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Title of Paper

**Top Incomes in Taiwan during 1970-2006: Analyses of Family
Income Survey and Tax Return**

Author(s)

Peter Wen-Hui Cheng, Ming-Hwang Hong, Jun-Rong Chen

For additional information please contact:

Name: Ming-Hwang Hong

Affiliation: Ph D. Candidate, Department of Social Welfare, National Chung Cheng University

Full mailing address: 168, University Rd., Min-Hsiung Chia-Yi, Taiwan, R. O. C.

Email address: minghung123@yahoo.com.tw

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Top Incomes in Taiwan during 1970-2006: Analyses of Family Income Survey and Tax Return

Peter Wen-Hui Cheng

Professor

Department of Nonprofit Organization Management

Nan Hua University

Da-Lin, Chia-Yi, Taiwan.

Email address: whcheng@ms2.ttc.edu.tw

Ming-Hwang Hong

Ph D. Candidate

Department of Social Welfare

National Chung Cheng University

Ming-Hsiung, Chia-Yi, Taiwan.

Email address: minghung123@yahoo.com.tw

Jun-Rong Chen

Lecturer

Department of Social Welfare

National Chung Cheng University

Ming-Hsiung, Chia-Yi, Taiwan.

Email address: jrchen@sw.ccu.edu.tw

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Abstract

Objectives: This paper aims to investigate the evolution and income composition of the top incomes in Taiwan during 1970-2006, by analyzing the data from annual family income survey and income tax return. The underestimation problems of top incomes in family income survey will also be explored by comparing these two sets of data. In addition, the effects of top incomes on income inequality will be traced. **Methodologies:** This research utilizes the data from annual family income survey to trace the tendency of income shares and income compositions held by top 1% and top 0.1% income groups in Taiwan during the period of 1979-2006. Then, Theil decomposition by income groups is used to assess the contribution of top 1% income group on the overall income inequality. **Major findings:** (1) Major income of top income earners in Taiwan came from capital income, which is similar as European countries in contrast with U.S. and Japan. (2) Underestimation of top incomes in family income survey was majorly due to under-reporting property income and business income of top income earners. (3) The contribution of top 1% income households on total income inequality has increased after 2001 than in 1990's.

1. Background

- Though there has been a dramatic increase in the literature on top incomes in European and North American since 2001, far less researches have been done in Asian countries.
 - Taiwan has experienced rapid economic growth with relative price stability during the 1960's through the 1980's, while income inequality as indicated by quintile ratio has decreased from 5.33 in 1964 to 4.17 in 1980. (see Table 1)
 - Recent concern in Taiwan was that income inequality had increased noticeably after **2001** that may be due to the increase in the income share of the top income earners. Therefore, in addition to investigate the changes in income shares and income compositions of top income groups, we would evaluate the impact of top incomes on overall income inequality before and after 2001.
- ratio of disposable income of **highest 20%** to **lowest 20%** households: (see Figure 1)
- less than **5** in 1980's; between **5 and 5.5** in 1990's; larger than **6** after 2001
- ratio of gross income of **99th** to **50th** percentile households: (see Figure 2)

period	Real Economic Growth Rate (%)	Annual Changes in CPI (%)	Quintile Ratio ^a
1961-1970 average	9.68	3.40	(1964) 5.33 (1970) 4.58
1971-1980 average	9.91	11.07	(1976) 4.18 (1980) 4.17
1981-1990 average	8.01	3.15	(1985) 4.50

less than **3.6** most years before 2000; larger than **3.6** most years after 2000

Table 1: Major Economic and Social Indicators in Taiwan, 1960-1990

Sources: calculated based on data published by the Directorate-General of Budget, Accounting and Statistics, Executive Yuan.

a: Ratio of income share of highest 20% households to that of lowest 20%.

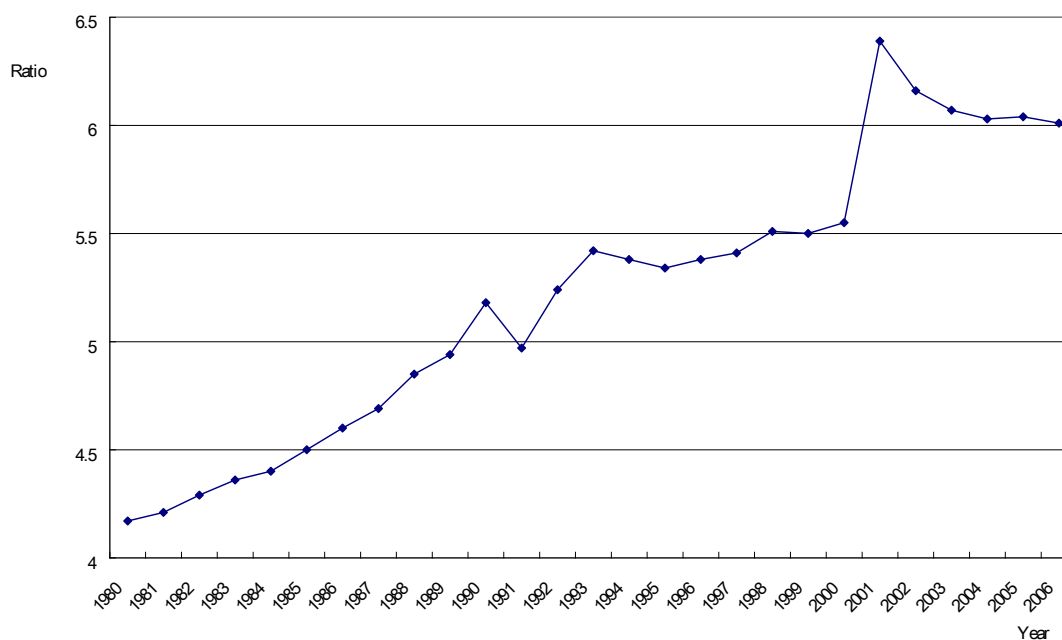


Figure 1: Ratio of Household Disposable Income Share of Highest 20% to Those of Lowest 20% Households in Taiwan: 1980 - 2006

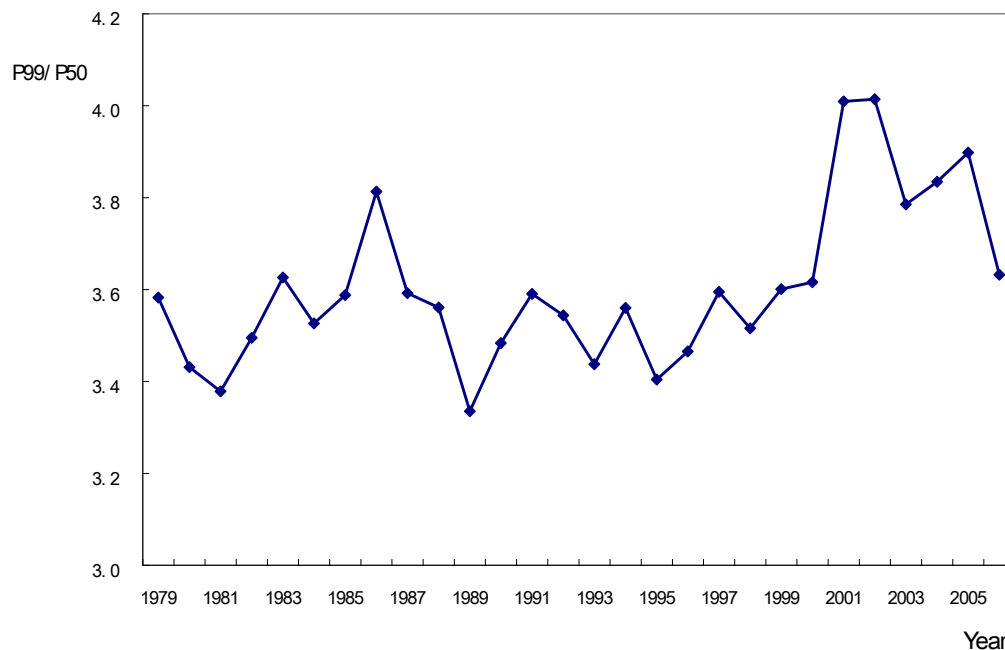


Figure 2: Ratio of Gross Income of 99th to 50th Percentile Households in Taiwan:
1979 - 2006

2. Problems to be addressed:

- Changes in income **shares** and income **compositions** of the top incomes in Taiwan during 1970-2006.
- **Underestimation** problems of top incomes in family income survey by comparing with data from tax returns.
- Effects of top incomes on overall **income inequality** in Taiwan.

3. Analyses:

- Basically, income shares and income compositions held by top **1%** and top **0.1%** income groups in Taiwan are calculated based on annual representative nationwide samples including 13,000-15,000 households during the period of 1970-2006.
- Though definitions of family unit and family income are not quite consistent between annual tax return and family income survey, data from annual tax return are also compiled to identify **under-reporting** problems of top incomes, especially capital income, in family income survey.
- The contribution of top 1% income group on overall income inequality is assessed by **Theil decomposition**, in which four income groups of lowest 5%, 5%-50%, 50%-99% and highest 1% from annual family income survey are divided and

their respective shares of income are calculated. Then, intra-group and inter-group Theil indexes of income inequality are analyzed.

4. Major findings:

4.1 Income Share

- Income share accrued to top income earners in Taiwan showed a **W-typed** pattern during 1970-2006, unlike a U-type as witnessed in most of developed countries. (see dot line in Figure 3)
- Gross income shares of top 1% earners reported in family income survey are only **50%** of those in tax return data. (see broken line in Figure 3)



Figure 3: Gross Income Share of Top 1% Income Earners in Tax Return and Household Income Survey in Taiwan, 1970-2006

- Underestimation of top incomes in family income survey was majorly due to under-reporting **property income** and **business income** of top income earners.
- Business income share of top 1% earners in tax return averaged up to **30%** during the period 1979-2006, while its share in household income survey was only around **5%**.(see Figure 4)

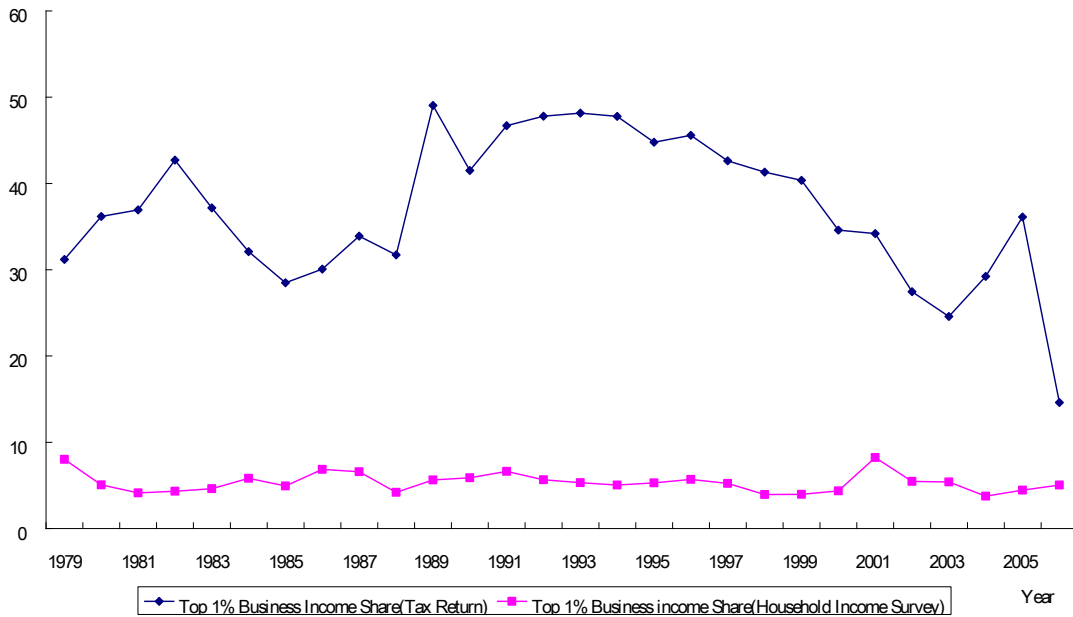
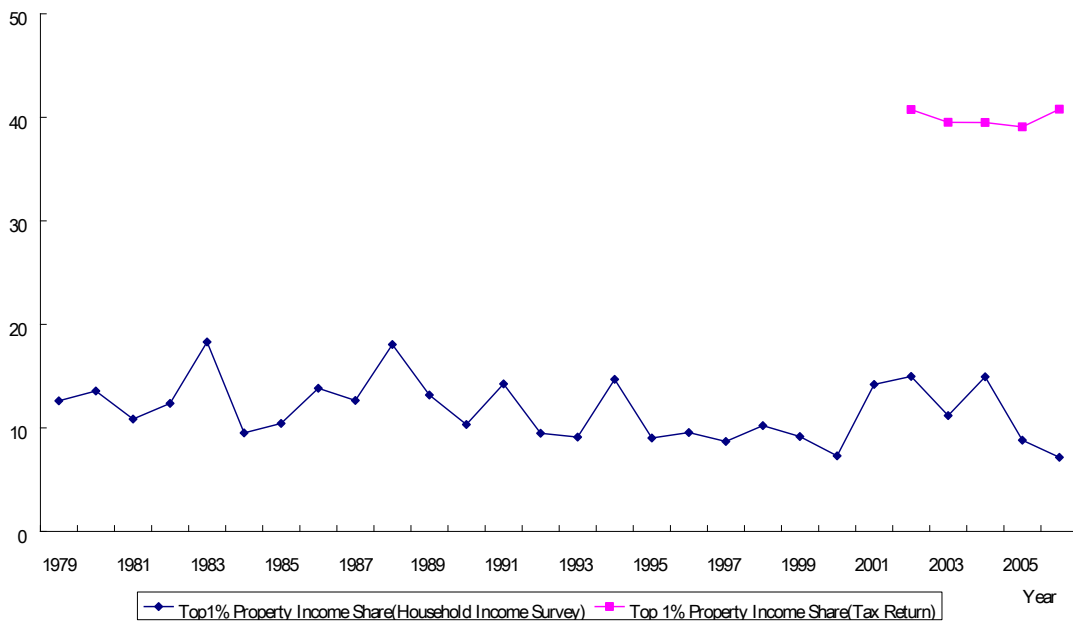


Figure 4: Business Income Share of Top 1% Income Earners in Household Income Survey and Tax Return in Taiwan, 1979-2006

- Property income share of top 1% earners in tax return was about **40%** during the period 2002-2006, while its share in household income survey was between **10-20%** in the same period. (see Figure 5)



1980	0.013	0.042	0.293	0.022	0.653	0.045	0.040	0.065	0.039	0.100	0.139
1990	0.009	0.041	0.277	0.034	0.669	0.048	0.042	0.075	0.045	0.121	0.166
2000	0.009	0.030	0.270	0.043	0.678	0.049	0.041	0.036	0.046	0.125	0.171
2001	0.009	0.032	0.256	0.049	0.684	0.055	0.050	0.079	0.054	0.149	0.203
2003	0.009	0.032	0.258	0.045	0.684	0.055	0.046	0.051	0.051	0.142	0.193
2006	0.009	0.026	0.259	0.049	0.688	0.052	0.042	0.051	0.050	0.136	0.186

Notes: Theil = $\sum_{k=1}^m y_m T_m + \sum_{k=1}^m y_m \ln(y_m/p_m)$

- The results showed an increasing contribution of top 1% income group to between-group inequality from **0.48** in 1990's to **0.52** in 2001-2006. (see Table 3)

Table 3: Contribution of Top 1% Income Group to Between-Group Inequality

Period	Contribution to Between-Group Inequality
1981-1985	0.54
1986-1990	0.55
1991-1995	0.48
1996-2000	0.48
2001-2006	0.52

Notes: Top 1% contribution = $y_{top1\%} \ln(y_{top1\%}/p_{top1\%}) / \sum_{k=1}^m y_m \ln(y_m/p_m)$

5. Conclusions:

- Major income of top income earners in Taiwan came from **capital income**, which is similar as European countries in contrast with U.S. and Japan.
- Underestimation of top incomes in family income survey was majorly due to under-reporting **property income** and **business income** of top income earners.
- The contribution of top 1% income households on total income inequality has been **increasing** after 2001 than in 1990's.

6. Further investigations:

- Possible major causes for increasing top income shares in recent years:
 - booming stock market.
 - decreasing top marginal personal income tax rate from 60% in 1970's to 40% after 1990's.
 - preferential treatments to capital income including dividends and transactions of stocks and land.