

# GROWING OUT OF POVERTY: TRENDS AND PATTERNS OF URBAN POVERTY IN CHINA 1988–2002

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EE 462 Development Macroeconomics  
Semester 1/2020

Reference: Appleton, S., Song, L., and Xia, Q. (2010). Growing out of Poverty: Trends and Patterns of Urban Poverty in China 1988–2002. *World Development*, 38(5), 665-678.

# Summary

- Objective:

Investigate poverty in urban China using CHIPs, and its relationship with inequality, growth, and anti-govt program.

- Methodology:

- Plot the trends in absolute poverty during 1988-2002
- Decompose poverty changes
- Multivariate analysis

- Main findings:

- Inequality rises during 1988-1995 but remain constant afterwards
- Poverty reduction is mainly due to econ growth; Govt program has little impact

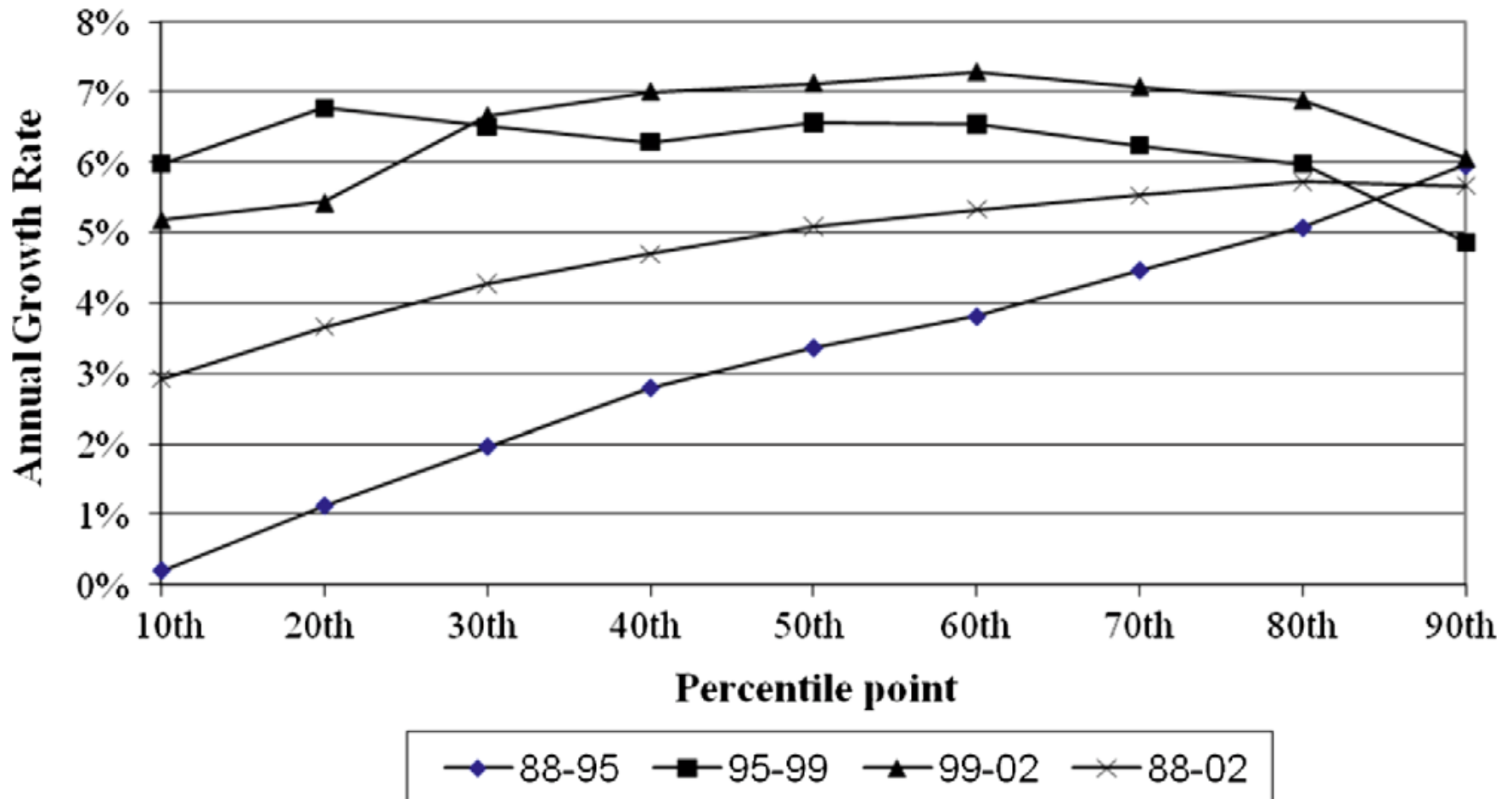
# Motivations

- Why should urban poverty be examined?
- What's the problem with previous estimation?

# Data

- What dataset is used?
  - Chinese Household Income Project Survey
- Strength of this data?
- Weakness of this dataset?

# Trends in Growth and Inequality



# Poverty Trends

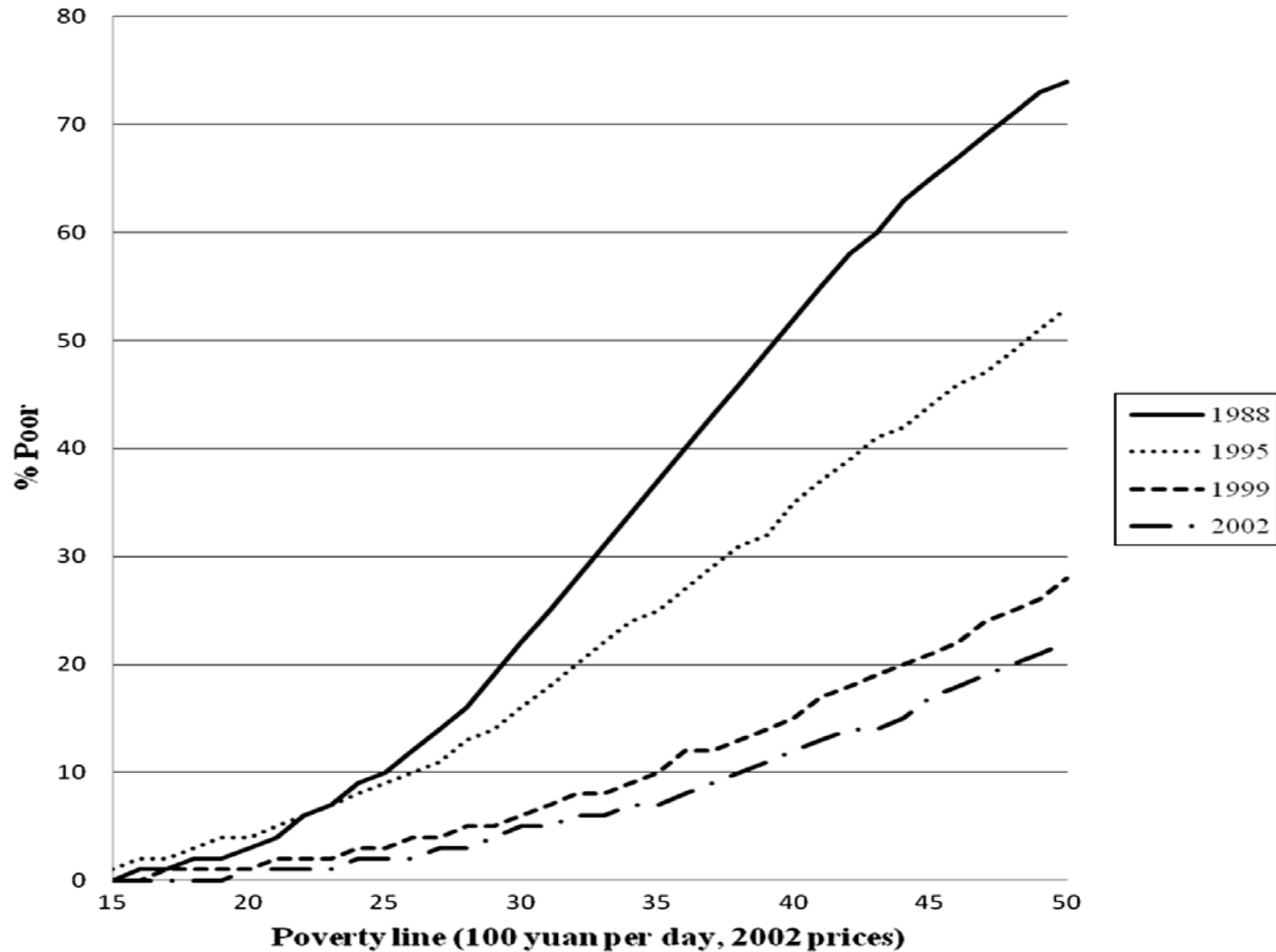


Table 4. *Inequality in urban household income per capita, 1988–2002*

	1988	1995	1999	2002
<i>10-province sample</i>				
Gini coefficient	0.211	0.316	N.A.	0.295
Atkinson index (with 1 inequality aversion)	0.071	0.160	N.A.	0.136
Atkinson index (with 2 inequality aversion)	0.133	0.302	N.A.	0.260
Generalized entropy (1) or Theil's $T$ index	0.078	0.229	N.A.	0.146
Generalized entropy (2) or Theil's $L$ index	0.092	0.686	N.A.	0.173
<i>5-province sample</i>				
Gini coefficient	0.196	0.331	0.312	0.291

Table 5. *Urban poverty indices, with \$2 and \$3 a day poverty lines, 1988–2002*

	1988 (%)	1995 (%)	1999 (%)	2002 (%)
<i>With 1200 yuan a year (\$1 a day) poverty line</i>				
Head count, $P_0$	0.16	0.64	0.27	0.12
Poverty gap, $P_1$	0.02	0.16	0.12	0.03
Squared poverty gap, $P_2$	0.00	0.08	0.07	0.01
<i>With 2,400 yuan a year (\$2 a day) poverty line</i>				
Head count, $P_0$	7.54	7.33	2.87	1.91
Poverty gap, $P_1$	1.21	1.69	0.66	0.42
Squared poverty gap, $P_2$	0.32	0.63	0.27	0.15
<i>With 3,600 yuan a year (\$3 a day) poverty line</i>				
Head count, $P_0$	37.14	25.79	10.90	7.91
Poverty gap, $P_1$	7.64	6.31	2.50	1.84
Squared poverty gap, $P_2$	2.40	2.41	0.95	0.66
<i>With half median income poverty line</i>				
Head count, $P_0$	3.10	8.20	9.28	10.46
Poverty gap, $P_1$	0.46	1.84	2.15	2.41
Squared poverty gap, $P_2$	0.11	0.68	0.82	0.88

*Note:* 10-province sample used for all years except 1999.

# Decomposing Changes in Absolute Poverty

Table 7. *Decomposition of urban poverty changes into growth and redistributive components (headcount poverty index)*

	Growth component (%)	Redistribution component (%)	Residual (%)	Total change in poverty (%)
<i>(a) 2,400 yuan a year poverty line (\$2 a day)</i>				
1988–1995	–6.05	12.00	–6.17	–0.22
1995–1999	–4.64	0.65	–0.47	–4.45
1999–2002	–0.80	–0.32	0.15	–0.96
1988–2002	–7.38	12.02	–10.28	–5.63
<i>(b) 3,600 yuan a year poverty line (\$3 a day)</i>				
1988–1995	–25.84	12.73	1.76	–11.35
1995–1999	–15.63	–0.61	1.36	–14.89
1999–2002	–2.65	–0.37	0.02	–2.99
1988–2002	–35.49	6.84	–0.58	–29.23

*Note:* 10-province sample used for all comparisons except those involving 1995, when the 5-province sample was used.

Table 8. *Decomposition of urban poverty changes by employment status of household workers, 1995–2002*

	Population share	Poverty headcount		
		2,400 yuan line	3,600 yuan line	
<i>Households without unemployed members</i>				
1995	93.45	6.01	23.12	
1999	77.88	1.84	7.86	
2002	78.46	1.19	5.73	
<i>Households with unemployed members</i>				
1995	6.55	22.31	55.1	
1999	22.12	9.99	27.63	
2002	21.54	5.92	17.82	
	Contribution to fall in poverty			Total change in poverty
	Population shifts	Intra-group changes	Interaction terms	
<i>(a) Decomposition with 2,400 yuan line</i>				
1995–1999	2.54	–4.70	–1.27	–3.43
1999–2002	–0.05	–1.41	0.02	–1.43
1995–2002	2.44	–5.58	–1.73	–4.87
<i>(b) Decomposition with 3,600 yuan line</i>				
1995–1999	4.98	–16.06	–1.90	–12.98
1999–2002	–0.11	–3.83	0.04	–3.90
1995–2002	4.79	–18.69	–2.98	–16.88

Note: A sample of seven common provinces was used.

Table 9. *The impact of social welfare payments on poverty and inequality*

	1995	1999	2002
Proportion of households with unemployed being helped by various anti-poverty measures	2.86%	21.18%	18.04%
(1) by work unit	2.34%	18.48%	1.96%
(2) by unemployment insurance	n.a.	1.10%	10.91%
(3) by low income allowance	0.52%	2.33%	8.22%
<i>Impact of anti-poverty measures on inequality</i>			
Actual Gini coefficient	0.31098	0.30882	0.29639
Gini coefficient excluding anti-poverty measures	0.31097	0.31226	0.29849
<i>Impact of anti-poverty measures on poverty headcount (1200 yuan poverty line)</i>			
Actual headcount	0.62%	0.37%	0.18%
Headcount excluding anti-poverty measures	0.62%	0.63%	0.27%
Total reduction in headcount from anti-poverty measures	0.00%	0.27%	0.09%
(1) by work unit	0.00%	0.22%	0.00%
(2) by unemployment insurance	n.a.	0.00%	0.00%
(3) by low income allowance	0.00%	0.12%	0.09%
<i>Impact of anti-poverty measures on poverty headcount (2,400 yuan poverty line)</i>			
Actual headcount	7.08%	3.65%	2.21%
Headcount excluding anti-poverty measures	7.09%	4.13%	2.54%
Total reduction in headcount from anti-poverty measures	0.01%	0.48%	0.33%
(1) by work unit	0.00%	0.36%	0.01%
(2) by unemployment insurance	n.a.	0.00%	0.07%
(3) by low income allowance	0.01%	0.12%	0.21%

*Note:* A sample of seven common provinces was used.

# Multivariate results

Table 10. *Determinants of income and poverty—parsimonious specification*

Dependent variable (estimation method)		1988	1995	1999	2002
Head's schooling (years)	Income (OLS)	0.04 <sup>***</sup>	0.04 <sup>***</sup>	0.06 <sup>***</sup>	0.08 <sup>***</sup>
	Income gap (tobit)	0.05 <sup>***</sup>	0.06 <sup>***</sup>	0.10 <sup>***</sup>	0.11 <sup>***</sup>
	Non-poor (probit)	0.16 <sup>***</sup>	0.11 <sup>***</sup>	0.18 <sup>***</sup>	0.18 <sup>***</sup>
Head is CP member	Income (OLS)	0.16 <sup>***</sup>	0.20 <sup>***</sup>	0.31 <sup>***</sup>	0.22 <sup>***</sup>
	Income gap (tobit)	0.18 <sup>***</sup>	0.34 <sup>***</sup>	0.63 <sup>***</sup>	0.50 <sup>***</sup>
	Non-poor (probit)	0.65 <sup>***</sup>	0.67 <sup>***</sup>	1.05 <sup>***</sup>	0.83 <sup>***</sup>
Male-headed	Income (OLS)	0.01	0.04	0.06	0.11 <sup>***</sup>
	Income gap (tobit)	0.06	0.07	0.21 <sup>*</sup>	-0.12
	Non-poor (probit)	0.15	-0.02	0.40 <sup>*</sup>	-0.14
Dependency ratio	Income (OLS)	-1.18 <sup>***</sup>	-1.25 <sup>***</sup>	-1.01 <sup>***</sup>	-1.11 <sup>***</sup>
	Income gap (tobit)	-1.25 <sup>***</sup>	-1.46 <sup>***</sup>	-0.95 <sup>***</sup>	-1.23 <sup>***</sup>
	Non-poor (probit)	-4.89 <sup>***</sup>	-3.08 <sup>***</sup>	-1.86 <sup>***</sup>	-2.20 <sup>***</sup>
Number of adults (log)	Income (OLS)	-0.31 <sup>***</sup>	-0.46 <sup>***</sup>	-0.38 <sup>***</sup>	-0.41 <sup>***</sup>
	Income gap (tobit)	-0.31 <sup>***</sup>	-0.55 <sup>***</sup>	-0.32 <sup>***</sup>	-0.43 <sup>***</sup>
	Non-poor (probit)	-1.27 <sup>***</sup>	-1.20 <sup>***</sup>	-0.62 <sup>***</sup>	-0.78 <sup>***</sup>
Number of observations		8,993	6,928	3,998	6,835
Number poor (income < \$3 per day)		2,957 (32.9%)	1,572 (22.7%)	439 (11.0%)	496 (7.3%)

*Notes:*

- (1) Dependent variables: income = log of real income *per capita*.
- (2) Income gap = log of real income *per capita*, censored at 3,600 yuan per year.
- (3) Non-poor = 1 if real income *per capita* above 3,600 yuan per year.
- (4) Also included in models but not reported are provincial dummies and quadratics for age of household head.

<sup>\*</sup> Denotes statistical significance at the 10% level.

<sup>\*\*\*</sup> Denotes statistical significance at the 1% level.

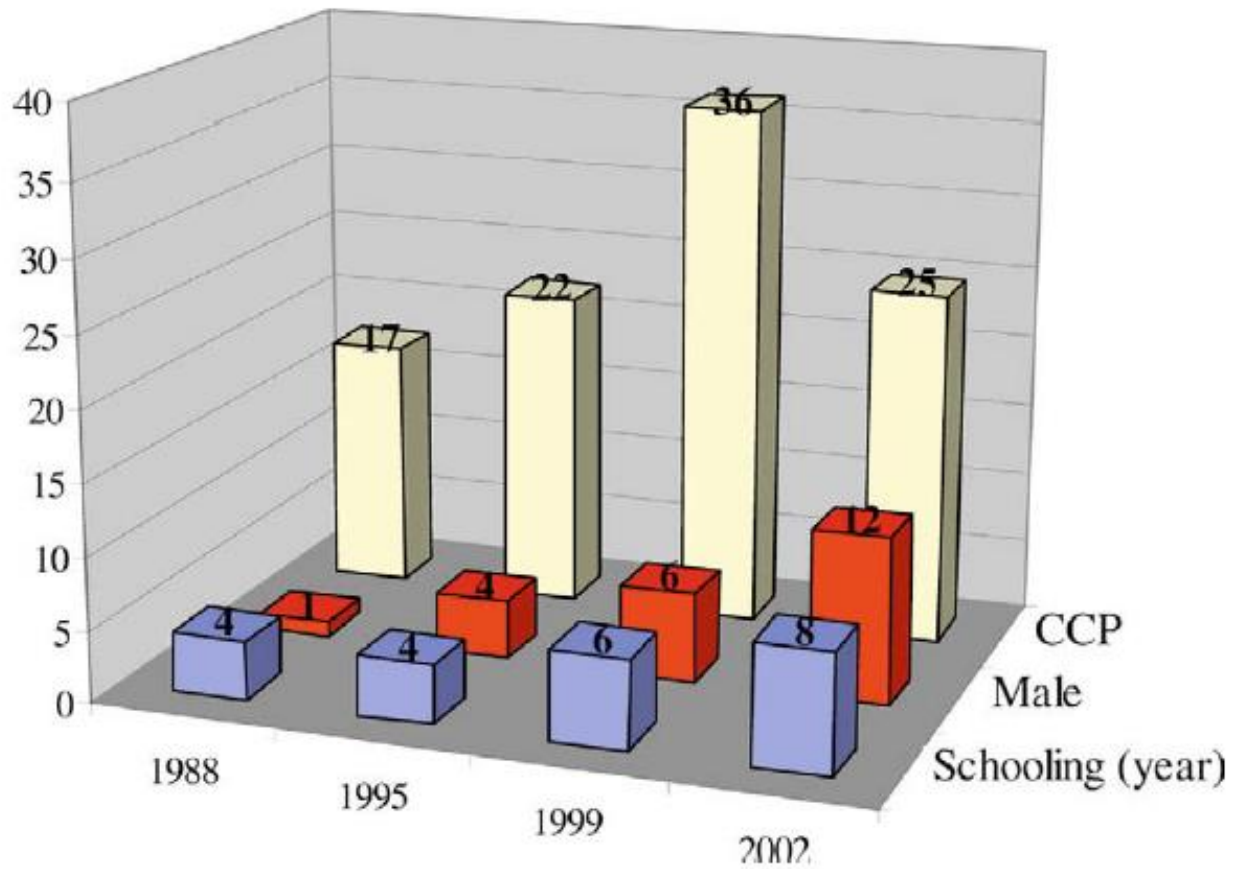


Figure 3. *Income differentials, 1988–2002.*

Table 11. *Effects of job characteristics on income and poverty—extended specification*

	1988		1995		1999		2002	
	Income (OLS)	Non-poor (probit)	Income (OLS)	Non-poor (probit)	Income (OLS)	Non-poor (probit)	Income (OLS)	Non-poor (probit)
<i>Ownership of head's place of work (State owned enterprise as default)</i>								
Urban collective	-0.09***	-0.48***	-0.16***	-0.42***	-0.17***	-0.38***	-0.20***	-0.50***
Private	-0.22***	-0.60**	-0.41***	-1.14***	-0.05	0.16	-0.14***	-0.38***
Foreign	0.40***	0.77	0.21***	0.39	0.31***	0.04	0.17***	0.35
<i>Occupation of head (manual workers as default)</i>								
Private business owner	0.01	-0.24	0.12*	0.26	0.33***	-0.18	0.10***	0.11
Professional	0.07***	0.38***	0.19***	0.68***	0.24***	0.61***	0.17***	0.67***
Administrator	0.15***	0.74***	0.26***	0.67***	0.26***	0.23	0.22***	0.90***
Clerk	0.05***	0.11	0.07***	0.18**	0.17***	0.24	0.12***	0.58***
Unemployed	-0.23*	-0.56	-0.61***	-1.54***	-0.29*	-1.72***	-0.19*	-0.76
Retired	0.12	1.08**	0.08	0.18	-0.06	0.35	0.33***	1.12**
Other Non-labor participation	-0.19**	-0.52	-0.08***	0.04	-0.03	-1.00*	-0.11***	-0.65
<i>Industrial sector head works in (manufacturing as default)</i>								
Mining/agriculture	0.04**	0.30***	0.06	0.10	-0.04	-0.13	-0.10*	-0.25
Construction	0.00	-0.05	0.00	-0.30**	0.10***	0.47**	-0.06	-0.44
Transportation and communication	0.02	0.09	0.04	0.03	0.29***	0.98***	0.18***	0.49**
Wholesale and retail	0.04***	0.12	-0.04*	-0.17**	0.06**	0.07	-0.03	-0.19
Real estate and social services	-0.05***	-0.16	-0.02	-0.32**	0.24***	0.60***	0.07***	0.03
Health and welfare services	-0.02	0.00	-0.03	-0.09	0.20***	2.14***	0.18***	0.47
Education	-0.02	-0.09	0.06*	0.03	0.23***	1.15***	0.16***	0.60*
Scientific research	0.02	0.06	0.21***	0.63***	0.23***	0.94**	0.24***	0.86
Finance	0.01	0.25	0.31***	0.88***	0.45***	1.85**	0.20***	0.53
Government	-0.05***	-0.11	0.01	0.08	0.25***	0.95***	0.14***	0.38

*Notes:*

(1) Dependent variables: income = log of real income *per capita*; income gap = log of real income *per capita*; censored at 3,600 yuan per year; non-poor = 1 if real income *per capita* above 3,600 yuan per year.

(2) For occupation, ownership, and industrial sector, controls for “other” and “not in above” included but not reported.

(3) Also included in models but not reported: head's age and age squared, education, sex, and CP membership; dependency ratio and log number of adults; provincial dummies and quadratics for age of household head.

\* Denotes statistical significance at the 10% level.

\*\* Denotes statistical significance at 5%.

\*\*\* Denotes statistical significance at 1% level.