Income Distribution Trends in Brazil and China: Evaluating Absolute and Relative Economic Growth

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Abstract

Over the past two decades real per capita income has increased significantly in Brazil and spectacularly in China. Relative inequality in the distribution of income, however, has remained high in Brazil and has worsened in China. This paper uses a "stochastic dominance" approach to evaluate the welfare effects of a combination of rising mean per capita income in the context of worsening relative inequality. It concludes that by this criterion economic welfare in Brazil increased slightly in the 1981-2002 period. In China, the rapid increase in mean per capita was more than sufficient to overcome significantly increased relative inequality. Between 1985 and 2001 economic welfare thus increased substantially. The overall increase in welfare in both countries, however, is more complex when analyzed by consideration of specific time periods or by rural-urban decomposition.

1. Introduction

One of the apparent disappointments of economic growth in a number of the major developing economies has been the seeming correlation between per capita income growth and worsening inequality in the distribution of income. These two features of the growth process are often discussed as if each could be considered independently. This is in part due to the fact that aggregate statistics used to characterize each trend, such as per capita income or consumption as a measure of overall growth, and the Gini coefficient or the Lorenz curve as indicators of relative income inequality, may indeed be calculated and examined in isolation from each other.

The difficulty with considering each trend in isolation is that it easily leads to arbitrary value judgments about the success or failure of the development process. A more systematic approach must consider per capita income growth and relative inequality in the distribution of income simultaneously. This paper uses a utility-based or “stochastic dominance” approach to examine the effects of economic growth in recent decades in Brazil and in China.

The use of stochastic dominance rules to compare income distributions is not new. [1] This paper extends the approach, however, by using stronger and computationally simpler criteria to make such comparisons. Section 2 is summarizes the intuition, assumptions, and methodology of the stochastic dominance comparison. Section 3 applies the method to data from Brazil’s *Pesquisa Nacional por Amostra de Domicílios* (PNAD), or National Household Sample Survey, from 1981 to 2002, noting some of the sample-specific and country-specific features of these data. Section 4 is a similar application to China’s State Statistical Bureau Annual Household Survey, using data from 1985 and 2001. The paper concludes in Section 5 with a discussion of some of the empirical and theoretical limitations faced by any utility-based evaluation of income trends.

2. Stochastic dominance comparisons of income distributions

Amartya Sen (1997) has suggested that characterizations of income distributions and inequality fall into two general categories, “objective” and “normative”.[2] The approach of this paper falls into the latter category, since it rests on explicit assumptions about preferences. In this section we outline, without proofs, the stochastic dominance approach to evaluating income distributions.

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[1] An early theoretical work relating stochastic dominance to choice among income distributions was Atkinson (1970), with subsequent work by Foster and Shorrocks (1988). The method has been used in Brazil by Barros and Mendonça (1995) and Barros and Ramos (2005). It does not appear to have been used with Chinese data.

[2].

If we ask if one country's distribution of personal incomes would be preferred to that of another country, or if it would be preferred to an earlier distribution of income in the same country—in other words, has it improved?—we are essentially asking about choices between probability distributions. This is the intuition of the stochastic dominance criteria when applied to the evaluation of income distributions. It may be seen more clearly in a simple comparison of two alternative distributions (*F(y)* and *G(y)*) of the incomes *(y)* of three individuals, as represented in Figure 1. The two underlying densities (*f(y)* and *g(y)*) are shown in the lower panel, with the three individual incomes in density *g(y)* denoted with O and the three incomes in *f(y)* denoted by X. The corresponding distributions *F(y)* and *G(y)* are shown in the upper panel. All six incomes lie in the interval between 0 and some maximum income *M*.

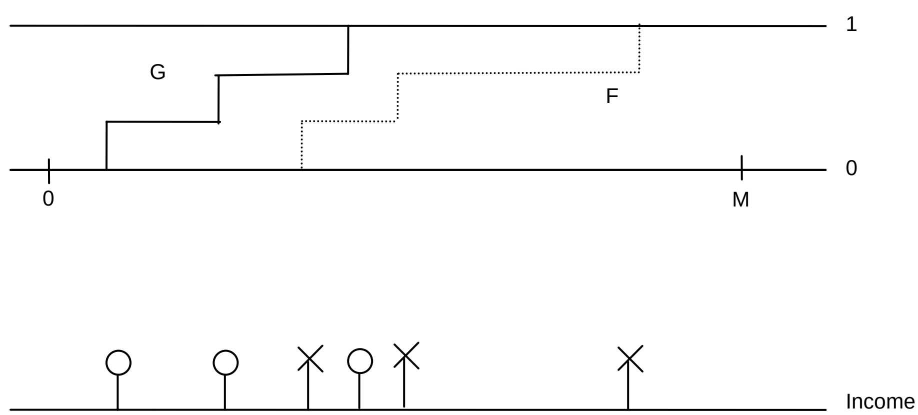

Figure 1.

The poorest of the three individuals in *f(y)* clearly has a lower income than that of the highest member of *g(y)*. If one could choose to be the highest income member of the *g(y)* economy, this would be superior to being the poorest person in *f(y)*. But if one could only choose between being a member of the *f(y)* economy or the *g(y)* economy, without choosing which member one could be, anyone who prefers a higher income to a lower one (i.e., anyone for whom the marginal utility of income is positive, or $U_1(y) > 0$) would prefer the *f(y)* economy. More formally, the difference between the expected utilities of the two distributions is positive, or $E\{U[f(y)]\}$ and $E\{U[g(y)]\} > 0$.

As may be seen by examination of the upper panel, the difference between the distribution $G(y)$ for the less preferred economy and that of the more preferred one $F(y)$ is always non-negative, meaning that $G(y)$ always lies vertically above or on $F(y)$[3]. This condition, known as "First Degree Stochastic Dominance" (FSD) holds for any utility function in which the marginal utility of income is positive ($U_1(x) > 0$). Formally, FSD holds if $H_1(y) = G(y) - F(y) \geq 0$ at all points on [0, M], a requirement sometimes referred to as the "FSD integral condition". In Figure 1, for example, it can easily be seen that this requirement is satisfied.

There are several limitations this rule. First, evaluation of $H_1(y)$ may be difficult for large income distribution data sets. Second, it permits only a partial and possibly rather weak ordering of income distributions, since there are many cases in which the two distributions $G(y)$ and $F(y)$ may intersect. In this case, $H_1(y)$ varies in sign and judgments about the relative desirability of one income distribution over another are not possible without further restrictions on preferences. This is the case, for example, for income distributions whose means are equal, but for which one of the distributions of income is more dispersed or inequitably distributed.

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[3] This criterion was originally discovered by Lehmann [1955] and introduced into the economic literature by Quirk and Saposnik [1962].

If we are willing to place the additional restriction on the utility function that it is risk averse ($U_2(x) < 0$ in addition to $U_1(x) > 0$), then a stronger rule, "Second Degree Stochastic Dominance" (SSD) may be derived.[4] Although this rule in principle can order a larger set of distributions, it requires examination of the integral of the difference in the two distributions over [0, *M*]. SSD holds if $H_2(y) = \int_0^y H_1(x)dx \geq 0$ over [0, M]. Like the weaker FSD rule, it too is a partial ordering. An added restriction on the utility function, that risk aversion be non-increasing with income or wealth (a sufficient, but not necessary condition for ($U_3(x) > 0$) permits the derivation of an even stronger rule, "Third Degree Stochastic Dominance" (TSD).[5] The corresponding "integral condition" for TSD is that $H_3(y) = \int_0^y H_2(x)dx \geq 0$ over [0, M].

It is clear that examination of the repeated integrals $H_1(y)$, $H_2(y)$ and $H_3(y)$ over all of [0, M] is a can become a computationally burdensome task for large data sets, possibly making the empirical implementation of stochastic dominance rules intractable. It would also appear that the derivation of higher degree stochastic dominance rules, beyond SSD or TSD, simply adds another difficulty, since it requires additional restrictions on utility that have no obvious economic meaning. It is probably for these

[4]SSD was discovered by Hardy, Littlewood, and Polya [1934] and was introduced to economists, apparently independently of each other and of earlier work, by Fishburn [1964], Hadar and Russell [1969], and Hanoch and Levy [1969]. A special case of this rule, applicable when the means of the two distributions are equal was Rothschild and Stiglitz' "Mean Preserving Spread" (1970).

[5] The TSD rule was discovered by Whitmore (1970). A special case of this rule, which applies to the choice between distributions of equal mean and equal variance, is the "Mean-Variance Preserving Spread" of Menezes, Geiss, and Tressler (1980).

two reasons that despite our theoretical understanding of stochastic dominance rules for over forty years, they have had limited empirical use.

This is an overly pessimistic conclusion. In contrast to economists and operations researchers, most laypeople associate an increase in the risk or undesirability of an uncertain prospect not with an increase in variance, but with higher chances of the worst possible outcomes. This intuitive notion of increased risk can be formalized by defining an increase in risk as the transfer of some of the mass of the distribution to the worst case outcomes, or thus to the lower tail of the probability density. If this is done without regard to the means and other moments of the original and the transformed distributions, then the original distribution will dominate the transformed one by the FSD rule. If the downward transfer of some of the mass to the worst case values is made subject to the constraint that the means of the two distributions remain unchanged, then the original distribution will dominate the transformed one by the SSD criterion. Similarly, a downward transfer that keeps the mean and variance unchanged will permit a ranking by the TSD rule, even though lower degree rules like FSD or SSD would not be satisfied.[6]

The procedure of transferring some of the mass of the distribution downwards to worst case outcomes may be repeated, subject to the increasing constraints that the mean, variance, third central moment, and increasingly higher central moments remain unchanged. Each higher degree transfer corresponds to a stochastic dominance rule that can order an increasingly larger set of distributions.

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[6] This type of transformation, or "mean-variance preserving spread" (MVPS), analyzed by Menezes, Geiss and Tressler (1980), is characterized by them as an increase in "downside risk".

By itself, this result would be of little more than theoretical interest. Repeated integration by parts of the $H_i(y)$ terms, however, shows that the value of each of these terms at the end of the interval [0, M] is a linear function of differences in the moments of the two distributions. It can be shown that higher odd central moments and lower even central moments increase the preference for $f(x)$ over $g(x)$.[7] Since we may calculate moments from any set of empirical distributions, it is therefore a relatively straight-forward task to decide if one distribution is superior to another by any of the first through *Kth*-degree stochastic dominance rules.[8]

Expression of preference among distributions using this moment-based measure also permits a more general measure of dispersion or inequality than do conventional measures based on variance. If we express each distribution in terms of deviations about their respective means, the first term in the $H_k(\mathrm{M})$ measures is eliminated (and hence, $H_2(\mathrm{M}) = 0$). Although $H_3(\mathrm{M})$ is then simply equal to half the variance, the higher terms allow increasingly higher-order central moments to affect preference, in contrast to mean-variance analysis. This feature may be of interest when we are concerned with low but positive probabilities of extremely unfavorable outcomes, such as starvation-level poverty or economic disaster.

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[7] $H_3(M)$, for example, equals $-\mathrm{M}(\mu_{1f} - \mu_{1g}) + (1/2)(\mu_{2f} - \mu_{2g})$, while $H_4(\mathrm{M}) = -(\mathrm{M}^2/2)(\mu_{1f} - \mu_{1g}) + (\mathrm{M}/2)(\mu_{2f} - \mu_{2g}) - (1/6)(\mu_{3f} - \mu_{3g})$ and $H_5(\mathrm{M}) = -(\mathrm{M}^3/6)(\mu_{1f} - \mu_{1g}) + (\mathrm{M}^2/2)(\mu_{2f} - \mu_{2g}) - (\mathrm{M}/6)(\mu_{3f} - \mu_{3g}) + (1/24)(\mu_{4f} - \mu_{4g})$, where the μ_{ig} and μ_{if} are the *i*th moments of the respective distributions. The evaluation of the $H_k(\mathrm{M})$ may be further simplified by standardizing the observations to fit on the unit interval [0. 1].

[8] When the income distribution data is available in a form that shows non-negative changes for each observation or category, when comparing $f(x)$ to $g(x)$, then FSD will hold and higher-level stochastic dominance rule tests are unnecessary. This is the case with some of the Brazilian and Chinese data considered in Sections 3 and 4.

3. Changes in the Brazilian distribution of income

Serious debate about trends in the Brazilian distribution of personal income began in the 1970s, with the release of data showing that relative inequality had worsened between the 1960 and the 1970 census. Per capita income increased by over 2 percent at annual rates over the decade, with the last years of the period pointed to by the military government as an "economic miracle" (*o milagre econômico*"). Over the same period, however, the Gini coefficient worsened from 0.50 to 0.57, making the Brazilian income distribution one of the world's most inequitably distributed ones.

The debate had a decidedly ideological aspect, with Langoni and others arguing that worsening inequality was to be expected in the development process, reflecting the increasing returns to human capital as growth accelerated.[9] Critics of this view associated the worsening inequality with wage repression by the authoritarian governments of the post-1964 period. In the absence of reliable large-sample data on personal income the debate was inconclusive. It did serve, however, to show the need for more serious empirical investigation of Brazilian income trends.

This need was addressed by the institution of a large scale household sample survey, *Pesquisa Nacional por Amostra de Domicílios* (PNAD), or National Household Sample Survey, which from 1981 onwards covered almost all of Brazil. In recent years the sample has been based on more than 100,000 households. Several of the questions focus on monthly household real income, while others attempt to characterize quality of

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[9] Langoni (1973) used a human capital model to argue that economic development raised the returns to educated labor. Bacha and Taylor (1978) and others attributed most of the worsening inequality to lagging wage adjustment and salary repression as inflation accelerated.

housing, access to public utilities, ownership of durables, and other components of the household's standard of living. Summary statistics from the PNAD's for 1981, 1992, and 2002 are shown in Table 1.

Table 1. Brazilian Income Distribution

	1981	1992	2002
Income Decile			
1	27	19	29
2	54	49	65
3	78	74	96
4	105	103	131
5	137	137	171
6	177	178	224
7	233	233	291
8	322	314	399
9	499	477	617
10	1418	1342	1803
Average	305	292.6	382.6

Income in October 2002 reais. Source: Ramos e Mendonça (2004), primary source PNAD.

The first decade of the 1981-2002 period was one of considerable macroeconomic disequilibrium, with a sharp fall in real growth and accelerating inflation. This was most pronounced in the early 1990s, when income actually fell to levels below that of 1981, following several failed stabilization programs. This fall was followed by a significant recovery with the implementation of the Plano Real in 1994. By 2002 real income levels for all deciles of the income distribution were higher than they had been in 1981.

It is clear from the table that despite the sharp downward and then upward moves in per capita income, there was little change in the distance between rich and poor over the two decades. Relative income inequality actually worsened, with the Gini coefficient rising slightly (from an already high 0.58 to 0.59) and the ratio of incomes of the top decile to average income in the lowest four deciles rising from 21.5 to 22.4.

The stochastic dominance approach discussed in the preceding section provides some insight into the effect of this combination of small increases in average income and worsening inequality on welfare. Between 1981 and 2002 all deciles of the Brazilian income distribution had modest to significant increases in the mean income of their group. Thus the cumulative distribution of income in 2002 (denoted by $F(x)$) lay wholly below that of 1981 ($G(x)$. As $H_1(x) = G(x) - F(x) \geq 0$ for all x implies First Degree Stochastic Dominance, we can conclude that the rise in income, especially after the Plano Real, was sufficient to overcome the negative effects of a slight worsening of inequality over the whole period.

This was definitely not the case between 1981 and 1992. Real income fell by more than 4 percent, with the Gini coefficient unchanged at 0.58. Aggregate trends, however, mask the changes in individual income categories. The period was a disaster for Brazil's poorest decile of income earners, whose income in 1992 had fallen about 29 percent from its 1981 level. Because average incomes in the middle deciles remained virtually unchanged, with a 0.56 percent rise for one group (those in the sixth decile), the cumulative distributions for 1981 ($F(x)$) and 1992 ($G(x)$ intersect. The FSD criterion is therefore not satisfied. But application of the next higher rule (SSD) shows that by this criterion the change from 1981 to 1992 was unambiguously negative. All risk averse Brazilians would have considered the 1981 income distribution better than that of 1992.

4. Chinese income distribution changes

Rapid growth in China in the past two decades, like Brazil during the "*milagre econômico*" years, has been accompanied by a marked worsening of relative inequality. Consistent and intertemporally comparable income distribution data has not been available in China for as long as it has in Brazil, and even today official publications make interpretation more difficult than is the case in Brazil.[10] As a result, there are varying estimates of the degree of increase in inequality, but there is little disagreement that inequality has worsened substantially during a period of unprecedented average income growth.[11]

Since 1985 China's National Statistics Bureau has published annual summary data from its National Household Sample Survey, which is comparable in size to Brazil's PNAD. The Chinese survey is a stratified sample of more than 30 thousand urban and 60 thousand rural households throughout all provinces and other administrative regions. Households remain in the annual survey for three years, when a third of them are replaced with new ones. Publicly-available data from the survey since 1985 consist of summary statistics by income categories, as well as data on mean income, Gini coefficients, and other aggregate measures.

Wu and Perloff (2004) have used an indirect "maximum entropy" method to estimate the underlying rural, urban, and overall income distributions for each year over

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[10] See Bramall (2001) and Fang, Wailes and Cramer (1998).

[11] The trend toward worsening inequality predates the period considered in this section. Worsening relative inequality has been examined by Khan and Riskin (1998), and Yang (1999).

the 1985 to 2001 period. The data presented in Appendix A are based on their overall estimates for 1985 and 2001, and are represented graphically in Figure 2.

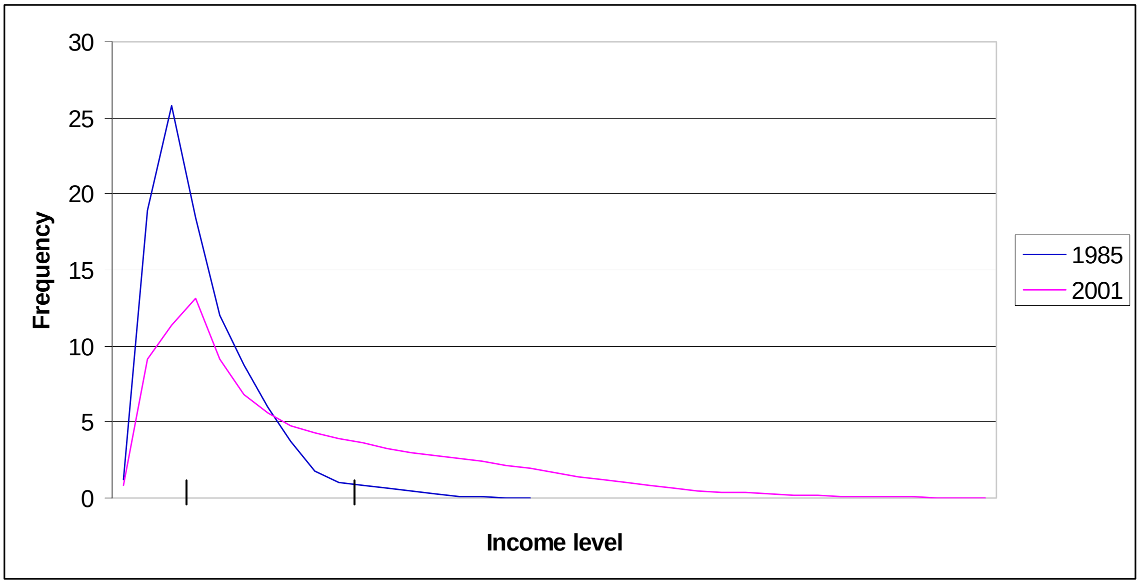

Figure 2: Frequency Distributions, Chinese Total Income

Mean income in 2001 was more than three times its 1985 level in constant (1985) yuan. Although there was a modest increase in the mode of the income distribution (from 313 to 438 yuan) most of the increase in mean per capita income came from a sharp increase in the frequencies of incomes in the highest income categories, as is apparent from Figure 2. As a result, the income distribution became decidedly more spread out, with an increase in its variance, as the upper tail of the density increased. This increase in inequality was reflected in the Gini coefficient calculated from these data, which rose from 0.310 in 1985 to 0.415 in 2001.[12] It is interesting to note that the latter measure of

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[12] These Gini coefficients were independently calculated from the data of Figure 2 and Appendix A, and match those reported in Wu and Perloff (2001) for aggregate (rural plus urban) income in the same data set. Due both to differences in coverage,

relative inequality is almost identical to that of the United States, despite the vast difference in mean per capita incomes in the two countries.

Despite the increase in relative inequality, the unprecedented growth in real per capita income made China's income distribution in 2001 clearly preferable to the 1985 distribution. Comparison of the cumulative distributions show that $H_1(x) = G(x) - F(x) > 0$ over the whole income range, where $G(x)$ is the 1985 distribution and $F(x)$ that of 2001. In terms of the stochastic dominance rules, FSD easily holds.[13]

Part of the Chinese experience becomes clearer if the urban and the rural income distributions are compared separately, as was done by Wu and Perloff (2004). Although both groups experienced substantial income increases over the period, the increase was considerably greater in urban areas. Since incomes in these areas were already considerably above rural incomes in 1985, the more rapid increase in urban incomes would have increased overall Chinese income inequality even if inequality in each subgroup had remained constant. As inequality increased in each subgroup over the 1985-2001 period, total inequality increased even more.

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definition, and estimation the Gini coefficients reported in several other studies differ from these, but all show a pronounced increase in relative inequality in this period.

[13] Since this condition implies that all higher stochastic dominance rules are satisfied, higher level SD tests are not necessary. It should be noted, moreover, that other things (such as mean income) equal, any increase in the mass in the upper tail of the 2001 density would add to the desirability of the latter distribution.

5. Conclusion: Interpreting income distribution change

Both Brazil and China provide interesting examples of economies in which increasing per capita income is accompanied by rising relative inequality. Judgments made about either trend in isolation from consideration of the other, however, are more likely to fuel ideological debates than to inform good policy.

It is clear from examination of both countries' experience in recent decades that growth has raised the welfare of the poor as well as the rich—even if those already better off have benefited much more. When countries have stumbled, as Brazil did between 1981 and 1992, it is the poor who have suffered most.

The stochastic dominance approach outlined in Section 2 suggests that for theoretically plausible utilities—especially that class of utilities which may be used to derive SD rules up to any degree—increases in the likelihood of extremely low or unfavorable outcomes weigh much more heavily and adversely on welfare than would negative shifts in the income distribution of equal magnitude occurring at higher initial levels of income or wealth. If this is so, an income fall of equal absolute magnitude is a much more serious event for a low income individual than for a high income one. The reverse side of this coin is that even modest increases in the incomes of the very poor may do much more for aggregate welfare than would similar absolute income increases for those already better off. The policy implication for both Brazil and China is that an emphasis on lower income groups in the provision of public goods is likely to have larger welfare effects than would equal expenditures that go largely to higher income groups. Expenditure on primary school and basic health services, for example, would therefore have larger impacts on welfare than would expenditures of equal size on universities or higher-end medical services.

Another implication of the stochastic dominance approach, at least for third and higher degree rules, is a ceteris paribus preference for greater positive skewness. Alternatively, this result may be interpreted as a strong argument for avoiding negative skewness, which is likely when the probabilities of very low outcomes increase. This may occur when the safety net provided by both family networks and government policy is compromised.

This point appears particularly relevant to contemporary China. The household survey data suggest that all income groups have benefited from the high rates of growth of the past several decades. But in the same period both demographic and policy changes have made a number of people more vulnerable to a possible slowing of China's growth than might have been the case in the past. The fall in family size—a trend that was well underway even before the widespread implementation of the "one child" policy for the Han Chinese—means that many elderly people have no family member to assist in their support. This is a sharp departure from many centuries of Chinese cultural and social tradition. In addition, the relaxation of residence permits and registration requirements have permitted many younger and working-age Chinese to migrate from the rural areas and the jobs to which they once would have been tied, often leaving the elderly behind.

Simultaneous changes in government policy have also increased the potential vulnerability of the poor, especially in rural areas and in provinces away from the high growth coastal areas. Virtually guaranteed jobs in the pre-Deng Xiaoping era provided a minimum level of subsistence—popularly known as the "iron rice bowl". The dismantling and termination of many state subsidized or run services and the privatization of a number of large state enterprises have taken away the iron rice bowl. Personal disasters, such as accidents or medical emergencies can be devastating for the poor.

In contrast to arbitrary definitions of a "poverty line", the stochastic dominance approach used here avoids any sharp discontinuity between the "poor" and the "non-poor". This is important for policy purposes, since improvements in the income of the very poor may not move them above the poverty line, yet would have a greater impact on welfare than would similar increases for slightly less poor.

There are some important limitations to the stochastic dominance way of making income distribution comparisons. First, it provides only a partial ordering over a set of distributions, since small chances of extremely low outcomes in an otherwise desirable income distribution will make it less preferred by those who are extremely risk averse. This may be viewed as an advantage, however, if we recognize that in such a case the impossibility of ordering is telling us that the kinds of orderings produced by comparisons of means, or of means and variances, or of shares of "poor" and "non-poor" may in fact not be legitimate for some reasonable utilities.

Secondly at an operational level, full implementation of the stochastic dominance rules requires the estimation of the moments of the underlying distributions. This appears easy when dealing with empirical distributions, for which the moments are defined. But if the underlying moments of the theoretical distributions are not defined, as is the case for some distributions, then the apparent empirical moments may be unstable. Although this is probably not the case when dealing with income distribution data, which may be well described by a number of theoretical distributions for which the moments exist, it may limit the applicability of SD rules (or any moment-based method) in some cases.[14]

A third difficulty with the stochastic dominance approach, as is the case with almost any utility-based method of choice, is that we have assumed that utility is a function of a single argument, usually income or consumption. This ignores a number of possible complications. It is possible that the income or consumption level of others—for example family members outside the household—is a secondary argument in the utility function. Alternatively, expected future income or consumption might be an argument. These potential complications may be addressed in a stochastic dominance framework, but at the cost of added complexity.

The possibility that the income or consumption of others may be an argument in one's own utility raises an interesting question in a Brazilian, or especially, in a Chinese context. An increase in inequality due to a rise in the probability of extremely unfavorable outcomes, or a "downward transfer" in the terminology of Section 2, is clearly what motivates the stochastic dominance approach, especially for higher degree rules. But in China in the past decade the increase in the dispersion or spread of the income distribution has been an "upward transfer", in which the number of households enjoying incomes at unprecedented levels has increased markedly. Since the higher level SD rules give positive weight to increases in the upper tail they are more informative than would be measures like variance that penalize any increase in dispersion of the

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[14] A related empirical issue in implementing SD measures arises from income data in which the highest income category ranges from its minimum to an undefined or unobserved upper limit.

distribution about the mean. But even the SD rules may underestimate the impact of an "income breakout" like that of contemporary China on those who are not yet in the upper tail. Like people who are excited by knowing that someone won big in the lottery, the fact that others have had rapid income increases may be viewed favorably even by those who do not share in the increase. This may be the case if they interpret the improvement in others' incomes as a signal that they too may share in this trend in the future.

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Appendix A: Chinese Income Distribution, Household Survey

From (1985 yuan)	To (1985 yuan)	1985	2001
0.0000	0.0125	1.20	0.88
0.0125	0.0250	18.90	9.09
0.0250	0.0375	25.81	11.40
0.0375	0.0500	18.43	13.16
0.0500	0.0625	11.98	9.17
0.0625	0.0750	8.76	6.78
0.0750	0.0875	5.99	5.58
0.0875	0.1000	3.69	4.79
0.1000	0.1125	1.75	4.31
0.1125	0.1250	1.01	3.91
0.1250	0.1375	0.83	3.59
0.1375	0.1500	0.65	3.27
0.1500	0.1625	0.46	2.95
0.1625	0.1750	0.28	2.79
0.1750	0.1875	0.14	2.63
0.1875	0.2000	0.07	2.39
0.2000	0.2125	0.05	2.15
0.2125	0.2250	0.01	1.91
0.2250	0.2375		1.67
0.2375	0.2500		1.44
0.2500	0.2625		1.20
0.2625	0.2750		1.04
0.2750	0.2875		0.88
0.2875	0.3000		0.68
0.3000	0.3125		0.48
0.3125	0.3250		0.40
0.3250	0.3375		0.33
0.3375	0.3500		0.29
0.3500	0.3625		0.22
0.3625	0.3750		0.18
0.3750	0.3875		0.13
0.3875	0.4000		0.10
0.4000	0.4125		0.08
0.4125	0.4250		0.06
0.4250	0.4375		0.04
0.4375	0.4500		0.02
0.4500	∞		0.01
TOTALS:		100.0	100.0

Source: Estimated from Perloff and Wu (2004). Primary source: Chinese State Statistical Bureau, *Yearbook*.