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THE STRUCTURE OF ECONOMIC INEQUALITY AMONG HOUSEHOLDS LIVING IN URBAN SICHUAN AND LIAONING, 1990

by

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ABSTRACT

This paper presents the results from a descriptive analysis of economic inequality among households living in urban regions of two Chinese provinces, Sichuan and Liaoning, in 1990. The results refer to distributions of households income, expenditure and savings and are based on data from the State Statistical Bureau's Urban Household Survey.

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1. INTRODUCTION

Most of the available empirical information on economic inequality in developing countries refers to the distribution of income among earners. This information constitutes an important part of a complete description of the labor market and related distributions of income, but it is less helpful in the analysis of inequality as a welfare issue. A more relevant approach is to compare incomes and consumption expenditures among households of equal size and composition. This paper focus particular attention on couples with one child less than 18 years living in urban regions of the Chinese provinces Sichuan and Liaoning. Our emphasize on couples with one child is due to the fact that this specific household group constitutes roughly half the population of urban households in these provinces. Thus, we also obtain important information about economic inequality among children. Moreover, to allow for comparison across persons we also apply household income divided by household size as welfare indicator.

This study is based on the State Statistical Bureau's Urban Household Survey for 1990. Our methodological approach is mainly based on a measure of inequality, called the A-coefficient, which is closely related to the Gini coefficient. As a supplement we also provide estimates for the Gini coefficient. The essential difference between these two measures of inequality is that the A-coefficient has a stronger focus than the Gini coefficient on the relative incomes at the bottom of the distribution. This means that the A-coefficient exhibits higher degree of inequality aversion than the Gini coefficient, irrespective the functional form of the income distribution in question.

The observed distribution of income is a result of a process governed by institutional conditions and individual decisions. By decomposing the overall inequality in the distribution of income with respect to the major income sources we obtain information about the

formation of income inequality resulting from this process. Similarly, we decompose overall expenditure inequality in order to analyze the welfare effects from raising prices on certain commodities and of introducing commodity taxation and subsidies. The results of the inequality decomposition enable us to reveal whether subsidizing one commodity financed by a tax on another commodity improves social welfare or not. Therefore, these results can be used to identify those pairs of commodities for which welfare improvements are possible.

This paper is organized as follows. Section 2 discusses the properties of the employed measures of inequality and the related method of decomposition. Section 3 deals with the description of income inequality and Sections 4 and 5 examine the household expenditure and savings patterns, respectively. Section 6 summarises and concludes the paper.

2. MEASUREMENT AND DECOMPOSITION OF INEQUALITY

In order to evaluate the deviation of each households income from that of a household living in a society of complete equality, the standard approach is to employ the Lorenz curve. The Lorenz curve relates the cumulative proportion of income units to the cumulative proportion of income received when units are arranged in ascending order of their income. Thus, the Lorenz curve captures the essence of inequality when inequality is defined as the deviation from the state of equality and restricted to satisfy the principles of transfers and scale invariance. The principle of scale invariance states that inequality should remain unaffected if each income is altered in the same proportion and it requires, therefore, the inequality measure to be independent of the scale of measurement. The principle of transfers implies that if a transfer of income takes place from a richer to a poorer person without changes in the relative positions, the level of inequality diminishes. When employed as a criterion for ranking income distributions the Lorenz curve is, however, incomplete.

Therefore, several summary measures of inequality have been derived to provide complete ranking of distributions. The most widely used measure of inequality is the Gini coefficient, which satisfies the principles of scale invariance and transfers. The reader is referred to Sen (1973) for a more comprehensive discussion of the normative implications of different measures of inequality.

As is wellknown, the Gini coefficient (G) is related to the Lorenz curve (L) in the following way

$$(2.1) \quad G = \int_0^1 [1 - 2L(u)] du.$$

The Gini coefficient offers a method for ranking distributions and quantifying the differences in inequality between distributions which is widely used in applied work. This practice, however, is questionable. Evidently, no single measure can reflect all aspects of inequality of a distribution, only summarize it to a certain extent. Consequently, it is important to have alternatives to the Gini coefficient. As pointed out by Atkinson (1970), the Gini coefficient assigns more weight to transfers in the centre of a unimodal distribution than at the tails. As an alternative to the Gini coefficient, we will employ an inequality measure - the A-coefficient - that assigns more weight to transfers at the lower tail than at the centre and the upper tail. For any distribution with the exception of the distribution displaying complete inequality, the cost of inequality is higher when measured by A than by G. Therefore, the total income which must be sacrificed in order to achieve complete equality is always larger for A than for G.

The A-coefficient, see Aaberge (1986), has a similar geometric interpretation and relation to the inequality curve M defined by

$$(2.2) \quad M(u) = \frac{E[X|X \leq F^{-1}(u)]}{EX}, \quad 0 \leq u \leq 1,$$

as the Gini coefficient has to the Lorenz curve. Here X has distribution function F . The A -coefficient is defined by

$$(2.3) \quad A = \int_0^1 [1 - M(u)] du.$$

If X is an income variable, then $M(u)$ for a fixed u expresses the ratio of the mean income of the poorest $100u$ per cent of the population to the mean income of the population. As is wellknown, the egalitarian line of the Lorenz curve is the straight line joining the points $(0,0)$ and $(1,1)$. The egalitarian line of the M -curve is the horizontal line joining the points $(0,1)$ and $(1,1)$. Thus, the universe of M -curves is bounded by a unit square, while the universe of Lorenz-curves is bounded by a triangle. Therefore, there is a sharper visual distinction between two different M -curves than between the two corresponding Lorenz curves. Note that the M -curve will be equal to the diagonal line ($M(u)=u$) if and only if the underlying distribution is uniform $(0,a)$ for an arbitrary a . The A -coefficient then takes the value 0.5, while the maximum attainable value is 1 and the minimum attainable value is 0.

Note that $M(u) = L(u)/u$, which implies

$$(2.4) \quad A = \int_0^1 \left[1 - \frac{L(u)}{u} \right] du.$$

Alternative expressions for G and A are given by

$$(2.5) \quad G = \frac{1}{EX} \int_0^{\infty} \int_0^y (y-x) dF(x) dF(y) = \frac{1}{EX} \int_0^{\infty} y(2F(y)-1) dF(y)$$

and

$$(2.6) \quad A = \frac{1}{EX} \int_0^{\infty} \int_0^y \frac{(y-x)}{F(y)} dF(x) dF(y) = \frac{1}{EX} \int_0^{\infty} y(1+\log F(y)) dF(y),$$

respectively.

Given the inequality in the distribution function F measured by A or G , the next step is to identify the sources that make substantial contribution to the inequality. Assume that the main variable X is the sum of s different factor components,

$$(2.7) \quad X = \sum_{i=1}^s X_i.$$

According to Aaberge (1986), A admits the following decomposition

$$(2.8) \quad A = \sum_{i=1}^s \frac{\mu_i}{\mu} \alpha_i$$

where μ_i/μ is the ratio between the means of X_i and X , respectively, and α_i can be interpreted as the conditional A-inequality of factor i given the units rank order in X . Analogously,

$$(2.9) \quad G = \sum_{i=1}^s \frac{\mu_i}{\mu} \gamma_i$$

where γ_i is related to G and has a similar interpretation as α_i related to A .

Notice that α_i and γ_i are measures of correlation between factor i , X_i , and X . Assume for example that $\mu_i > 0$. Then, a negative value of α_i or γ_i expresses negative correlation and means that factor i has an equalizing effect on the inequality in the distribution F of X . A

positive value expresses a disequalizing effect on the inequality in F. For $\mu_i < 0$, then positive values of α_i and γ_i express an equalizing effect on the inequality in F. We call α_i and γ_i concentration coefficients which is in accordance with the tradition initiated by Mahalanobis (1960).

If α_i and γ_i are equal to 0, then every household (or individual) receives an equal amount of factor i. Thus, factor i does neither hold a disequalizing nor an equalizing effect on the distribution F of X. We say that factor i holds a neutral effect.

The above interpretation of the concentration coefficients is based on a simultaneous examination of the influence from the different factor components on the overall income inequality. Alternatively, we can ask the following question: What is the impact on overall income inequality from solely increasing factor i income, given that all the concentration coefficients are assumed fixed? The answer is given by the following elasticities which are established by straightforward differentiation

$$(2.10) \quad \frac{\partial \log A}{\partial \log \mu_i} = \frac{\mu_i}{\mu} \left(\frac{\alpha_i}{A} - 1 \right) \quad i = 1, 2, \dots, s$$

and

$$(2.11) \quad \frac{\partial \log G}{\partial \log \mu_i} = \frac{\mu_i}{\mu} \left(\frac{\gamma_i}{G} - 1 \right) \quad i = 1, 2, \dots, s.$$

The formulas (2.10) and (2.11) yield the marginal effects on A and G from a small increase of an income factor, conditional on fixed concentration coefficients. From the expressions (2.10) and (2.11) we see that overall inequality will increase (decrease) if and only if the current concentration coefficient is larger (smaller) than the overall inequality.

3. THE STRUCTURE OF INEQUALITY IN DISTRIBUTIONS OF INCOME

In this section we provide information on income inequality among households living in urban regions of Sichuan and Liaoning for 1990. A household is defined to include all persons living in the same dwelling and having common board. Contrary to European countries we must expect that wage earnings have a modest impact on income inequality in China, since the basic wages are determined by a set of guidelines given by the government. The introduction of bonus payments may, however, give rise to income inequality. The bonus payments are included in the wage earnings, which are divided into a state-owned sector and a collective-owned sector. Additionally to bonus payments, wage earnings in state-owned or collective-owned units also include base wage, floating salary and contractual income. We refer to Appendix 1 for a more detailed description of these income components. The workers also receive housing subsidies and covering of medical insurance from the work unit. These subsidies are the main sources of the income factor "other income from work units".

The basic income variable is defined as follows:

$$\begin{aligned}
 \text{income} &= \Sigma \text{ wage earnings in state-owned units} \\
 &+ \Sigma \text{ wage earnings in collective-owned units} \\
 &+ \Sigma \text{ other income from work units} \\
 &+ \Sigma \text{ income from current transfers} \\
 &+ \Sigma \text{ other income.}
 \end{aligned}$$

Note that the main factors of "income from current transfers" are pension and price compensation. The variable "other income" includes income from selfemployment, secondary employment, property and gifts, payments to surveyed households and other special income. The basic unit of observation is the household and the reference period in one year. With

these concepts the " Σ " in the definition of income means sum over all persons who were members of the household during 1990.

3.1. Inequality and decomposition of inequality in the distribution of household income

As a result of the current birth control policy couples with 1 child is the most common urban household type in China. In Sichuan and Liaoning couples with 1 child constitute 36.2 and 54.1 per cent of the total number of urban households, respectively. Accordingly, most children are living in three-persons families. For these reasons, it is important to focus on this household group.

In table 1 we report mean income by decile groups for all households and for couples with 1 child younger than 18 years.

Table 1. Meanⁿ⁾ income for urban households by family type, province and decile groups

Province Income decile group	Sichuan		Liaoning	
	All households	Couples with 1 child	All households	Couples with 1 child
1	2315 (121)	2836 (124)	3087 (105)	3495 (79)
2	3498 (102)	3530 (107)	3993 (73)	4037 (57)
3	4043 (88)	3968 (42)	4463 (74)	4362 (76)
4	4514 (84)	4413 (115)	4900 (78)	4651 (83)
5	4934 (78)	4764 (114)	5266 (62)	4993 (101)
6	5334 (93)	5052 (100)	5573 (71)	5310 (56)
7	5761 (82)	5428 (124)	5978 (77)	5544 (57)
8	6367 (141)	5780 (107)	6462 (106)	5850 (88)
9	7231 (122)	6312 (170)	7367 (181)	6284 (101)
10	9291 (328)	7295 (169)	9780 (281)	7542 (255)
All	5329 (85)	4938 (91)	5687 (77)	5207 (66)

ⁿ⁾ Standard deviations are given in the parantheses.

According to Table 1 the mean income of the richest 10 per cent of the 1 child couples in Sichuan and Liaoning were 2.6 and 2.2 times the mean income of the poorest 10 per cent, respectively. The corresponding figures for the ratio between the richest 5 per cent and the poorest 5 per cent were 3.0 and 2.5, respectively.

In order to sum up the detailed information given by Table 1, Table 2 provides estimates of two summary measures of inequality.

Table 2. Estimates of the A-coefficient⁾ and the Gini coefficient in distributions of income for households living in urban Sichuan and Liaoning

Province	Sichuan		Liaoning	
	All households	Couples with 1 child	All households	Couples with 1 child
Population				
Number of observations	550	199	597	323
A-coefficient	0.303 (0.010)	0.227 (0.010)	0.257 (0.008)	0.182 (0.007)
Gini-coefficient	0.200 (0.007)	0.148 (0.007)	0.174 (0.006)	0.122 (0.006)

⁾ Standard deviations are given in parentheses.

The estimates given in Tables 1 and 2 reveal that there were a higher income level and a smaller degree of inequality in urban Liaoning than in urban Sichuan. For couples with 1 child the income level in urban Liaoning was 5.5 per cent above the income level in urban Sichuan. The higher inequality among all households than among couples with 1 child was mainly due to variation in household size and composition. However, in spite of this variation the degree of the inequality was very low compared to that of other developing countries which is demonstrated by the Gini coefficient estimates displayed in Table 3. The figures in

Table 3 are related to distributions of income for urban households and are taken from Jain (1975).

Table 3. Estimates of the Gini coefficient in distributions of income for urban households in various countries

Asian countries		Latin American countries	
India (1967-68)	0.465	Argentina (1963)	0.385
Hong Kong (1967-68)	0.430	Chile (1968)	0.376
Republic of Korea (1971)	0.338	Mexico (1963)	0.524
Pakistan (1970-71)	0.365		
Phillippines (1971)	0.458		
Thailand (1970)	0.385		

Next we examine the influence on the income inequality from different kind of income factors. The results of the decomposition of the A-coefficient are given in Table 4. However, as a supplement, corresponding results for the Gini coefficient are given in Appendix 2.

Table 4. Decomposition of the A-coefficient^{*)} in distributions of households income with respect to wage earnings in state-owned units (1) and in collective-owned units (2), other income from work units (3), income from current transfers (4) and other income (5) for households living in urban Sichuan and Liaoning

Province	Population (level of inequality)	Income factor	Fraction of overall inequality (per cent)	Fraction of total income (per cent)	Concentration coefficient
Sichuan	All households (0.303)	1	80.9	53.9	0.454
		2	-3.3	8.4	-0.118
		3	9.4	7.1	0.404
		4	5.9	22.1	0.081
		5	7.0	8.5	0.251
	Couples with 1 child (0.227)	1	92.2	61.2	0.342
		2	-18.6	12.5	-0.338
		3	12.5	8.8	0.321
		4	3.7	10.4	0.081
		5	10.1	7.1	0.324
Liaoning	All household (0.257)	1	83.6	53.6	0.402
		2	2.9	17.1	0.043
		3	7.6	6.9	0.283
		4	-4.9	15.1	-0.083
		5	10.8	7.3	0.379
	Couples with 1 child (0.182)	1	104.4	53.7	0.354
		2	-23.0	21.8	-0.192
		3	8.7	8.2	0.193
		4	0.4	9.7	0.007
		5	9.5	6.6	0.264

^{*)} Fraction of overall inequality =

$$\frac{(\text{Fraction of total income}) \cdot (\text{Concentration coefficient})}{\text{Overall inequality}}$$

Example:

The fraction of overall inequality held by wage earnings in state-owned units among urban households in Sichuan =

$$\frac{53.9 \cdot 0.454}{0.303} = 80.9$$

The first and second column of Table 4 show the relative contribution from the major income factors to overall inequality and to total income, respectively. The third column gives the concentration coefficients. The positive concentration coefficients for wage earnings in state-owned units, other income from work units and other income demonstrate that these income factors had a disequalizing effect on the current distributions of income. Note that wage earnings in state-owned units was the major income factor, contributing to 50 - 60 per cent of total income. However, this income factor also had the strongest disequalizing effect on the distributions of household income. Income from current transfers had a modest disequalizing effect, which means that the households received approximately an equal amount of transfers. Wage earnings in collective-owned units had, however, negative concentration coefficients which means that this income factor had an equalizing effect on the distributions of income, i.e. wage earnings in collective-owned units were on average larger among the poor than among the rich households.

In order to facilitate the understanding of the estimated concentration coefficients in Table 4 we provide more detailed information in Table 5 by decomposing the deciles of income for couples with 1 child living in urban Sichuan by the five income factors we introduced above. Note that the decile mean incomes in the first column are equal to the sum of the corresponding means in the remaining columns. Table 5 confirms the results summarized in Table 4 for 1 child couples living in urban Sichuan. We also see that wage earnings in collective-owned units was the predominant income source for the 10 per cent poorest couples, while wage earnings in state-owned units constituted as much as 62.8 per cent of the incomes for the 10 per cent richest couples. The 10 per cent richest earned on average more income on each income factor than the mean factor incomes and held the largest decile specific means for every factor except wage earnings in collective-owned units.

Table 5. Mean income for couples with 1 child living in urban Sichuan with respect to wage earnings in state-owned units (1), and in collective-owned units (2), other income from work units (3), income from current transfers (4) and other income (5)

Decile	Mean income	Decile specific mean factor incomes				
		1	2	3	4	5
1	2 836	957	1 115	187	340	237
2	3 530	1 827	826	278	454	145
3	3 968	1 766	900	247	741	314
4	4 413	2 736	537	367	522	251
5	4 764	3 110	515	418	464	257
6	5 052	3 158	604	427	589	274
7	5 428	3 851	219	505	591	262
8	5 780	3 831	569	456	441	484
9	6 312	4 380	248	668	544	472
10	7 294	4 581	619	810	471	813
All	4 938	3 019	615	436	516	351

As emphasized in Section 2, the above interpretation of the concentration coefficients as having equalizing/disequalizing effects on the current distribution of income, is based on the assumption that the current income factors are operating simultaneously, which means that decisions affecting each of the income factors are assumed to have been made simultaneously. Next we will examine the distributional impact from increasing a particular income factor, while the remaining income factors are kept fixed. Thus, according to (2.10) and the estimated concentration coefficients displayed in Table 4, a small increase in wage earnings in state-owned units or of other income from work units will increase income inequality for all distributions. This conclusion is based on the assumption that the concentration coefficients remain unchanged. Further we see that an increase in wage earnings from collective-owned units or in income from current transfers would have reduced income inequality. If, for example, wage earnings in collective-owned units for 1 child couples in Sichuan is increased by 1 per cent then income inequality would be reduced by 0.3 per cent. However, by

increasing wage earnings in state-owned units by 1 per cent then income inequality would have increased by 0.3 per cent.

3.2. Inequality in the distribution of per capita income

The results for all households reported in Section 3.1 provides important information about household income inequality, but it must be interpreted with caution when used as a basis for an analysis of welfare. This is mainly due to variation in household size and composition. To allow for the fact that for some households the total income may be shared by several persons while for others it may be enjoyed by just one or a few persons, we need an alternative to household income as an indicator of welfare. An indicator of welfare also ought to reflect that there are economies of scale when individuals combine to form households. The main argument is that a household with two members may not be able to live as cheaply as a single person, but two persons can certainly live more cheaply together than apart since certain consumption goods can be shared. These facts were the main motivation behind our focusing on couples with 1 child in the previous section. However, since we then merely succeed to compare the welfare levels of about half the urban population of Liaoning and one third of the urban population of Sichuan, we supplement this information by introducing household income divided by household size as welfare indicator and by analyzing the distribution of this indicator among individuals. The drawback of this approach is its neglect of possible economics of scale. However, the fact that expenditure to food, clothes and daily articles accounted for more than 70 per cent of total consumption, controlling for economies of scale may be less important.

Table 6. Mean, A-coefficient and Gini coefficient in the distribution of per capita household income among persons by province

Province	Sichuan	Liaoning
Number of observations	1 784	1 983
Mean	1 643 (13)	1 708 (10)
A-coefficient	0.274 (0.004)	0.224 (0.005)
Gini coefficient	0.187 (0.004)	0.147 (0.002)

The results in Table 6 confirm that there were relatively modest income differences in urban Sichuan and urban Liaoning. Note that the distributions of per capita household income among persons possessed a higher degree of inequality than the related distributions of income among couples with 1 child. This may be due to a possible underestimation of the welfare levels of larger households relatively to smaller ones, since the chosen welfare indicator neglects a possible presence of economies of scale.

4. THE STRUCTURE OF INEQUALITY IN DISTRIBUTIONS OF HOUSEHOLD EXPENDITURE

The aim of this section is to improve our understanding of current urban household expenditure patterns in urban Sichuan and Liaoning and thus of the structure of aggregate consumer demand and the welfare implications of consumers.

As for analyzing income distributions we examine distributions of expenditure by employing a summary measure of inequality. This approach is particularly attractive since it also provides information about the influence of major expenditure categories on the

inequality in the distribution of total household expenditure. The interest for decomposing expenditure inequality is motivated by the fact that the observed distribution of expenditure is the result of a process where households make decisions on consumption of different consumption goods and services simultaneously. In this paper we define the major commodity categories to be:

- (1) food
- (2) tobacco, liquor and tea
- (3) clothing
- (4) durables
- (5) other expenditures.

The major commodities in (4) are bicycles, television sets, radios, cameras, watches and furniture. The category (5) consists mainly of fuel, housing, daily articles, culture and services. Fuel is mainly used for cooking purposes and includes coal, firewood, gas and electricity. The category daily articles includes small appliances, cosmetics, laundry and toilet soaps. Because of its importance food is further divided into five components:

- (i) grain
- (ii) fresh vegetables
- (iii) meat and eggs
- (iv) fish
- (v) other food.

It should be noted that Chinese households also receive goods and services free of charge or at reduced prices. Free movies, excursions and transportation are examples, together with subsidies for grain, housing, fuel and medical services. This study is based on household expenditure data where the value of price subsidies is ignored.

4.1. Inequality and decomposition of inequality in distributions of household expenditure

As shown in Table 7, the level of household expenditure was higher in Liaoning than in Sichuan. The results also suggest a higher degree of inequality in distributions of expenditure in Sichuan than in Liaoning. Therefore, the main features in the differences between distributions of income seem to correspond to the differences between the respective distributions of expenditure.

Table 7. Mean^{*)}, A-coefficient and Gini coefficient in distributions of household expenditure for households living in urban Sichuan and Liaoning

Province	Sichuan		Liaoning	
	All households	Couples with 1 child	All households	Couples with 1 child
Mean	4 192 (76)	3 953 (95)	4 626 (77)	4 368 (83)
A-coefficient	0.324 (0.010)	0.263 (0.013)	0.302 (0.008)	0.258 (0.009)
Gini coefficient	0.221 (0.008)	0.182 (0.010)	0.214 (0.007)	0.184 (0.007)

^{*)} Standard deviations are given in the parantheses.

Next we examine the influence on the distributions of expenditure from the expenditures on different types of consumption goods and services. From the results displayed in Tables 8 and 9 we see that none of the expenditure categories had an equalizing effect on the distribution of total expenditure. The main features are that food expenditures contributed considerably less to overall inequality than to total expenditure and that durables contributed considerably more to overall inequality than to total expenditure. To be specific, the contribution of expenditure on food to total expenditure and overall inequality for couples

with 1 child were about 50 and 25 per cent, respectively, both in Sichuan and Liaoning. Durables contributed between two and three times as much to overall inequality as to total expenditure, which means that expenditure on durables are concentrated at high total expenditure levels. The contribution of clothing expenditures to overall inequality were 16-18 per cent and reflected its fraction of total expenditure. This implies that household with low, medium and high clothing expenditure on average had the same proportion of total clothing expenditure as of total expenditure. Also note from Table 9 that poor households spent relatively more on tobacco, liquor and tea than their proportion of total expenditure should promise.

Table 8. Decomposition of the A-coefficient in distributions of household expenditure with respect to five food expenditure categories and four non-food expenditure categories for households living in urban Sichuan and Liaoning

Province	Population (level of inequality)	Expenditure category	Fraction of overall inequality (per cent)	Fraction of total expenditure (per cent)	Concen- tration coefficient
Sichuan	All households (0.324)	(1) Food	37.3	52.7	0.230
		(i) Grain	2.7	5.6	0.159
		(ii) Fresh veget.	4.0	7.0	0.187
		(iii) Meat and eggs	12.7	19.8	0.207
		(iv) Fish	1.9	2.0	0.293
		(v) Other food	16.0	18.3	0.284
		(2) Tobacco, liquor and tea	5.2	6.4	0.262
		(3) Clothing	17.9	14.8	0.391
		(4) Durables	28.4	13.5	0.683
		(5) Other expend.	11.2	12.5	0.291
	Couples with 1 child (0.263)	(1)	25.0	48.5	0.135
		(i)	1.2	5.2	0.059
		(ii)	1.6	6.0	0.069
		(iii)	7.7	17.7	0.115
		(iv)	1.6	2.0	0.205
(v)		12.9	17.6	0.193	
(2)	5.2	7.0	0.197		
(3)	17.4	16.0	0.286		
(4)	38.2	15.1	0.666		
(5)	14.2	13.5	0.275		

Table 8 (cont.)

Province	Population (level of inequality)	Expenditure category	Fraction of overall inequality (per cent)	Fraction of total expenditure (per cent)	Concen- tration coefficient
Liaoning	All households (0.302)	(1) Food	32.8	52.8	0.188
		(i) Grain	2.1	5.3	0.121
		(ii) Fresh veget.	3.7	7.5	0.147
		(iii) Meat and eggs	9.0	16.2	0.168
		(iv) Fish	3.8	4.9	0.234
		(v) Other food	14.2	18.9	0.227
		(2) Tobacco, liquor and tea	6.1	6.9	0.267
		(3) Clothing	16.5	16.3	0.305
		(4) Durables	36.6	15.3	0.725
		(5) Other expend.	8.0	8.7	0.276
	Couples with 1 child (0.258)	(1)	25.8	50.9	0.131
		(i)	0.3	4.4	0.019
		(ii)	2.3	7.0	0.084
		(iii)	7.2	15.2	0.121
		(iv)	3.1	4.6	0.178
(v)		12.9	19.7	0.168	
(2)		4.1	7.0	0.151	
(3)		15.8	17.2	0.237	
(4)		46.4	16.4	0.728	
(5)		7.9	8.5	0.240	

Since expenditures on food accounted for as much as 50 per cent of total expenditure, Table 8 provides a further breakdown of food expenditure into five food commodity categories. As can be seen from the estimated concentration coefficients, expenditures on grain and fresh vegetables contributed with the lowest disequalizing effects on the distribution of total expenditure; for couples with 1 child, the figures of these concentration coefficients were close to zero. This means that expenditures on grain and fresh vegetables were quite evenly distributed over the population of couples with 1 child. The estimated effects of

expenditures on grain seem reasonable since grain is heavily subsidized. Fresh vegetables were, however, mainly purchased in the free market. In that context the approximately neutral effect of fresh vegetables on overall expenditure inequality are rather surprising. It implies that the households preferences for fresh vegetables were independent of their purchasing power.

Table 9. Mean expenditure by deciles for urban Sichuan couples with 1 child decomposed with respect to expenditures on food, tobacco, liquor and tea, clothing, durables and other expenditures

Decile	Mean expenditure	Decile specific mean expenditure categories				
		Food	Tobacco, liquor and tea	Clothing	Durables	Other expenditures
1	2 117	1 306	173	269	64	305
2	2 766	1 642	180	500	90	352
3	3 060	1 822	319	438	114	367
4	3 260	1 832	266	483	249	428
5	3 597	1 941	220	551	430	454
6	3 888	2 018	293	742	312	523
7	4 155	1 961	255	814	576	549
8	4 512	2 053	342	587	800	730
9	5 259	2 354	365	878	966	695
10	6 915	2 220	340	1 049	2 356	950
All	3 953	1 915	276	631	596	535

Table 9 provides more detailed information than Table 8 about differences in the expenditure pattern among couples with 1 child living in urban Sichuan. The most striking result is that the 10 per cent of the couples with the highest total expenditure on average spent considerably more on durables than the remaining part of the population; 2.4 times the mean expenditure on durables for the ninth decile and 36.8 times the mean expenditure on durables for the first decile. Also note that the tenth decile both had the highest clothing expenditure

and other expenditures. Couples located in the upper 50 per cent of the expenditure distribution spent approximately the same amount on food and on tobacco, liquor and tea.

We also examine the impact on the overall expenditure inequality from increasing expenditure in one category at a time, *ceteris paribus*. Table 8 demonstrates that food expenditure has the lowest concentration coefficient for all populations. Thus, by increasing food consumption by 1 per cent then overall expenditure inequality will decrease among all households in urban Sichuan and Liaoning by 0.15 and 0.20 per cent, respectively, provided that the concentration coefficients are kept unchanged. The breakdown of food expenditure reveals that grain has the lowest concentration coefficient. By doubling grain consumption the overall expenditure inequality would have decreased by 4 per cent both among couples with one child living in urban Sichuan and urban Liaoning. As noticed, durables were heavily concentrated at high total expenditure levels. Therefore, by increasing durables expenditure by 1 per cent the overall expenditure inequality among couples with one child living in urban Sichuan and Liaoning will increase by 0.23 and 0.30 per cent, respectively.

4.2. Welfare effects of commodity taxation

Note that the decomposition of the Gini-coefficient has long been used as a method for describing the relationship between functional and size distributions of income and to analyze nonlinear Engel curves by means of the Lorenz curve (see e.g. Kakwani, 1980). The decomposition method has also been employed for evaluating the welfare effects from income and commodity taxation. This methodological approach was also used by Yitzhaki and Slemrod (1991) in order to examine the effect on social welfare from subsidizing expenditure on one commodity by means of a tax on another commodity such that net tax revenue does not change. In this section we will consider related questions, but restrict our ambition to the

estimation of direct effects, i.e. the impact of behavioral responses (indirect effects) will be neglected.

Let X be total expenditure for a randomly selected household and assume that X is the sum of s expenditure categories. Now suppose that we introduce a tax (θ_r) on expenditure category (commodity) r and a subsidy (θ_k) on expenditure category k , so that total tax revenue does not change. Thus, θ_r is negative and θ_k is positive. Let the tax revenue P be defined by

$$(2.12) \quad P = \theta_k \mu_k + \theta_r \mu_r.$$

The requirement of unchanged tax revenue, $P=0$, leads to the following expression for total household expenditure

$$(2.13) \quad X = (1+\theta_k)X_k + (1+\theta_r)X_r + \sum_{i \neq k,r} X_i$$

The decomposition of the A-coefficient when X is defined by (2.13) is given by

$$(2.14) \quad A = \frac{(1+\theta_k)\mu_k}{\mu} \alpha_k + \frac{(1+\theta_r)\mu_r}{\mu} \alpha_r + \sum_{i \neq k,r} \frac{\mu_i}{\mu} \alpha_i.$$

Inserting (2.12) and (2.13) into (2.14) gives

$$(2.15) \quad A = \frac{\theta_k \mu_k}{\mu} (\alpha_k - \alpha_r) + \sum_{i=1}^s \frac{\mu_i}{\mu} \alpha_i.$$

By differentiating (2.15) with respect to θ_k , we get

$$(2.16) \quad \frac{\partial A}{\partial \theta_k} \Big|_{P=0} = \frac{\mu_k}{\mu} (\alpha_k - \alpha_r).$$

Analogously, we find for the Gini-coefficient that

$$(2.17) \quad \frac{\partial G}{\partial \theta_k} \Big|_{P=0} = \frac{\mu_k}{\mu} (\gamma_k - \gamma_r).$$

Under the current Chinese economic system, grain consumption is subsidized by price supports. According to the concentration coefficients estimates in Table 8, grain expenditures had approximately a neutral effect on overall expenditure inequality. Thus, by increasing the price support on grain welfare will be improved, provided that the behavioral responses do not substantially change the concentration coefficients. Suppose now that the subsidies on grain are to be financed by a tax on another commodity. Then, according to (2.16) and the estimates of Table 8, it would be most favorable to tax the consumption of durables. If this tax reform did not increase the tax burden then substantial welfare improvement would be obtained. By comparing the concentration coefficients in Table 8, (2.16) can be used to identify alternative welfare improving tax reforms, though less favorable than the tax reform where we tax the consumption of durables and subsidize the consumption on grain. Note that we arrive at the same conclusion if these welfare evaluations are based on (2.17) and the estimates of Table G8 in Appendix 2.

5. THE STRUCTURE OF HOUSEHOLDS SAVING BY INCOME

The purpose of this section is to provide information on the relative importance of lower, middle, and upper household income classes in the total of households saving. The reason for highlighting the distribution of savings by income, as opposed to alternative economic characteristics, is the important role played by income in almost all saving theories.

Saving is defined as the difference between annual real income and annual real expenditure. Accordingly, investment in consumer durable goods is not included in saving. As a supplement to the description of the saving behavior we, however, provide similar

information of the purchasing behavior on durables.

For the judgement and interpretation of the results in this section it is important to note that the relative importance of different income classes saving can be affected by the time period covered. Firstly, it is possible that households with high current income in any year tend to have higher income than normal and hence save more than they ordinarily do, while households with low current income have lower income than normal and hence save less than they ordinarily do. Second, in many countries there are evidence of cyclical variation in the savings behavior suggesting that the proportion of savings accounted for by the upper income groups is higher in an economic recession than during a boom. However, lack of individual time series data prevent us from dealing with these issues.

Based on data from the Urban Household Survey we are in the position to break down household savings into income groups. Therefore, we can estimate the proportions of savings accounted for by the lower, middle and upper income classes. Table 10 shows the distributions of savings and expenditure on durables by income decile groups for all households and for couples with 1 child living in urban Sichuan and urban Liaoning.

Table 10. Mean saving and expenditure on durables by income decile groups for urban households living in Sichuan and Liaoning. Per cent

Income decile group	Sichuan				Liaoning			
	All households		Couples with 1 child		All households		Couples with 1 child	
	Mean savings (per cent)	Mean expend. on durables (per cent)	Mean savings (per cent)	Mean expend. on durables (per cent)	Mean savings (per cent)	Mean expend. on durables (per cent)	Mean savings (per cent)	Mean expend. on durables (per cent)
1	3.6	0.9	3.9	2.7	3.7	2.3	4.5	4.0
2	5.2	5.1	4.8	7.3	6.0	4.4	7.4	4.1
3	7.6	3.5	9.7	4.0	1.3	10.2	-0.2	13.3
4	4.4	10.1	0.8	16.1	9.7	5.8	8.2	7.0
5	10.2	6.4	11.1	6.9	8.3	8.9	10.3	7.1
6	9.2	11.6	13.0	8.5	7.6	12.0	11.4	9.6
7	11.0	10.2	11.1	10.1	8.0	12.5	6.7	14.4
8	13.4	14.9	14.2	10.6	14.4	9.8	11.0	14.3
9	15.3	15.8	16.6	11.2	17.3	12.9	14.7	10.7
10	20.1	21.5	14.8	22.6	23.7	21.2	26.1	15.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

According to Table 10, the 30 per cent richest households accounted for about 50 per cent of total savings, with not much difference in this respect between all households and couples with 1 child. The results also suggest a somewhat greater concentration of saving in the upper income groups for Liaoning than for Sichuan. This difference, however, is to a certain extent neutralized by a greater concentration of expenditure on durables for Sichuan than for Liaoning. It is found that the 30 per cent richest households are responsible for 40-45 per cent of the total expenditure on durables for Liaoning and roughly 5 per cent points higher for Sichuan.

Table 11. Saving-income ratios and expenditure on durables income ratios by income decile groups for households living in urban Sichuan and Liaoning

Income decile group	Sichuan				Liaoning			
	All households		Couples with 1 child		All households		Couples with 1 child	
	Saving-income ratio (per cent)	Expend. on durables income ratio (per cent)	Saving-income ratio (per cent)	Expend. on durables income ratio (per cent)	Saving-income ratio (per cent)	Expend. on durables income ratio (per cent)	Saving-income ratio (per cent)	Expend. on durables income ratio (per cent)
1	17.7	2.2	13.6	5.6	12.8	5.3	11.1	8.2
2	16.8	8.2	13.3	12.4	15.8	7.8	15.5	7.3
3	21.3	4.9	24.1	6.0	3.1	16.1	-0.4	21.9
4	11.1	12.7	1.7	21.8	20.6	8.3	13.4	10.8
5	23.6	7.3	22.7	8.7	16.8	12.0	17.5	9.8
6	19.6	12.3	25.5	10.1	14.5	15.2	18.2	13.0
7	21.7	10.1	20.2	11.1	14.2	14.8	10.3	18.7
8	23.9	13.2	24.3	10.9	23.7	10.7	15.8	17.5
9	23.9	12.4	25.9	10.5	25.0	12.4	19.7	12.3
10	24.6	13.1	20.0	18.5	25.7	15.3	29.1	14.7
All	21.3	10.6	20.0	12.1	18.7	12.4	16.1	13.8

Table 11 demonstrates that the similarities between the distributions of savings for Sichuan and Liaoning are maintained in the saving-income ratios between the provinces. The saving rate is on average close to 25 per cent among the 20 per cent richest households and 15 per cent among the 20 per cent poorest households. The surprisingly high savings rates among the poor suggest that the propensity to save is equally strong among the poor as among the rich.

Now, assume that the subsistence expenditure on food for couples with one child is equal to the average food expenditure for the 5 per cent poorest couples with one child living in urban Sichuan, which was estimated to be 1 300 Yuan in 1990. Then it was found that the average propensity to save out of total income minus subsistence expenditure on food was

constant over most of the range of income. A similar result holds for Liaoning except for the 10 per cent richest couples with one child where the propensity to save was much stronger than for the remaining part of the population.

Since for some purposes it is desirable to add investment in consumer durables to personal savings information about expenditure on durables is displayed in Tables 10 and 11. The results demonstrate the importance of examining savings behavior in relation to purchasing behavior of durables. The low savings rate for the fourth income decile group of couples with one child in Sichuan and the slightly negative saving rate for the third income decile of couples with one child in Liaoning have to be judged against the particular high expenditure on durables to income ratio for these income groups. Similarly, the third income decile group of couples with one child in Sichuan differs from the remaining low income groups by holding a considerable higher saving rate and lower rate of expenditure on durables.

Tables 10 and 11 show that only a few of the income groups had low savings rates, which can be due to the circumstance that the households with negative or low positive savings rates are dispersed across most income groups. Table 12 demonstrates a similarity between the structures of dissavings over provinces. The proportion of households with negative savings was indeed 7 percentage points higher in Liaoning compared to Sichuan.

Table 12. Proportion of household with negative saving, mean level of dissaving, mean expenditure on durables and mean income for households with negative saving

Province	Family type	Proportion of households with negative saving (per cent)	Mean level of dissaving	Mean expenditure on durables	Mean income
Sichuan	All households	11.4	-745	1 892	5 238
	Couples with 1 child	15.4	-698	1 746	4 666
Liaoning	All households	18.2	-1 224	2 201	5 293
	Couples with 1 child	22.5	-1 218	2 107	5 020

The mean incomes of households with negative savings were roughly equal to the mean incomes of their respective populations, while the mean expenditure on durables were 3-4 times the respective population means. For households with negative reported savings the purchases of durables were either financed by such incomes as bank deposits withdrawn, nonreported transfers from parents and other relatives or/and by other income sources underreported by the households.

6. SUMMARY AND CONCLUSIONS

In this paper we present a descriptive analysis of the structure of economic inequality among households living in urban regions of two Chinese provinces, Sichuan and Liaoning, in 1990. This study is altogether based on data from the State Statistical Bureau's Urban Household Survey. A particular feature of this survey is that each household administers daily records of its cash income and consumption quantities and expenditures.

In order to focus attention on economic inequality, we concentrate on distributions of income, expenditure and savings among all households and in particular among couples with

1 child less than 18 years. In 1990, couples with 1 child constituted 36.2 and 54.1 per cent of the total number of urban households in Sichuan and Liaoning, respectively. The dominating position of this particular household group is mainly a result of the current birth control policy in China. Consequently, the majority of the children is thus living together with their parents in three-person's families. Thus, by focusing on couples with 1 child we also obtain important information about economic inequality among children living in urban regions.

Our findings of income inequality show a low level of inequality compared to other developing countries. The mean income of the richest 5 per cent couples with 1 child living in Sichuan was, for instance, 3 times the mean income of the poorest 5 per cent. For the purpose of comparison, however, note that the present study is restricted to households living in urban regions. By extending the study to include rural regions, income inequality would presumably rise.

In order to identify the sources of income inequality in urban Sichuan and Liaoning the overall inequality were decomposed with respect to five major income factors. For each population, the primary contribution to inequality was wage earnings in state-owned units, contributing to about 80 per cent of overall inequality while its fraction of total income was between 50 and 60 per cent. In contrast, wage earnings in collective-owned units had an equalizing effect on the distribution of income for each population except for the population of households living in urban Liaoning, for which this income factor was approximately evenly distributed. Thus, for poor couples with 1 child wage earnings in collective-owned units was the predominant income source, while for rich couples with 1 child wage earnings in state-owned units was the predominant income source. Also note that income from current transfers was approximately evenly distributed over each of the current populations.

The examination of the distributions of expenditure reveals higher degree of expenditure inequality than income inequality. This is mainly due to the savings behavior and the purchases of durables financed by nonreported incomes and transfers from parents and other relatives. The level of expenditure was about 10 per cent higher in Liaoning than in Sichuan. In contrast, the corresponding difference in level of income was about 6 per cent. Moreover, the decomposition of the expenditure inequality shows that food expenditure is the predominant expenditure factor, contributing to about 50 per cent of total expenditure. Its contribution to overall inequality is, however, considerably lower. By contrast, durables contributed between 2 and 3 times as much to overall inequality as to total expenditure. The major durables are bicycles, television sets, radios and furniture.

A further breakdown of food expenditure into five food commodity categories reveals that expenditure on grain and fresh vegetables were evenly distributed over couples with 1 child. Another striking result is that the upper 10 per cent in the distribution of total expenditure spent on durables 4 times the mean expenditure of durables despite that they also had high expenditure on the remaining consumption categories.

In order to obtain a more complete picture on economic inequality than given by income and expenditure data, we also provide information about who saves by highlighting the distribution of savings by income. The estimates show that the 30 per cent richest households accounted for about 50 per cent of total savings. Moreover, the savings-income ratio was found to be about 20 per cent with not much difference between poor and rich households. Nevertheless, as much as close to 16 per cent of the couples with one child living in urban Sichuan and Liaoning had negative savings rates. These particular households turn out to have considerably higher expenditure on durables than the mean expenditure on durables. For these households, purchases of durables were either financed by nonreported transfers from relatives or/and by other nonreported incomes, such as bank deposits

withdrawn.

The paper also demonstrates how to utilize the decomposition results for evaluating the welfare effects from commodity taxation. Our conclusion is that a substantial welfare improvement would be obtained by increasing the price support on grain followed by a tax on consumption of durables. Note, however, that these considerations disregard the impact of behavioral responses. In order to take behavioral aspects into account it is necessary to employ a structural model, which is the purpose of a follow-up study.

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APPENDIX 1

The Urban Household Survey of China

The annual Urban Household Survey of China is a sample survey which covers all provinces. The survey collects data on household size and composition, employment status, education level, income structure and quantities and expenditures by type of commodities.

A particular attractive feature of this survey is its continuity in recording the income and consumption data. Each household is keeping daily records of its cash income and consumption quantities and expenditures for monthly collection by survey officials.

The sample of households is selected by adopting a two-stage sampling design. At each stage stratified systematic sampling is used. In the first stage, a sample of cities and county towns is selected by the State Statistical Bureau (SSB) and provincial statistical bureaus. The cities and county towns are according to the size of their non-agricultural populations selected by means of a systematic sampling procedure. In the second stage 100 households are selected randomly from each selected city and county town. The total sample size is about 15 000 households. In addition to provide daily income and consumption accounts the selected households are every month asked questions about household size and composition and about education and employment status of the household members.

In order to reduce non-response and the extent of measurement errors the Urban Household Survey has been based on a rotation sample since 1988. The rotation proportion is 1/3 and the rotation period is one year. Furthermore, SSB has also worked out a comprehensive set of instructions for survey officials in order to improve the data quality. Its main content deals with the survey officials behavior towards the field operations. They are, for instance, asked to help the selected households with housework and child care and otherwise comply with the households customs.

Income concepts

Total income is all cash income received by the household during the year, but excluding such incomes as bank deposits withdrawn, money borrowed from relatives or friends, and repayment of debt by others.

Wages in state-owned or collective-owned units are the total wages of household members employed in state-owned or collective-owned enterprises, institutions, government offices and other organizations. Such wages consist of base wage, bonuses, floating salary and contractual income. Floating salary is an unfixd salary, the amount of which depends upon the quality and quantity of work produced. Contractual income is the income that staff and workers in some state-owned and collective-owned enterprises earn from work they are contracted to perform. The amount of the contractual income is equal to the total income derived from the constracted activities minus all production costs, taxes, and profits set by contract.

Table A1. Basic information about household structure in urban Sichuan

Household structure	Number (per cent)	Mean age of adult females	Mean age of adult males
Singles	8.9	52	43
Couples without children	14.0	56	61
Couples with 1 child less than 18 years	36.2	36	39
Couples with 2 or more children less than 18 years	7.1	39	41
Other households	33.8	45	49
All households	100.0	43	46

Table A2. Basic information about household structure in urban Liaoning

Household structure	Number (per cent)	Mean age of adult females	Mean age of adult males
Singles	4.0	43	34
Couples without children	7.4	56	59
Couples with 1 child less than 18 years	54.1	35	36
Couples with 2 or more children less than 18 years	8.7	41	42
Other households	25.8	45	47
All households	100.0	40	41

APPENDIX 2

Decomposition of the Gini-coefficient

In the tables below we have used a numbering which will facilitate comparisons with the corresponding tables for the A-coefficient. Table G4 corresponds to Table 4 and Table G8 to Table 8.

Table G4. Decomposition of the G-coefficient in distributions of urban households income with respect to wage earnings in state-owned units (1) and in collective-owned units (2), other income from work units (3), income from current transfers (4) and other income (5) by province

Province	Population (level of inequality)	Income factor	Fraction of overall inequality (per cent)	Fraction of total income (per cent)	Concentration coefficient
Sichuan	All households (0.200)	1	81.7	53.9	0.303
		2	-5.3	8.4	-0.125
		3	9.6	7.1	0.273
		4	6.2	22.1	0.056
		5	7.7	8.5	0.183
	Couples with 1 child (0.148)	1	89.3	61.2	0.216
		2	-15.8	12.5	-0.188
		3	13.2	8.8	0.221
		4	1.3	10.5	0.019
		5	12.0	7.1	0.250
Liaoning	All household (0.174)	1	76.7	53.6	0.198
		2	-1.7	17.1	-0.014
		3	6.4	6.9	0.127
		4	4.7	15.1	0.043
		5	13.9	7.3	0.263
	Couples with 1 child (0.122)	1	100.2	53.7	0.228
		2	-24.2	21.8	-0.136
		3	8.1	8.2	0.121
		4	-0.4	9.7	-0.005
		5	16.3	6.6	0.303

Table G8. Decomposition of the Gini-coefficient in distribution of urban household expenditure with respect to five food expenditure categories and four non-food expenditure categories

Province	Population (level of inequality)	Expenditure category	Fraction of overall inequality (per cent)	Fraction of total expenditure (per cent)	Inter- action coefficient
Sichuan	All households (0.221)	(1) Food	33.1	52.7	0.139
		(i) Grain	2.2	5.6	0.086
		(ii) Fresh veget.	3.4	7.0	0.109
		(iii) Meat and eggs	10.8	19.8	0.120
		(iv) Fish	1.6	2.0	0.176
		(v) Other food	15.1	18.3	0.182
		(2) Tobacco, liquor and tea	4.5	6.4	0.152
		(3) Clothing	17.8	14.8	0.264
		(4) Durables	33.9	13.5	0.554
		(5) Other expend.	10.9	12.5	0.192
	Couples with 1 child (0.182)	(1)	20.5	48.5	0.077
		(i)	1.0	5.2	0.035
		(ii)	1.1	6.0	0.034
		(iii)	6.3	17.7	0.065
		(iv)	1.4	2.0	0.123
(v)		10.7	17.6	0.111	
(2)		4.1	7.0	0.106	
(3)		16.1	16.0	0.184	
(4)	44.4	15.1	0.536		
(5)	14.9	13.5	0.200		

Table G8 (cont.)

Province	Population (level of inequality)	Expenditure category	Fraction of overall inequality (per cent)	Fraction of total expenditure (per cent)	Inter- action coefficient
Liaoning	All households (0.214)	(1) Food	29.1	52.8	0.118
		(i) Grain	1.8	5.3	0.073
		(ii) Fresh veget.	3.3	7.5	0.092
		(iii) Meat and eggs	7.8	16.2	0.103
		(iv) Fish	3.5	4.9	0.154
		(v) Other food	12.7	18.9	0.144
		(2) Tobacco, liquor and tea	5.4	6.9	0.167
		(3) Clothing	14.7	16.5	0.193
		(4) Durables	43.2	36.6	0.606
		(5) Other expend.	7.6	8.0	0.188
	Couples with 1 child (0.184)	(1)	25.8	50.9	0.069
		(i)	0.3	4.4	0.005
		(ii)	2.3	7.0	0.047
		(iii)	7.2	15.2	0.052
		(iv)	3.1	4.6	0.098
(v)		12.9	19.7	0.097	
(2)		4.1	7.0	0.092	
(3)		15.8	17.2	0.148	
(4)	46.4	16.4	0.617		
(5)	7.9	8.5	0.183		

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