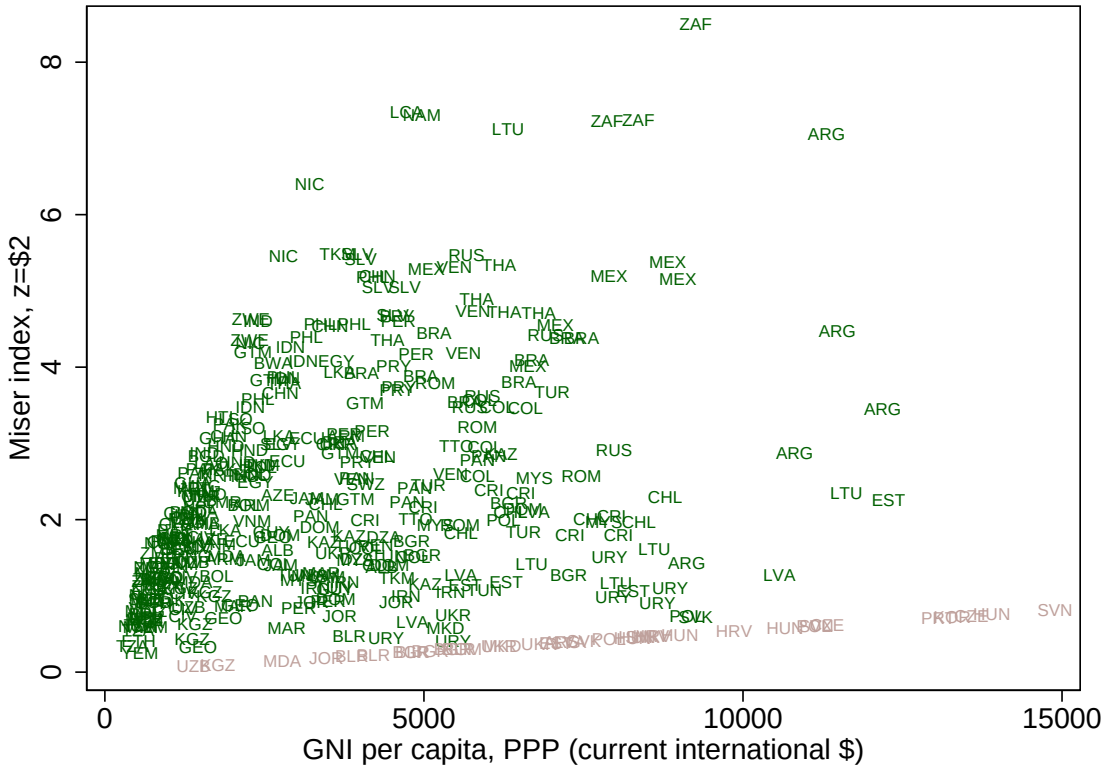
$$\dot{m} = 0 \;\; => \;\; \frac{\dot{h}}{h} = -\frac{1-h}{1-2h}\frac{\dot{y}_r}{y_r} \;\; \text{for } h \neq 1/2$$

Growing incomes to the rich with a yearly rate of say k per cent is consistent with a constant miser index if it is met by (i) a yearly reduction in the number of poor people that is higher than k per cent when $h < 1/2$, and (ii) a growth in poverty that is less than k per cent when $h > 1/2$.

3 Miser rankings and its correlates

To apply our miser index in (4), it is necessary to calculate y_r,the average income of the non-poor beyond the poverty line. It is sufficient to know the average income per capita I in the country, the head count ratio of poverty h, and the poverty gap ratio $g = (z - y_p)/z$ for the chosen poverty line z – all of which are reported by the World Bank. We calculate the average non-poor income y_r as follows

Figure 1: The relationship between the Miser index and national income



Countries with head count rates below 2% are depicted in grey

$$y_r = \frac{I - hz\,(1-g)}{1-h} - z$$

We find the data on I, h, g for a large number of countries, and for some countries for several years, in the World Data Indicators (World Bank XXXX) using per capita GNI to measure income per capita I. When y_r is known we can easily calculate the miser index $m = h\,(1-h)\,y_r$.

Figure 1 shows a scatter plot of the calculated miser index against GNI per capita. As we see there is a considerable variation among miserly countries. Most of them have reasonably high incomes, and could therefore easily afford to alleviate extreme poverty at a quite low cost. Yet both quite poor countries and quite rich countries are among the countries with high levels on the miser index. This confirms that the index measures something beyond income.

Table 1 shows the 20 most miserly countries.[1] In the appendix we report the full ranking of all developing countries. As an indication of the magnitudes of the poverty problem relative to the countries' ability to transfer resources to the poor, we also calculate the hypothetical tax rate on all production in the country that would be just high enough to finance the total poverty gap of the country hzg. Thus the production tax is $t = hzg/I$.

Table 1: The 20 most miserly countries

Country	Survey year	Tax rate	Head count ratio	GNI/cap	Miser index
South Africa	2000	0.99%	34.07%	9260	8.50
St. Lucia	1995	4.02%	59.76%	4730	7.34
Namibia	1993	4.46%	55.78%	4970	7.31
Argentina	2003	0.54%	22.98%	11310	7.05
Nicaragua	2001	9.35%	79.91%	3210	6.41
China	2001	3.15%	46.67%	4270	5.20
Philippines	2000	3.10%	47.48%	4200	5.18
Mexico	2002	0.55%	21.19%	8980	5.15
El Salvador	2002	3.09%	40.54%	4700	5.05
Thailand	2002	0.67%	25.86%	6800	4.72
Zimbabwe	1995	15.37%	82.97%	2290	4.63
India	2000	10.99%	81.30%	2400	4.61
Brazil	2003	0.81%	21.73%	7470	4.39
Venezuela, RB	2000	1.34%	27.81%	5620	4.18
Peru	2002	2.03%	32.10%	4880	4.17
Indonesia	2002	3.69%	52.42%	3110	4.08
Egypt, Arab Rep.	2000	2.28%	43.89%	3630	4.08
Botswana	1986	8.48%	61.31%	2640	4.06
Paraguay	2002	2.61%	33.22%	4530	4.01
Sri Lanka	2002	2.39%	41.43%	3680	3.93

As seen South Africa turns out to be the most miserly country according to our data.

[1]For each country, the most recent data are used.

South Africa is rich by African standards, but has nevertheless a very high poverty rate of more than 34 per cent in year 2000. The huge inequalities of the country is inherited from apartheid. But since ANC took over in the early 1990s South Africa could have 'eliminated' all its extreme poverty by a production rather small production tax – of less than one per cent in year 2000. Having not done so, can be interpreted as a sign that the process of social and political conciliation after the war also has lead to a miserly behavior towards the poor – as our index indicates.

Moving down the list there is an interesting contrast between Argentina - the fourth most miserly country - and Nicaragua - the fifth most miserly country on our list. While Argentina is almost four times as rich as Nicaragua and could have eliminated its poverty of 23 per cent of the population by a production tax of a little more than 0.5 per cent only, Nicaragua would need a production tax of almost 10 per cent to eliminate its poverty rate of almost 80 per cent of the population. In spite of these huge differences the two countries end up as almost equally miserly according to our index. The basic reason for this is that the average income of the non-poor in Nicaragua is at the same level as the average income of the non-poor in Argentina. This can actually be read from the table as a poverty rate h around 20 per cent (in Argentina) and around 80 per cent (in Nicaragua) yield the same value of the product $h(1-h)$. Thus the two countries must have similar average incomes per non-poor member as they end up with an almost equal index score of $m = h(1-h)y_r$. In fact, while the higher affluence $(1-h)y_r$ in Argentina is mitigated in the miser index by a lower poverty rate, the four times higher poverty rate in Nicaragua is mitigated in the miser index by a lower affluence.

Since the China - India comparison is often emphasized (see for instance ch 11 in Dreze and Sen 1989) it should be noted that table 1 ranks China way above India in miserly attitudes (6th place versus 12th place). The head count measure of poverty in India is almost twice as high as the Chinese level. The reason why China is considered more miserly than India is basically that China is more affluent and has more potential contributors to alleviate poverty than potential receivers of poverty support. This is in contrast to the poorer India that has more than 80 per cent potential receivers of poverty relive and only 20 per cent contributors.

It is also interesting to see from table 1 that Botswana, the African growth success

per excellence, actually ends up among the top twenty miserly countries (on 18th place on our list). Although the country since independence has experienced the highest economic growth in the world, it has been much less successful in eliminating poverty. In 1986 (the most recent observation of poverty levels in the country) the poverty rate was still more than 60 per cent. Sri Lanka on the 20th place is also considered a success story according to some social indicators. For instance, the population of Sri Lankan has a life expectancy at birth of almost 73 years which is way beyond what other countries at this income level have. Yet Sri Lanka has not been equally successful in eliminating income poverty.

To see some of the characteristics of miserly countries, Table 2 show the results from regressions of a number of indicators of policies and social outcomes on the miser index, controlling for log income. There is no clear direction of causality in these estimates, so they should be seen more as correlations than structural relationships.

First, we see that more miserly countries on average have lower public expenditures on health. This is what we should expect. A general provision of health care is a pro-poor policy and since miser countries are considered to reveal little care for the poor one should expect that they don't spend much on general health care as well. As table 2 demonstrates there is a tendency that fertility rates are higher in more miserly countries. This may be interpreted as a side effect of a low level of health care and low education. As seen from the table primary education is positively associated with miser attitudes, while secondary and tertiary education are negatively associated with miser attitudes. In sum table 2 demonstrates that miserly countries educate their populations to a limited extent, and does neither provide them with health care nor with higher education.

As table 2 also demonstrates we find no relationship between (i) military expenditures and miser attitudes and between (ii) the inflow of foreign aid and miser attitudes. Thus we find no support for our hunch that miser attitudes go together with canons for butter policies (but the data on military spending are not particularly reliable). Neither does it seem to be the case that miser countries are favored by the international aid community.

Next we attempt to identify what institutional arrangements affect miser attitudes. Table 3 show the results from regression of the miser index on measures of democracy from the Polity IV database (ref) and a composite index of institutional quality, actually the average of five sub-indices, taken from Sachs and Warner (1997).

Table 2: The correlation of the miser index with some outcome measures

	Miser index		Observations	R^2
	Coefficient	t-value		
Health expenditure, public (% of GDP)	-0.512	(3.97)**	146	0.4
Military expenditure (% of GDP)	0.193	(0.51)	284	0
Fertility rate, total (births per woman)	0.206	(2.23)*	226	0.59
Life expectancy at birth, total (years)	-0.755	(1.58)	221	0.6
Aid (% of GNI)	-0.003	(0.01)	361	0.41
Labor force with primary education (% of total)	7.879	(2.73)**	63	0.13
Labor force with secondary education (% of total)	-9.121	(3.18)**	61	0.28
Labor force with tertiary education (% of total)	1.124	(0.57)	62	0.02
School enrollment, primary (% gross)	4.567	(2.88)**	120	0.24
School enrollment, secondary (% gross)	-5.971	(2.67)**	114	0.5
School enrollment, tertiary (% gross)	-6.555	(4.20)**	109	0.47

*The table show the estimates from a regression of the outcome on the miser index and log income. * signifies significant at 5%; ** significant at 1%*

The first thing we notice is that, controlling for log income, democratic regimes seem to be more miserly than autocratic regimes. From columns (1) to (3), this effect is seen to hold when using the measure of democracy, the measure of autocracy, and the composite of the two. This finding is somewhat in line with views that emphasize that democracy in developing countries is more efficient in fighting temporary poverty related to famines and catastrophes than they are in fighting chronic poverty which show up as a high level of extreme poverty (see for instance Dreze and Sen 1989, and Sen 2000). Building on this, one possible assertion is that the chronic poor can be more of a threat to autocratic regimes than to democratic ones implying that democracy in developing countries tends to be no guarantee against miser attitudes towards the worst off.

The second thing we notice from table 3 is that good institutional quality seems to reduce the level of miser attitudes. The index used is an average of five indexes that capture the rule of law, bureaucratic quality, corruption in government, risk of expropriation and government

Table 3: The relationship between the miser index and measures of democracy and institutions

	(1)	(2)	(3)	(4)	(5)
Log GNI	0.480	0.474	0.476	0.446	0.555
	(8.24)***	(8.02)***	(8.12)***	(7.84)***	(9.40)***
Institutionalized democracy score	0.032				
	(2.82)***				
Institutionalized autocracy score		-0.037			
		(2.47)**			
Democracy - Autocracy			0.018		0.021
			(2.74)***		(3.13)***
Quality of institutions				-0.130	-0.147
				(4.16)***	(4.47)***
Constant	-2.676	-2.362	-2.523	-1.710	-2.481
	(5.79)***	(4.94)***	(5.43)***	(3.97)***	(5.51)***
Observations	210	210	210	243	195
R^2	0.28	0.28	0.28	0.21	0.35

*Dependent variable is the Miser index with poverty line z = 2$. * significant at 10%; ** significant at 5%; *** significant at 1%*

repudiation of contracts. One reading of this finding is that miserly countries tend to have more rule bending and to be more venal and bureaucratic inefficient.

The two findings that (i) democracy and (ii) bad institutions both tend to go along with miser attitudes also hold when we control for them simultaneously as reported in column (5) of table 3. It is therefore tempting to assert that many miserly countries tend to be imperfect democracies with bad institutions.

A final point that we consider is the relationship between miser attitudes and growth. On the one hand, one could imagine that miserly countries, by hoarding wealth among the rich, would boost investments and hence grow faster, potentially generating a trickle down

effect to the poor at some stage of development. If this were true we may have misclassified countries as miserly while they instead may follow a strategy of growth mediated poverty alleviation. The high levels of poverty that they presently have may be due to some non-monotonicity between growth and extreme poverty (a la Kuznets 1956) On the other hand, miserly countries may simply be very unequal countries with a high level of social exclusion that both can be viewed as obstacles to growth and development.

Table 4 show the results from some growth regressions. We look at growth during three periods, 1960-2000, 1975-2000, and 1990-2000. In columns (1) to (3), we use the earliest measure of the miser index available in an attempt to capture the causal effect of miser attitudes on growth. There seems to be essentially no impact from the miser index to the subsequent growth.

In columns (4) to (6) in table 4, we instead use the most recent measure of the miser index available. Now there seems to be a positive relationship between miser attitudes and growth, albeit not a strongly significant one. In addition we have to admit that it is not easy to interpret the causality of this relationship. Given the results in columns (1) to (3), the most reasonable assertion may be that growth increases the affluence of the country without reducing poverty very much. Thus miserly countries can be seen as countries with inequitable growth that makes the non-poor richer and leave the worst off further behind. Referring to the discussion in the end of section 2, miserly countries may have a growth of the average income of the non-poor y_r that is higher than $(1-2h)/(1-h)$ times the reduction in poverty. When this is the case, revealed miser attitudes increases over time.

4 Is the world becoming more miserly?

We could also treat the whole world as one society where the rich have a responsibility for helping the poor. How miserly is then the world, and how has this changed over time? To answer these questions, we have made some fairly rough calculations of the global Miser index from 1975 to 2005. The data sources are the same as above. We first calculate the head count ratio and poverty gap ratio for all available countries by linearly interpolating the available data. For countries without data on poverty, we treated poverty as zero if the country had a GNI above 10000 PPP$, otherwise as missing. The complete procedure is

Table 4: Growth and misery

	(1)	(2)	(3)	(4)	(5)	(6)
	Earliest measure of Miser index			Latest measure of Miser index		
	1960-2000	1975-2000	1990-2000	1960-2000	1975-2000	1990-2000
Miser index, z=$2	0.001	-0.000	-0.001	0.004	0.003	0.004
	(0.22)	(0.07)	(0.26)	(1.90)	(1.11)	(1.30)
Log initial GDP	-0.003	-0.000	0.003	-0.005	-0.001	0.001
	(1.10)	(0.09)	(1.13)	(1.72)	(0.47)	(0.24)
Constant	0.038	0.014	-0.013	0.044	0.019	0.002
	(1.93)	(0.67)	(0.57)	(2.32)*	(0.89)	(0.09)
Observations	60	74	81	60	75	86
R^2	0.02	0.00	0.02	0.08	0.02	0.02

*Dependent variable is average annual growth rates over the given period. The measure of the Miser index employed is either the earliest available observation or the last available observation. * signifies significant at 5%; ** significant at 1%*

explained in Appendix X. Adding up, we get the results shown in Figure 2.

The related, but different question of global inequality has received a lot of attention recently (Milanovic 2005, Sala i Martin 2006). We follow a cruder approach than most of this literature, but do also answer a different question. Our results are reasonable, although not very optimistic results. Global miserliness has been rising almost monotonically over the whole period. The head count ratio has declined somewhat, from about 51% to about 44 %, but this is out of proportion to global GNI per capita, which has multiplied by five over the same period. Only a very small fraction of global growth over the last twenty years has gone to alleviate poverty, hence the dramatic rise in global miserliness.

Figure 2: The evolution of the Miser index globally