Child Poverty, Generational Mobility and the One Child Policy in Urban China

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Abstract.

Chinas' controversial and far reaching One Child Policy (OCP) introduced in 1979 changed fundamentally the nature of both existing and anticipated marriage arrangements and influenced family formation decisions in many dimensions especially with respect to the number of and investment in children. It may well be expected to have influenced their well being and life chances. Child poverty, or the over-representation of children in the poverty group, has been a major policy issue in some western societies. In the United Kingdom and Canada its elimination has been a declared policy target, in the USA, its deleterious consequences have been attacked with policies promoting generational mobility (i.e. policies to reduce the dependence of child outcomes on parental circumstances) under an equal opportunities imperative. Here we look at the impact of the OCP on child poverty and generational mobility in the context of the parent/child educational attainments and incomes. Using data drawn from an urban household survey carried out in six provinces in China, namely Shaanxi, Jilin, Hubei, Sichuan, Guangdong and Shandong (the first two may be considered low, the second two intermediate and the third pair high income provinces) the impact of the OCP on child poverty and generational mobility is studied.

We examine how the OCP influenced investment in children by studying the way in which the relationship between the educational attainment of children and family characteristics changed with the introduction of the OCP. Broadly speaking the impact of household income and parental educational attainment has increased significantly over time, there appears to be an emerging negative household size effect and a negative birth order effect suggesting that the level of investment in children diminished with the size of the family. Finally a positive gender effect emerged (girls advanced more than boys). Examination of the proportion of children in the poverty group (defined by incomes below various proportions of median income) revealed that, unlike western societies, children are not overrepresented in the poverty group, neither before nor after the OCP. As for mobility, applying new techniques for measuring its degree we observe that the life chances of children born under its regimen have improved substantially but become increasingly dependent upon their parental circumstances. Thus, consistent with the increased parental investment per child that the OCP engendered, there is a much closer association between the characteristics of subsequent generations or a substantial reduction in generational mobility. This phenomenon is found to be particularly prevalent in the lower income quantiles reinforcing a dynastic notion of poverty.

Introduction.

One of the most controversial and far reaching population control policies in recent history is China's One Child Policy (OCP) introduced in 1979. Directed at China's large population growth rate, OCP represented a considerable intervention in the household choice process, by fines and various other forms of coercion families were encouraged to limit the production of offspring. The intervention changed fundamentally the nature of both existing and anticipated marriage arrangements and influenced family formation decisions in many dimensions. Anderson and Leo (2007), in studying the impact of the policy on family formation, construed the OCP as a rationing policy constraining the quantity (but not the quality) of children and, following Neary and Roberts (1980) and Deaton (1981), anticipated that the demand equations for quantity and quality of children would be affected accordingly. Increased positive assortative pairing of couples was observed as was increased investment in children and, also consistent with the rationing theory, income ceased to be a factor in determining family size. Such changes in family formation behavior may well have had substantial impacts on the wellbeing of children both in the context of child poverty and their generational mobility.

Child poverty has been a big issue in western societies where it is strongly associated with single parent family situations (in the United Kingdom children of lone parents are subject to more than twice the risk of poverty compared to children of couples Brewer et. al. (2006a)). Its eradication has been a policy target in both Canada and the United

Kingdom[1], where child poverty figures of the order of 1 in 6 and 1 in 4 respectively have been cited in recent years (as compared to 1 in 10 and 1 in 7 respectively for people in poverty in the population at large). Though child poverty has not been such a direct policy target in the United States (where roughly speaking 1 in 5 children are in the poor group as compared with 1 in 10 households in the population at large) policies promoting generational mobility, reducing the dependence of child outcomes on parental circumstances in the spirit of an equal opportunity imperative, have been pursued. This can be seen as an attack on the dynastic nature of poverty (Kanbur and Stiglitz (1989)) the greater likelihood that children of the poor have of being members of the poor club when they become adults. In formalizing the imperative, Roemer (2002) remarked that equal opportunity is "Probably the most universally supported conception of Justice advanced in societies.."[2]. With roots in recent egalitarian political philosophy (See Dworkin (1981)) the concept sees differential outcomes as ethically acceptable when they

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[1] Without being very explicit in 1989 the Canadian House of Commons unanimously resolved to "seek to achieve the goal of eliminating poverty among Canadian children by the year 2000" (to date little has changed, whatever the policies were, they have met with little success). With a similar vagueness in 2000 the British Government vowed to "half child poverty by 2010 and eliminate it by 2020", to this end the UK government committed £8 billion to child contingent income support in the 1999-2004 period (Brewer et. al. (2006)) and some benefit has accrued, by 2004 the number of children in poverty had fallen by some 700,000 and the child poverty rate was at its lowest since the 1980's. These heroic intentions were not matched by the United States administration where the issue prompted the administration to review how poverty was measured!

[2] For example during the 1970's and 1980's substantial changes in family law and practice were introduced, primarily to improve the life chances of children in single parent custodial situations relative to children in intact marriages. The shift, away from a preference for maternal to joint custodial arrangements, had the intent of increasing material support and paternal involvement in the development of children in divorced and separated parent situations. The changes were intended to bring the circumstances of children in single parent situations closer to parity with the circumstances of children in intact marriages, "leveling the playing field" as it were. In the field of education under the auspices of "No Child Left Behind" Act of 2001 policies have been pursued to "..ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and state academic assessments.". Aside from education and family law the extent to which such an objective has been achieved has fostered much public and academic debate in the realms of health and income access policy

are the consequence of individual choice and action but not ethically acceptable when they are the consequence of circumstances beyond the individual's control.

Here we look at the impact of the OCP on child poverty and generational mobility in the context of the parent/child educational attainments. Applying new techniques for measuring the degree of mobility to a data set on urban households from 6 provinces we observe how the policy influenced the life chances of children born under its regimen in terms of child poverty and generational mobility. Samples of family cohorts for the years 1987, 1992, 1997 and 2001 drawn from an urban survey of six provinces in China, Shaanxi, Jilin, Hubei, Sichuan, Guangdong and Shandong[3] were studied to examine the extent to which the OCP impacted and constrained family formation decisions in these respects. The first two may be considered low, the second two intermediate and the third pair high income provinces.

Table 1. GDP Comparison

Unit: billion RBM Yuan

	1992	2001
Shanxi	33.96	133.33
Jilin	36.65	149.14
Hubei	69.07	339.89
Sichuan	87.61	354.26
Guangdong	127.18	751.88
Shandong	128.06	678.63

Note: data of 1992 is the average GDP from 1985 to 1992, that of 2001 is from 1994 to 2001

Source: SSB

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[3] These data were obtained from the National Bureau of Statistics as part of the project on Income Inequality during China's Transition organized by Dwayne Benjamin, Loren Brandt, John Giles and Sangui Wang.

To anticipate some of the results, children do not appear to be over-represented in the poverty group either before or after the OCP, indeed the OCP seems to have strengthened the sense in which they are under-represented. However the OCP does appear to have reduced generational mobility especially among the lower quantiles of the income distribution. Section 1 considers how increased investments in children have impacted their educational attainment. In section 2 the impact of OCP on the nature of child poverty is examined and compared with changes in the child poverty situation in the UK. Finally Section 3 considers the impact of the OCP on generational mobility in China. Some conclusions are drawn in section 4.

Section 1. The OCP and Investment in Children

We consider the investment in children in terms of their educational attainment. For

comparison purposes we consider only children over 20 so that the parental aspect of the

investment activity may assume to have been completed. We look at cohorts of such

children for the years 1987, 1992, 1997 and 2001 in the six provinces. The salient

features of the data are reported in table 2.

Table 2. Educational Attainment and household characteristics (children over age 20) raw data

Means	1987	1992	1997	2001
Age	24.7346	25.1207	25.8027	26.8895
%/100 female	0.4904	0.4570	0.4628	0.4650
Educational Status*	2.8524	3.2742	3.5257	3.7316
Birth Order	1.3854	1.3263	1.3363	1.2624
Family Size	4.4989	4.1600	4.0761	3.8456
Family Income (nominal)	323.1836	10138.029	23597.968	24616.638
Fathers Educational Status	2.5605	3.2166	3.2823	3.4118
Mothers educational Status	1.6582	2.3154	2.4027	2.4557
Fathers Age	49.2081	51.6481	52.1372	51.5134
Mothers Age	50.1348	50.6024	51.3248	53.0869
Number of Siblings	2.3567	2.00640	1.8487	1.6068
Number of Observations.	942	1094	1130	1185

*Education level variable for 1987 is not strictly comparable with other years

To study the investment in child quality the dependent variable in the regression model is

the product of the Educational Attainment of a child and the number of children in

family, hopefully this reflects the notion that each child is an observation on the stock of

quality adjusted kids for that family type. This variable is regressed upon the logarithm of

Adult equivalized household income, father's and mother's educational status, household

size, and the gender of the child (1 if female 0 otherwise) and birth order (Birth order

represents the order in which the child arrived in the family, 1 = first child, 2 = second

child…). Household income equivalization is based upon the square root rule (Brady and

Barber (1948)) under which household income is deflated by the square root of the number of persons in the household reflecting some returns to scale in household consumption. Parental educational status is included to reflect both inherited abilities and parental preferences, and household size is included as an argument independent of income to reflect investment scale effects outside of the consumption nexus. Gender and birth order effects are included following Bjorklund et. al (2004).

Regressions for 1987, 1992, 1997 and 2001 cohorts were performed noting that they are really mixtures of pre and post OCP families where the post OCP family mixing coefficient is increasing with the cohort year so that the proportion of pre OCP children in the samples upon which each regression is based will diminish as time progresses. Broadly speaking the impact of household income has increased significantly over time as has the combined effect of mother's and fathers educational status (a combined coefficient of 0.15 in 1987 moving to 0.28 in 2001), though mothers status has become more important relative to fathers status. There appears to be an emerging negative household size effect (-0.26ln(household size)-0.02(household size) in 1987 which became -0.34ln(household size)-0.14(household size) in 2001). In fact this effect is compounded by the negative birth order effect which also increased significantly over the period suggesting that the level of investment in children diminished with the size of the family. Finally the positive gender effect that emerged (significant in 2001) should be noted.

Table 3. Basic Child Type Regressions

	1987	1992	1997	2001
Constant	3.3920	3.6044	1.6147	2.6409
	(0.2389)	{0.3920)	(0.3891)	(0.4130)
Ln(Household Income/√# Household)	0.2570	0.1182	0.3200	0.3376
	(0.0402)	(0.0419)	(0.0398)	(0.0406)
Father's educational status	0.0419	0.1396	0.1276	0.0833
	(0.0126)	(0.0190)	(0.0201)	(0.0195)
Mother's educational status	0.1107	0.1451	0.0795	0.1951
	(0.0197)	(0.0206)	(0.0237)	(0.0249)
Household size	-0.0182	0.0195	0.0095	-0.1392
	(0.0282)	(0.0388)	(0.0425)	(0.0440)
Gender (female = 1)	-0.0119	-0.0120	0.1247	0.1566
	(0.0572)	(0.0709)	(0.0719)	(0.0732)
Birth order	-0.0574	-0.1682	-0.1033	-0.1821
	(0.0466)	(0.0673)	(0.0714)	(0.0863)
R^2	0.1104	0.1302	0.1319	0.1658
Standard Error	0.7418	1.3124	1.3884	1.4792
Sample Size	942	1094	1130	1185

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Section 2. Child Poverty and Wellbeing.

In the west the child poverty issue can be characterized as an over-representation of children in the poverty group however it is measured, alternatively put the children in a society experience a greater degree of measured poverty than the adults. Poverty measurement has been the subject of much debate. What should the poverty frontier be, should incidence, depth or intensity measures be used and how should adults and children be compared within the context of a household and the extent to which there are returns to scale in household consumption are all issues that have received attention. To this list should be added the question of the household sharing rule which permits the identification of child and adult income distributions? Thanks to results in Atkinson (1987) many of these debates (aside from the last topic) may be circumvented by employing stochastic dominance techniques.

The Atkinson result, also noted in Foster and Shorrocks (1988), establishes a useful link between poverty indices and stochastic dominance relations for more general welfare comparisons which may be summarized as follows. If income distribution $f_A(x)$ stochastically dominates income distribution $f_C(x)$ over the interval 0 to x* at a particular order then all poverty measures in a specific class will record greater poverty for society C than society A for any poverty line up to x*. Intensity of poverty measures require dominance of order three or less, depth of poverty measures require dominance of two or less and incidence measures (e.g. poverty rates) require dominance of order 1. Noting that dominance of order j implies dominance of order k for k > j we see that first order dominance of A over C implies greater poverty in C than in A for any poverty measure based upon a cut-off < x*. Thus in the present context child $f_C(x)$ and adult $f_A(x)$ income

distributions can be compared and if the former is stochastically dominated by the latter

at all incomes less than x* we can conclude that children are over represented in the

poverty group however it is measured as long as the poverty cutoff is less than x*.

Child and adult income distribution comparisons are made for our Chinese datasets for

the years 1987 and 2001 and, for comparison purposes, the corresponding statistics for

the United Kingdom for 2002 and 1996[4]. The child and adult income distributions were

computed on the basis of the household equivalized income (using the square root rule

alluded to earlier) being attributed to each child or adult in the household[5]. Summary

statistics for the comparison distributions are reported in Table 4.

Table 4. Sample characteristics log adult real equivalized household income.

	Mean	Median	Standard Deviation	Coefficient of variation	Sample Size
China Child 1987	4.7819	4.8548	0.6164	0.1289	3387
China Adult 1987	4.5317	4.8040	1.2556	0.2771	2074
China Child 2001	8.8374	8.9197	0.8642	0.0978	10569
China Adult 2001	8.6875	8.7916	0.9050	0.1042	3936
UK Child 1996	5.3423	5.3390	0.6380	0.1194	17386
UK Adult 1996	5.5021	5.5277	0.6797	0.1235	60323
UK Child 2002	5.5985	5.6089	0.6750	0.1206	9401
UK Adult 2002	5.7257	5.7703	0.7509	0.1311	32691

We would briefly note that the location measures for the child distributions are greater

than the location measures for adult distributions in China whereas the situation is

reversed in the UK (note that the Chinese data are in constant 1987 RMB's and the UK

data are in constant £'s). Child distributions are always less dispersed than the

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[4] The data used in this study relate to United Kingdom household income from all sources net of direct taxes and is drawn from the annual Family Resources Survey for the corresponding years.
[5] Comparing child and adult income distributions in this way involves very strong implicit assumptions about the way income is allocated or shared within the family which is fundamentally an unobservable phenomenon. Different sharing rules would produce substantially different outcomes establishing what those rules may be is a matter for ongoing research (see Browning et. al. (2006) for instance).

corresponding adult distributions in all comparisons. With the exception of the 1987

Adult distribution in China, which possesses a much larger standard deviation compared

to its Child counterpart, relative variability is pretty stable across distributions.

Table 5 reports the comparisons of the distributions. It is readily seen that for 2001 at

every decile cut-off up to the 9th there were smaller proportions of children in the group

than there were adults, very much a property of the child's income distribution first order

dominating that of the adults. Thus we can safely conclude that for almost any poverty

measure at any cutoff line child poverty would be less than adult poverty. The same is

almost true for the 1987 year where the proportion of children is always less than the

proportion of adults for every decile cut-off up to the 7th, so that child poverty would be

less than adult poverty for any poverty line up to the 7th decile for virtually all poverty

measures[6]. Notice that for the United Kingdom comparator the reverse is true, at every

decile cut-off up to the 9th the child's income share is greater than the adult's (both in

1996 and 2002), very much a characteristic of the adult income distribution stochastically

dominating the child's income distribution at all orders indicating an overrepresentation

of children in the poverty group however it is defined.

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[6] Actually 1st order dominance would be rejected over the whole income range since for the 8th and 9th
deciles child shares are significantly greater than adult shares but second order dominance of the adult
income distribution by the child's distribution would prevail (see appendix) so that all depth and intensity
poverty measures would record less poverty for thildren than for adults over the whole income range.

Table 5. Child and Adult proportions at income deciles.

Case	Decile	Cut-off Err	Child Share	Adult Share	Difference	Diff Std
China	1	0.8603	0.0880	0.1319	-0.0439	0.0105
2001	2	0.9088	0.1825	0.2477	-0.0652	0.0136
N_c=10569	3	0.9506	0.2799	0.3537	-0.0738	0.0152
N_a=3936	4	0.9848	0.3792	0.4558	-0.0766	0.0160
	5	1.0113	0.4837	0.5434	-0.0598	0.0161
	6	1.0339	0.5913	0.6235	-0.0322	0.0157
	7	1.0555	0.6932	0.7180	-0.0248	0.0147
	8	1.0831	0.7911	0.8239	-0.0328	0.0125
	9	1.1236	0.8916	0.9223	-0.0307	0.0091
China	1	0.8860	0.0765	0.1389	-0.0624	0.0089
1987	2	0.9402	0.1760	0.2406	-0.0646	0.0114
N_c=3387	3	0.9824	0.2772	0.3375	-0.0603	0.0129
N_a=2074	4	1.0131	0.3770	0.4378	-0.0608	0.0137
	5	1.0394	0.4804	0.5352	-0.0548	0.0139
	6	1.0645	0.5890	0.6176	-0.0286	0.0136
	7	1.0906	0.6994	0.7049	-0.0056	0.0127
	8	1.1192	0.8087	0.7869	0.0218	0.0112
	9	1.1633	0.9114	0.8809	0.0305	0.0086
UK	1	0.4411	0.1191	0.0946	0.0245	0.0037
2002	2	0.5476	0.2564	0.1839	0.0725	0.0050
N_c=9401	3	0.6421	0.3855	0.2754	0.1101	0.0056
N_a=32691	4	0.7353	0.4889	0.3745	0.1144	0.0058
	5	0.8442	0.5975	0.4721	0.1254	0.0058
	6	0.9666	0.6906	0.5741	0.1165	0.0055
	7	1.1051	0.7816	0.6766	0.1050	0.0050
	8	1.2894	0.8641	0.7816	0.0825	0.0042
	9	1.6423	0.9349	0.8900	0.0449	0.0031
UK	1	0.4263	0.1313	0.0910	0.0404	0.0028
1996	2	0.5223	0.2805	0.1768	0.1036	0.0037
N_c=17386	3	0.6187	0.3977	0.2718	0.1259	0.0041
N_a=60323	4	0.7234	0.4987	0.3716	0.1271	0.0043
	5	0.8388	0.6041	0.4700	0.1341	0.0042
	6	0.9661	0.7055	0.5697	0.1358	0.0040
	7	1.1155	0.7924	0.6734	0.1191	0.0036
	8	1.3172	0.8697	0.7800	0.0897	0.0030
	9	1.6750	0.9370	0.8894	0.0476	0.0022

In essence the comparisons which permitted such strong and sweeping statements to be made were of the form:

$$\int_0^x (F_C^i(z) - F_A^i(z))dz \leq 0 \quad \forall \quad x$$

$where:$

$$F_H^{i+1}(x) = \int_0^x F_H^i(z)dz \text{ with } F_H^0(z) = f_H(z) \text{ for } H = A, B \text{ and } i = 1, 2, ..$$

with the strict inequality holding at least somewhere. These are conditions under which we can infer that society C is better off than society A. Thus from the above following Foster and Shorrocks (1988) we may infer that the society of children were better of than the society of adults for all utilitarian social welfare functions in 2001 and for all social welfare functions that express a preference for mean preserving progressive transfers in 1987. The reverse is true for the UK. The society of Adults is better off than the society of children in both 1996 and 2002 in terms of all utilitarian social welfare functions. However we can take the analysis further, consider the income distribution of society H in year k to be $f_{Hk}(x)$ and consider the condition:

$$\int_0^x [(F_{C2001}^i(z) - F_{A2001}^i(z)) - (F_{C1987}^i(z) - F_{A1987}^i(z))]dz \leq 0 \quad \forall \quad x$$

This asks the question "Does the extent to which the child's society was better off than the adults in 2001 dominate the extent to which the child's society was better off than the adult's in1987. This is essentially a difference in dominance comparison part of the toolkit for studying polarization (Anderson (2004)). The comparison results employing the Wolak (1989) method for comparing multivariate inequalities are reported in Table 6 for China 2001 and 1987 and for the UK 2002 and 1996. In the case of both countries the

notion that the change in the child's distribution dominated that of the adult's distribution is not rejected whereas the notion that the change in the adult's distribution dominated that of the children is strongly rejected. This has different implications for the two countries. For China it means that the child's income distribution has moved further away from the Adults income distribution Child and adult societies have become more polarized as it were whereas in the United Kingdom it means that the two societies have moved closer together or depolarized.

Table 6 Difference in differences comparisons, upper tail probabilities.

Comparison	Adult Change Dominates Child Change	Adult Change Dominates Child Change
China 1987-2001	0.0000	0.9409
United Kingdom 1996-2002	0.0000	0.9007

It is thus safe to conclude that, on the basis of our samples, child poverty is not the issue that it appears to be in western societies. Indeed those societies have something to learn from the Chinese example since it is probably the nature of the extended family prevalent in that society that is preventing the emergence of a child poverty issue. In the west the child poverty problem is largely a symptom of the prevalence of single parents living alone in a household with their children, in China single parents tend to live with their children in an extended family type household diluting the impact on income sharing of the children in the household.

Section 3. Generational Mobility.

Greater investments in child quality probably strengthen the ties between generational income distributions, making it is more likely that parents with high (low) incomes will have children who will earn high (low) incomes when they become adults. This increased dependence between child and parent outcomes constitutes a reduction generational mobility. We look at generational mobility by examining the dependence between parent incomes and educational attainments and child educational attainments.

Following Anderson and Leo (2006) the extent to which dependence or independence accords with the data can be indexed by an overlap measure given by:

$$OV = \sum_i \sum_j \min(p_{ij}^o, p_{ij}^e)$$

Where p^o corresponds to the observed cell probability and p^e corresponds to the expected cell probability under the null hypothesis (be it independence or dependence). This measure forms a very natural index since it reflects the proximity of the data to the hypothesis of interest. When the data completely conform to the hypothesis of interest $OV = 1$, otherwise $0 \leq OV < 1$.

OV_{Ind}, the independence based index, is easily calculated, p_{ij}^o is simply the observed cell sample proportions and p_{ij}^e is the product of the corresponding empirical marginal proportions[7]. An attractive feature of these indices is that they can be readily applied when the transition matrices are not square and can be easily implemented in multivariate environments. For example given an initial state defined by w and x with joint density

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[7] Note p^e can be generated from the marginal distributions of the target population or the marginal distributions of those who were actually paired depending on the theoretical issue being addressed.

f(w,x) and an ultimate state defined by y and z with joint density g(y,z) with a joint density of all characteristics given by h(w,x,y,z) then the mobility index is of the form ∫∫∫∫min[h(w,x,y,z),(f(w,x)g(y,z))]dwdxdydz. In addition they appear to have asymptotically normal sampling distributions[8], conveniently facilitating inferences about trends toward independence or dependence over time. These indices can be more focused, concentrating on a subset of cells that relate to particular features of interest. So for example mobility amongst the poor could be examined by specifying a null in which only independence with respect to the poor is entertained so that the mobility of the i'th subgroup can be considered in terms of:

$$OV_i = \sum_{j=1}^{k} \min((\frac{p_{ij}}{p_{i.}}), p_{.j})$$

Where $p_{i.}$ and $p_{.j}$ are marginal row and column probabilities respectively.

To study the impact on generational mobility of the OCP we study the degree of dependence between parent and child characteristics. To identify pre and post OCP children the age of the mother at the introduction of the one child policy is taken into consideration. Households where the mother was less than 25 at the introduction of OCP are considered to have made their parenting decisions in the context of being an OCP family. Households where the mother was over 35 at the onset of the OCP are considered to have made their parenting decisions prior to the OCP. The parent's characteristics are household income and educational attainment (the maximum of the parent's attainments)

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[8] The distribution of OV_{Ind} can be shown to be asymptotically normal by noting that, under the null of independence, both p_{ij}^{o} and p_{ij}^{e} are normal with means p_{ij} and variances $p_{ij}(1-p_{ij})/n$ and, following results in Daganzo (1980) based on Clark (1961), $\min(p_{ij}^{o}, p_{ij}^{e})$ will also be normal, and OV_{Ind}, being a sum of such terms, will also be asymptotically normal. Anderson, Ge and Leo (2006) presents a small Monte Carlo exercise supporting normality of overlap indices.

Table 7. Mobility Differences Pre and Post OCP families

Children 20-30.	Mother's Age at OCP		
	<25 at OCP (Post OCPDeciders) Index (Std Err.)	>35 at OCP (Pre OCP Deciders) Index (Std Err.)	Difference [P-Value]
Mobility all Children, Education-Education n=236/1356	0.78244 (0.02686)	0.84834 (0.00974)	-0.065895 [0.02108]
Mobility for all Children, Education-Income	0.88279 (0.02094)	0.93245 (0.00682)	-0.049655 [0.024135]
Mobility for all Children, Education-Education-Income	0.69844 (0.02987)	0.81828 (0.01047)	-0.11984 [0.000153]
Mobility of Males, Education-Education* n=114/746	0.80371 (0.03720)	0.85097 (0.01304)	-0.047264 [0.23052]
Mobility of Females, Education-Education n=122/610	0.73206 (0.04010)	0.83475 (0.01504)	-0.10260 [0.01649]
Mobility of Males, Education-Income	0.85488 (0.03299)	0.93218 (0.00921)	-0.077303 [0.024003]
Mobility of Females, Education-Income	0.85038 (0.03229)	0.92247 (0.01083)	-0.072091 [0.034302]
Mobility of Males, Education-Education-Income	0.6385 (0.04500)	0.81126 (0.01433)	-0.17276 [0.000254]
Mobility of Females, Education-Education-Income	0.64271 (0.04339)	0.7945 (0.01636)	-0.15179 [0.001062]
Mobility 1st born, Education-Education N=187/663	0.77912 (0.03034)	0.85884 (0.01352)	-0.079723 [0.016381]
Mobility 2nd born, Education-Education* 42/481	0.75624 (0.06625)	0.84192 (0.01663)	-0.085682 [0.20971]
Mobility 1st born, Education-Income	0.85982 (0.02539)	0.93219 (0.00976)	-0.072374 [0.007797]
Mobility 2nd born, Education-Income*	0.88209 (0.04976)	0.90989 (0.01306)	-0.027799 [0.58896]
Mobility of 1st born, Education-Education-Income	0.69112 (0.03379)	0.80771 (0.01531)	-0.11659 [0.001670]
Mobility of 2nd born, Education-Education-Income	0.49302 (0.07714)	0.7778 (0.01896)	-0.28478 [0.000337]

the child's characteristics are their educational attainments[9]. Only children between the ages of 20 and 30 were considered so as to allow for them to have completed their education. Following results in Bjorkland et.al. (2004), in addition to overall child - parent mobility, mobility by gender and birth order of child are considered. Both univariate (child achievement – parent achievement and child achievement – parent income) multivariate indices (child achievement – parent achievement and income) are employed. As table 7 reveals with very few exceptions mobility diminished significantly in virtually every situation that was examined, the three exceptions were the parent's education – child's education comparison for males and the univariate comparisons for the 2nd born.

Table 8. Educational mobility by income quartile.

| | Mother's Age at OCP | | |
	<25 at OCP (Post OCPDeciders)	>35 at OCP (Pre OCP Deciders)	Diff/P-Value
First Quartile	0.70321 (0.06810) 45	0.86021 (0.01376) 635	-0.1570 [0.023843]
Second Quartile	0.73291 (0.05531) 64	0.85902 (0.02003) 302	-0.1261 [0.032031]
Third Quartile	0.81564 (0.05136) 57	0.84537 (0.02138) 286	-0.0297 [0.59301]
Fourth Quartile	0.72204 (0.05355) 70	0.77398 (0.03627) 133	-0.051943 [0.42187]

A closer look at education-education mobility by income quartile is reported in table 7 and the results asre somewhat more troublesome since the drop in mobility appears to be most prevalent in the lower income quartiles.

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[9] Educational attainment is measured as an integer indexed from 0 to 5 with 5 = college graduates and above, 4 = technical secondary school, 3 = high school, 2 = middle school, 1 = primary school and lower.

Section 4. Conclusions.

Unlike some countries in the west, children do not appear to be over-represented in the poverty group in Urban China either before or after the one child policy. What may be interpreted as the child's income distribution is seen to stochastically dominate the adult income distribution in the pre One Child Policy environment at the second order. The post one child policy result is even stronger with the child income distribution first order dominating that of the adult distribution. Indeed it appears that the OCP has polarized (i.e.widened the gap between) child and adult income distributions[10]. This general relationship between child and adult income distributions could well be a consequence of the nature of household formation and the extended family found in China but not prevalent in the west.

With respect to mobility the increased intensity of investment in child quality brought about by the one child policy has reinforced the link between parent and child quality and reduced generational mobility as a result. This is contrary to the results found for the US for example where generational mobility has increased over the last part of the 20th Century (Anderson and Leo (2006a)). When viewed by income quartile increases in immobility are found to be more prevalent in the lower income quartiles reinforcing notions of "Dynastic Poverty" discussed in Kanbur and Stiglitz (1986).

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[10] On the other hand policies pursued in the UK, our comparator society, appeared to have narrowed the gap between the child and adult income distributions where generally the adult income distribution dominate that of the adults.

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Appendix 1.

Second order dominance results for China 1987.

Case	Decile	Cut-off	Child	Adult	Difference	Diff Std Err
Table 4. Child and Adult proportions at income deciles.						
China	1	0.8860	0.0153	0.0734	-0.0581	0.0064
1987	2	0.9402	0.0219	0.0837	-0.0617	0.0067
	3	0.9824	0.0314	0.0957	-0.0643	0.0069
	4	1.0131	0.0413	0.1074	-0.0667	0.0071
	5	1.0394	0.0524	0.1201	-0.0677	0.0072
	6	1.0645	0.0658	0.1345	-0.0687	0.0073
	7	1.0906	0.0826	0.1517	-0.0691	0.0075
	8	1.1192	0.1043	0.1732	-0.0689	0.0076
	9	1.1633	0.1425	0.2101	-0.0676	0.0077
	10	1.3860	0.3609	0.4269	-0.0660	0.0078