Levels and Trends in Australian Income and its Distribution: A Crosswalk from Market Income towards a Comprehensive Haig-Simons Income Approach

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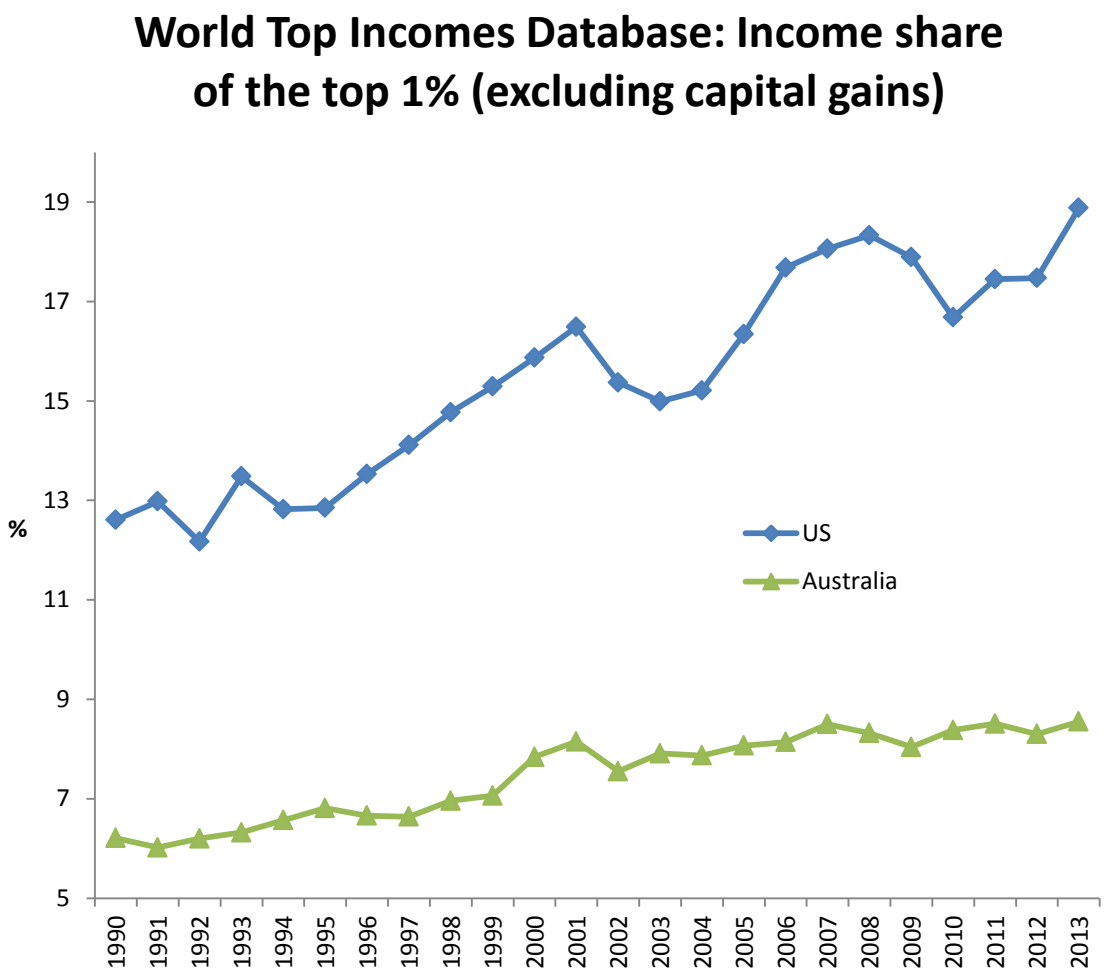
Motivation (1)

Tax records-based studies of top income shares (Atkinson, Piketty, Saez, et al.)

- Comparisons of top income shares across countries
  - Different methods
  - Different income components
  - Different ‘tax units’

Motivation (1) – Comparing top income shares across countries



Australia: Include government benefits
US: Exclude government benefits

Australia: Tax unit is the individual
US: Tax unit is the family

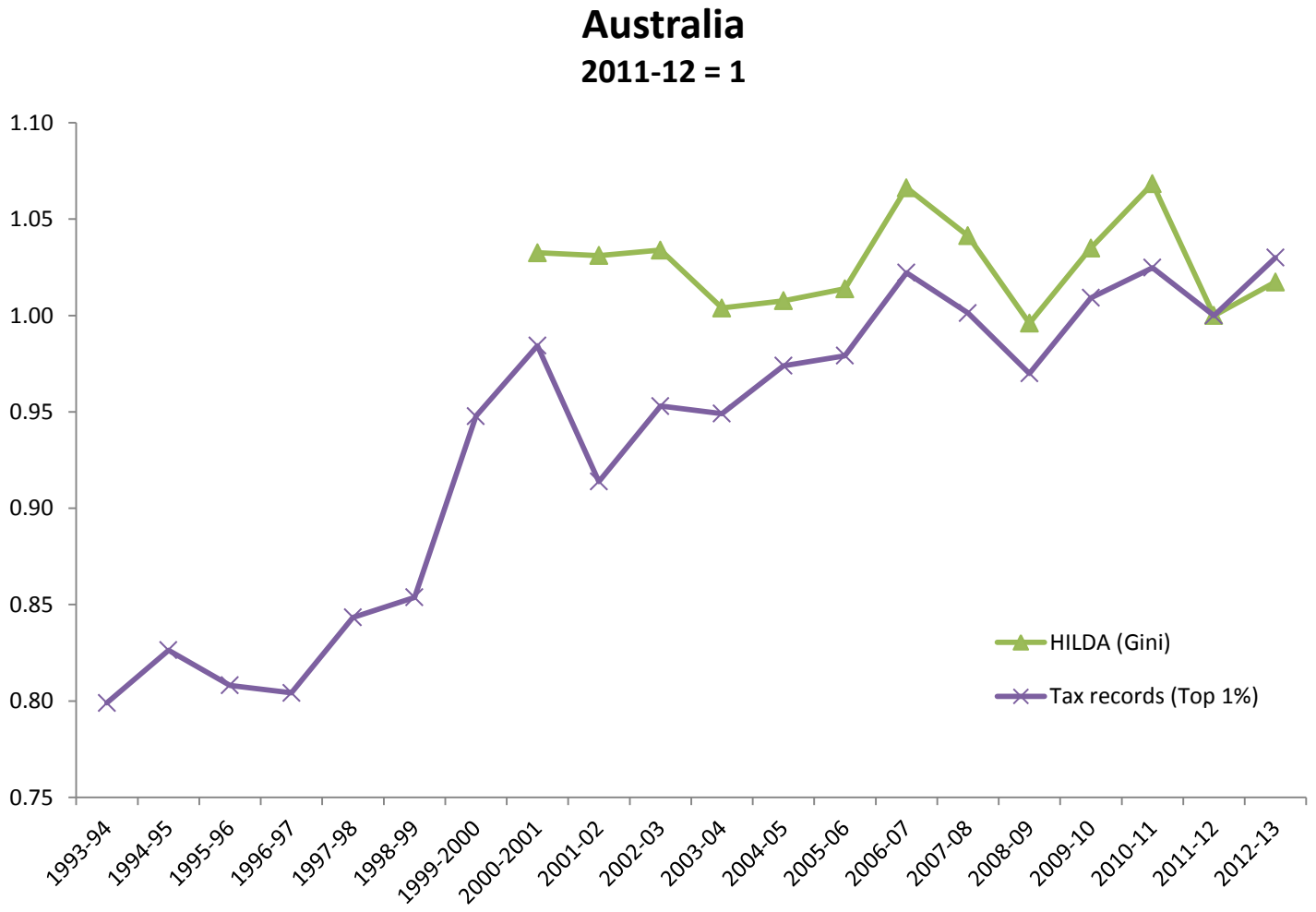
Australia: Total income sourced from GDP
US: Total income a multiple of total market income captured by tax records

Motivation (2)

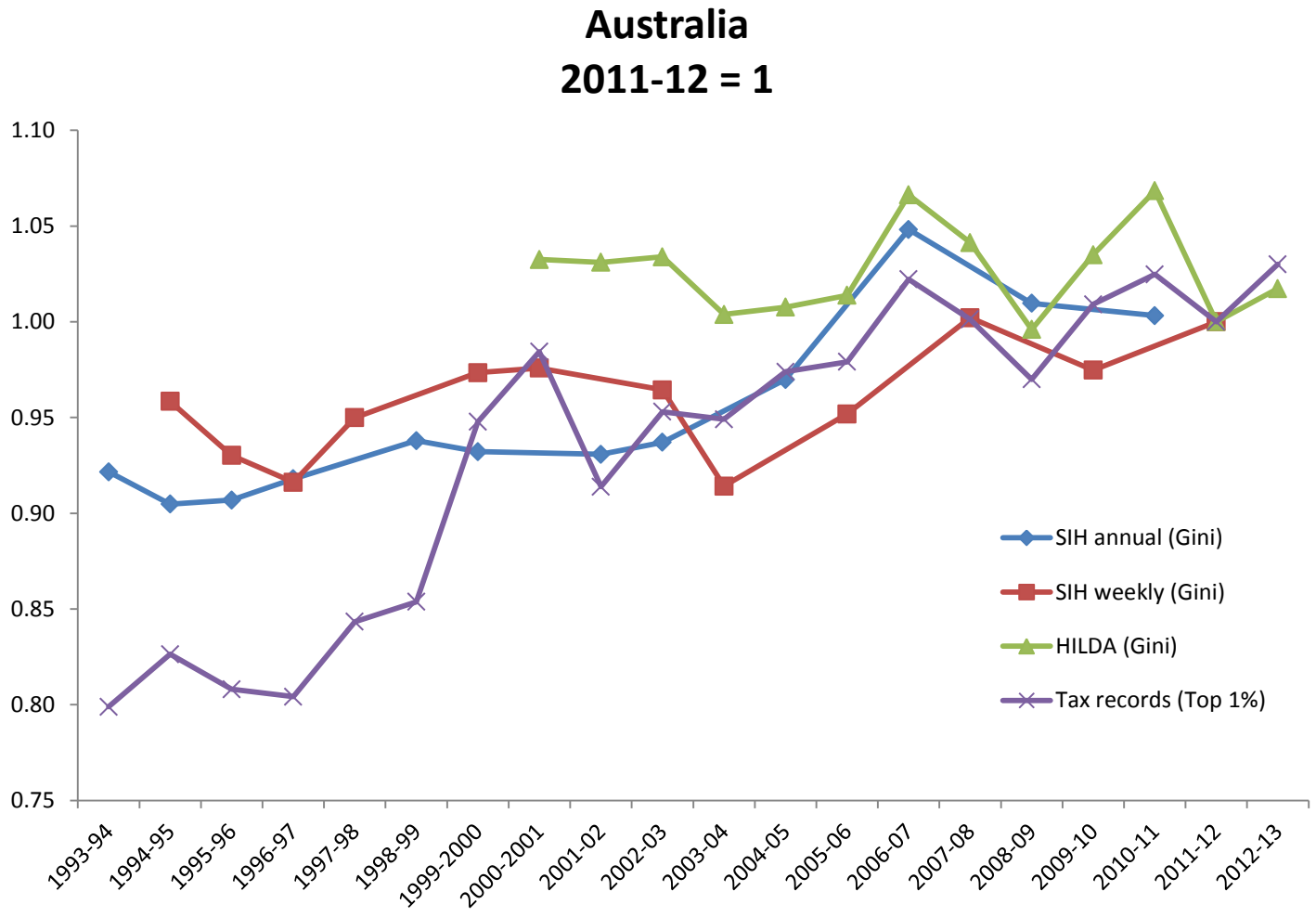
Reconciling tax-based inequality measures with survey-based measures

- Two distinct literatures with little intersection
- Not always telling the same story
- Tax data has no sampling error and possibly less measurement error; very useful for understanding top incomes
- However, survey-based measures have stronger conceptual foundations

Motivation (2) – Inequality trends in tax records and household survey data



Motivation (2) – Inequality trends in tax records and household survey data



Motivation (3)

- The cash income focus of surveys may be misleading on levels of, and trends in, income inequality
- Canberra Group standards result in income distribution studies not taking into account:
  - Irregular income (including ‘capital transfers’)
  - In-kind income
  - Expenditure taxes
  - Capital gains

Income concept – ‘Ideal’

Haig-Simons

Income = Consumption plus change in wealth

- Includes in-kind income
- Excludes taxes paid (i.e., post-tax)
- Implicit is that income is measured at the household level (household sharing unit)
  - Although ‘unit of analysis’ is most logically ‘the individual’

Some income concepts used in practice

- **Income unit**: Individual, family or household
- **Private income** (market income): Wages, dividends, interest, business income, etc.
- **Gross income**: Private income plus government cash benefits
- **Disposable income**: Gross income minus income taxes
- **Equivalised income**: Disposable income adjusted for household composition/size (eg using 'modified OECD' scale)
- **'Full' income**: Add in-kind income (from government and private sources) and subtract taxes on expenditure
- **'Comprehensive' income**: Add capital gains

Data used

- Tax records (with National Accounts)
- HILDA Survey

- Not used: ABS income surveys

Tax records measures – Australia
(Atkinson and Leigh, 2007)

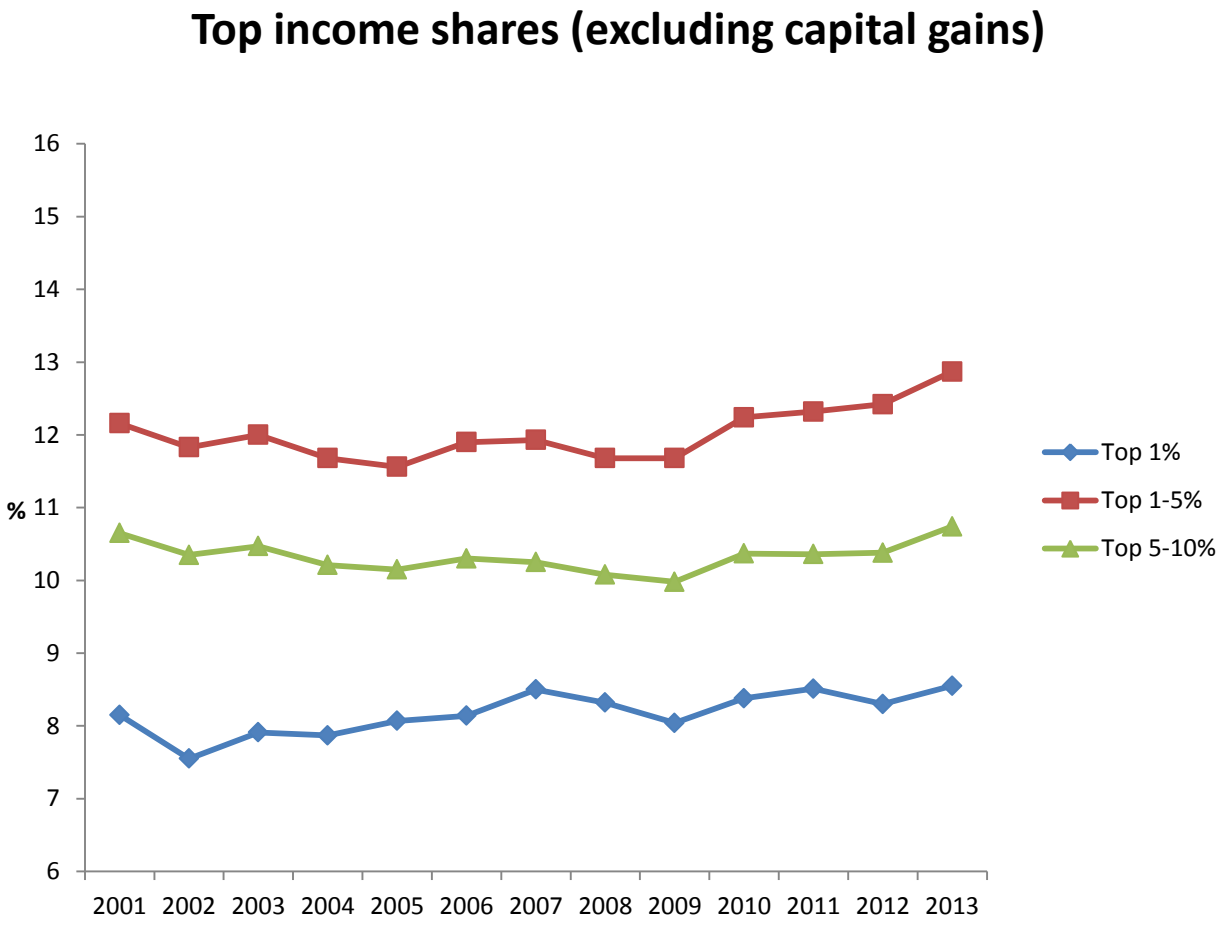
- Inequality measure is “Share of personal ‘declarable’ income of the top X% of persons aged 15 and over”
- Excludes some income components (non-taxable income)
- Income of *individuals* (so zero if no *personal* income, even if live with a high-income individual)
- Calculation:

1. ABS population data: Total number of people in top x%
2. Tax tables: Number of tax filers and **total** income in each category of **taxable** income

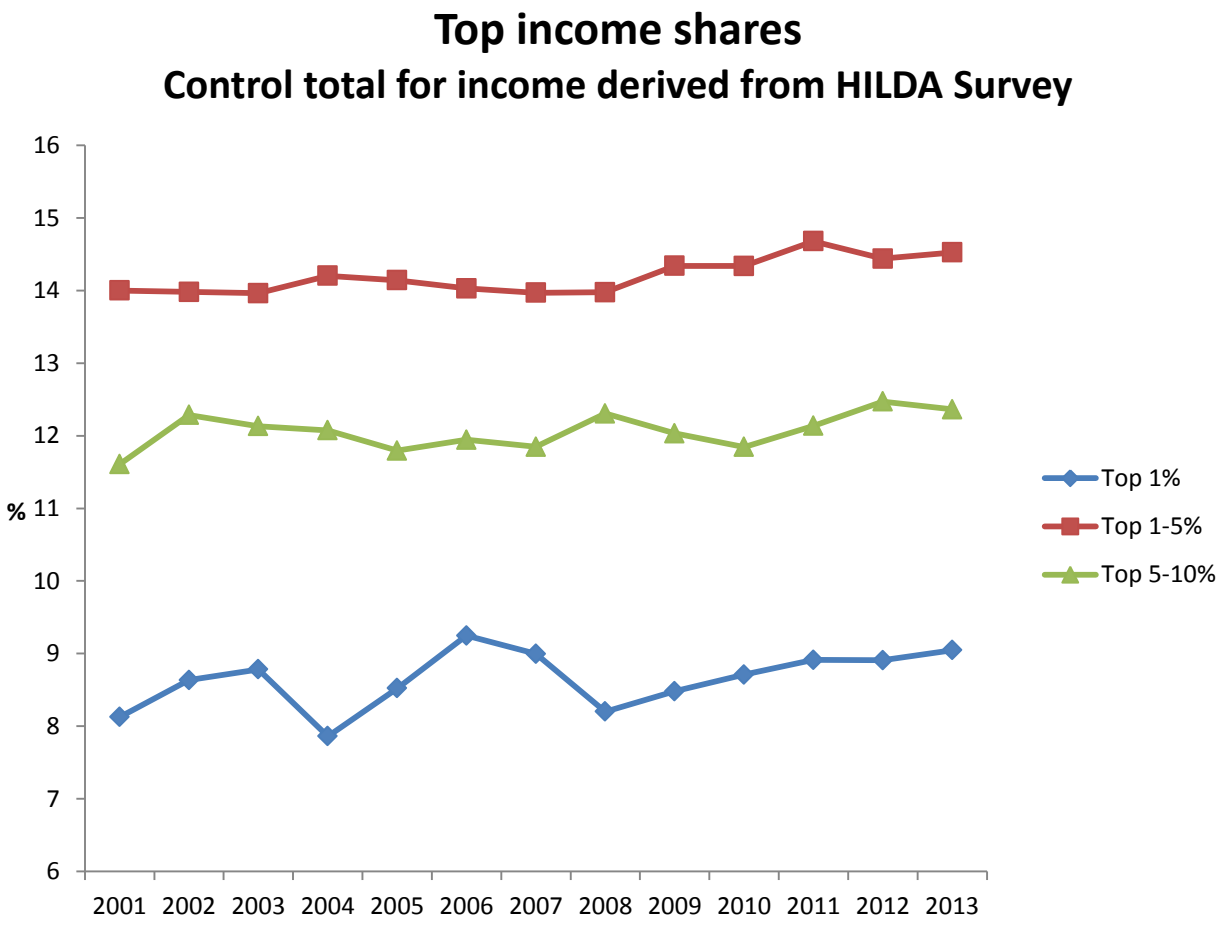
} Numerator

3. National Accounts: Total household income } Denominator

Top incomes – Tax records data



Top incomes – HILDA Survey



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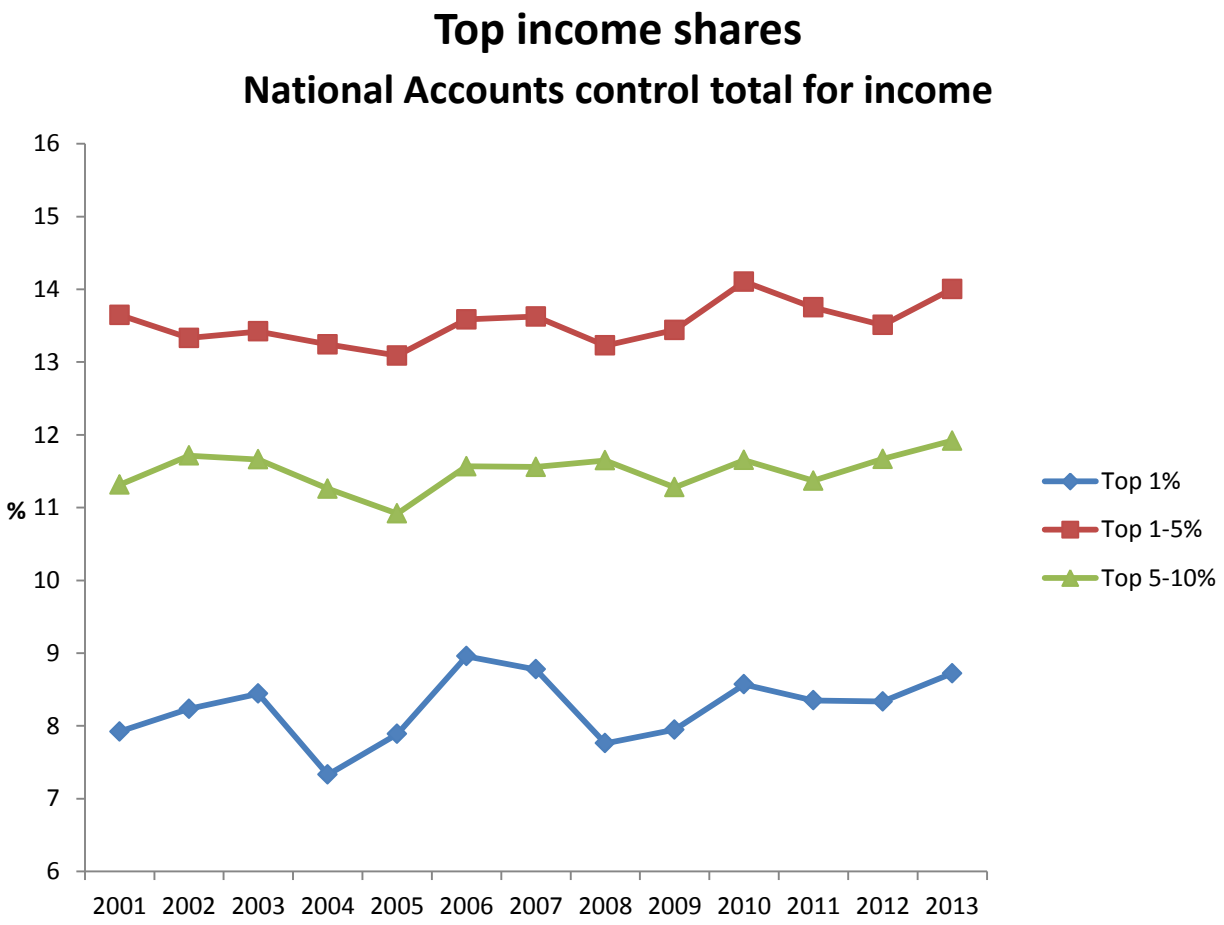
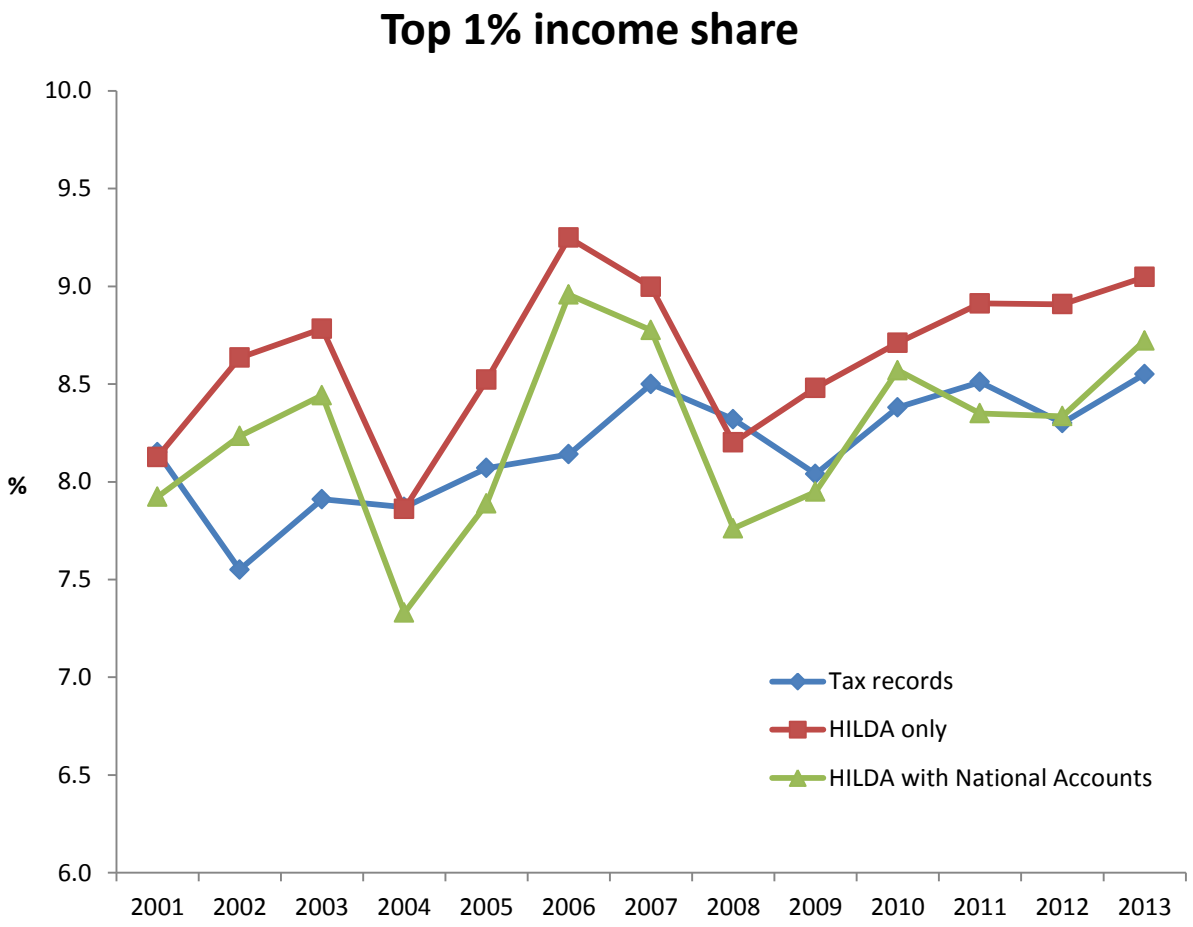


Tax records compared with HILDA

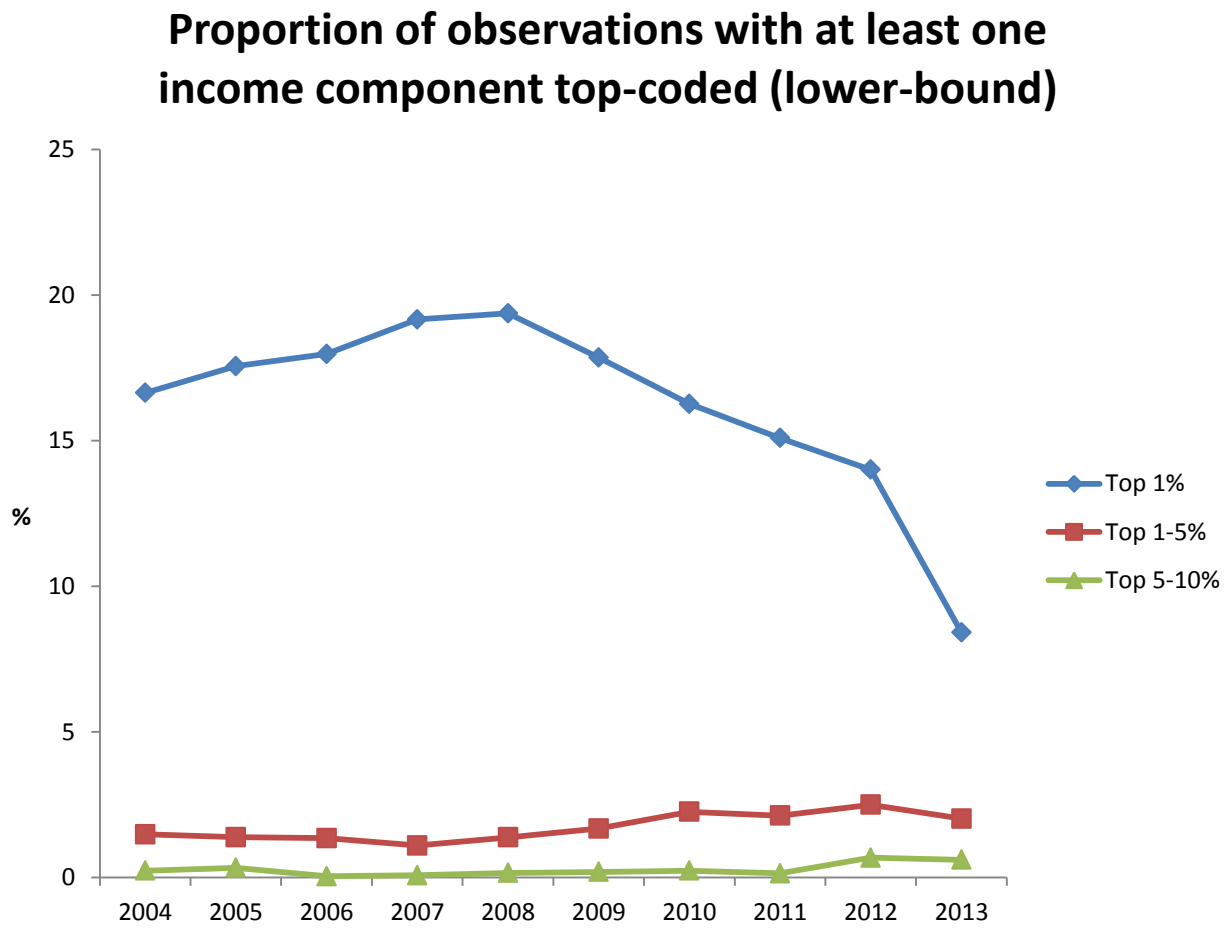


Adjusting HILDA using **unit record** tax data

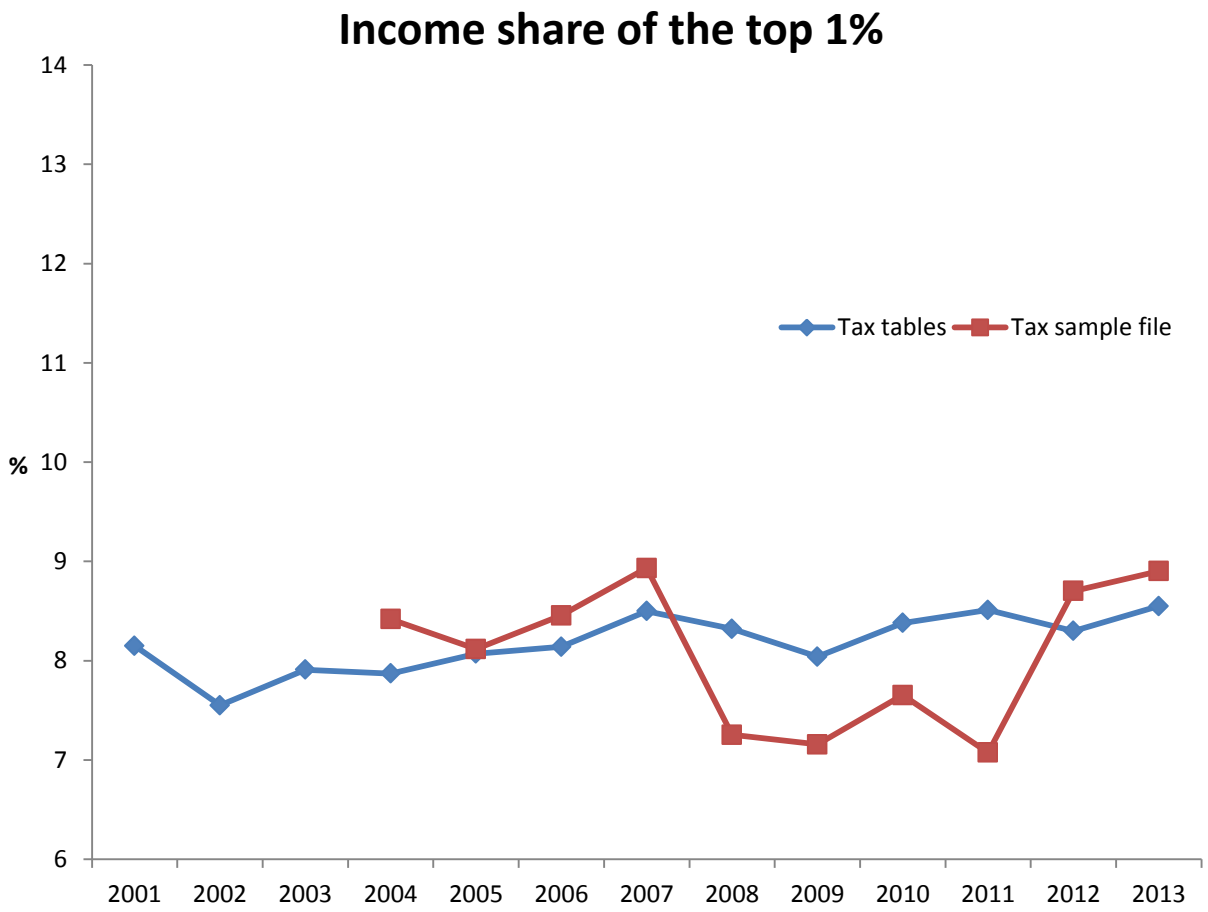
Unit record tax data:

- Available for each tax-year from 2003-04 to 2012-13
- 1% sample of individuals who lodged a tax return (2% sample since 2011-12)
- In principle better than tax tables (no need for distributional assumptions within income categories)
- BUT, it is confidentialised: Each income component is top-coded and bottom-coded

Censoring in unit record tax data



Tax data - Tables versus unit record data



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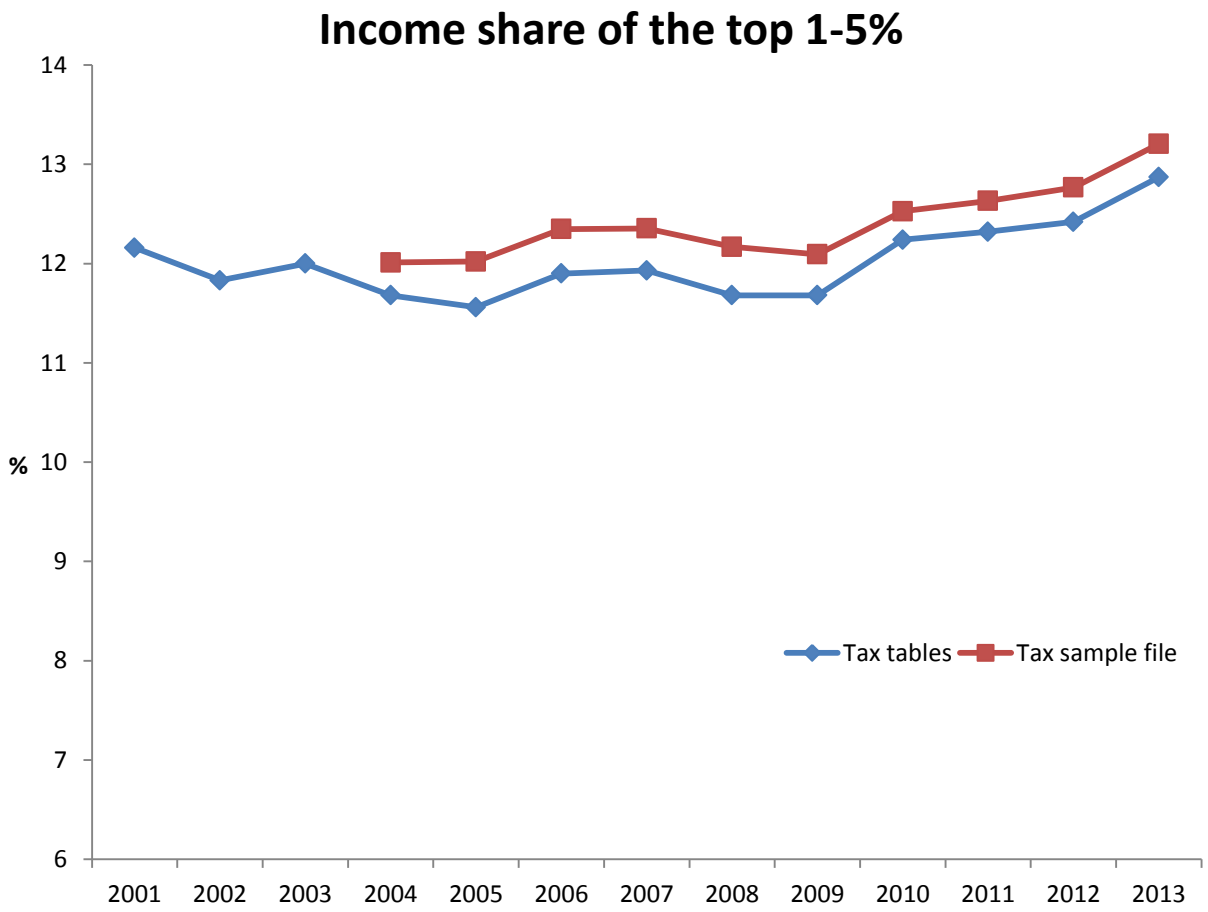

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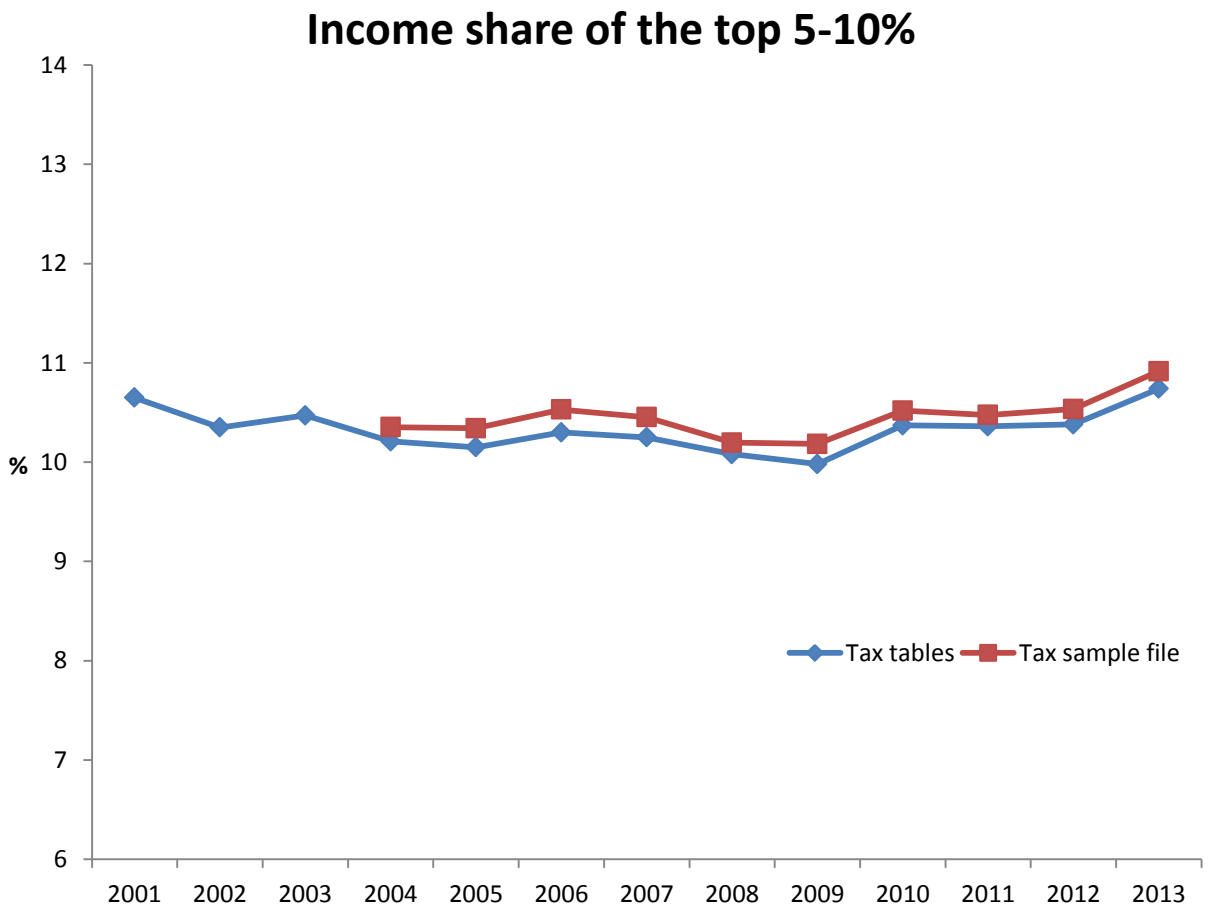
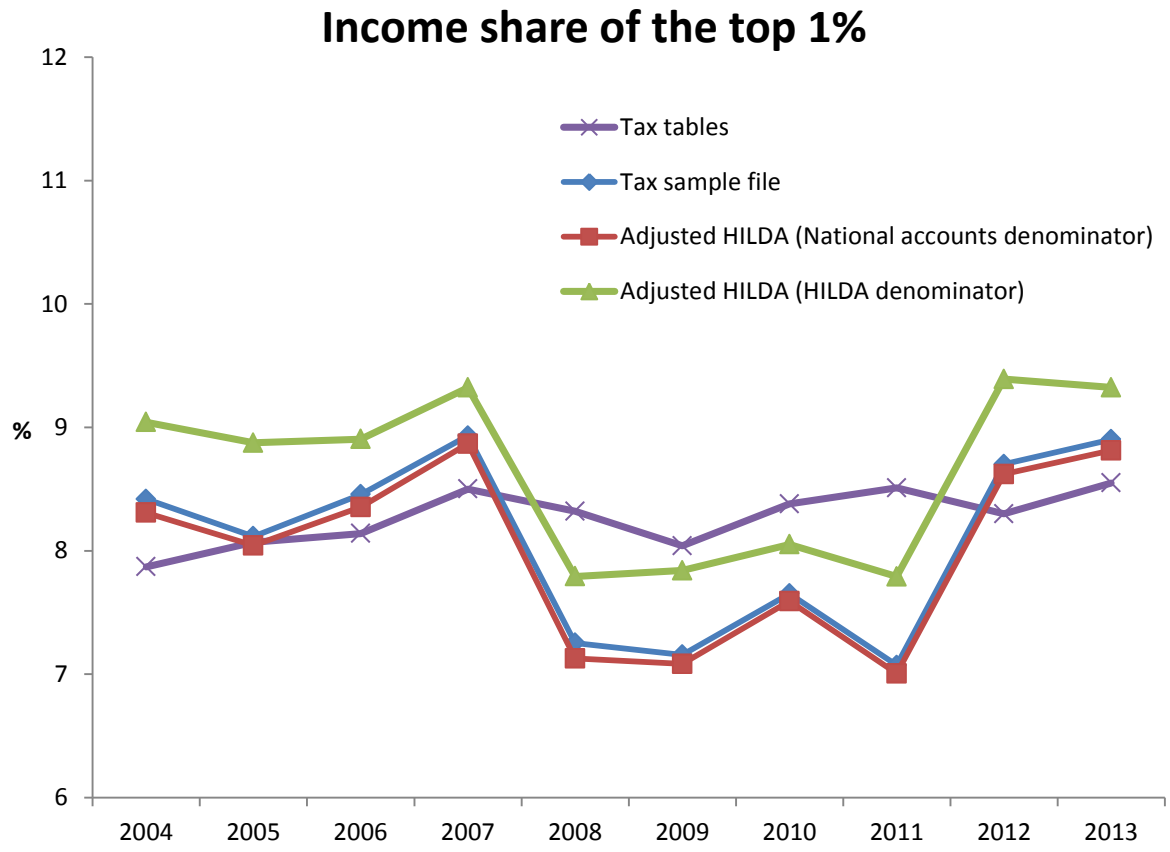
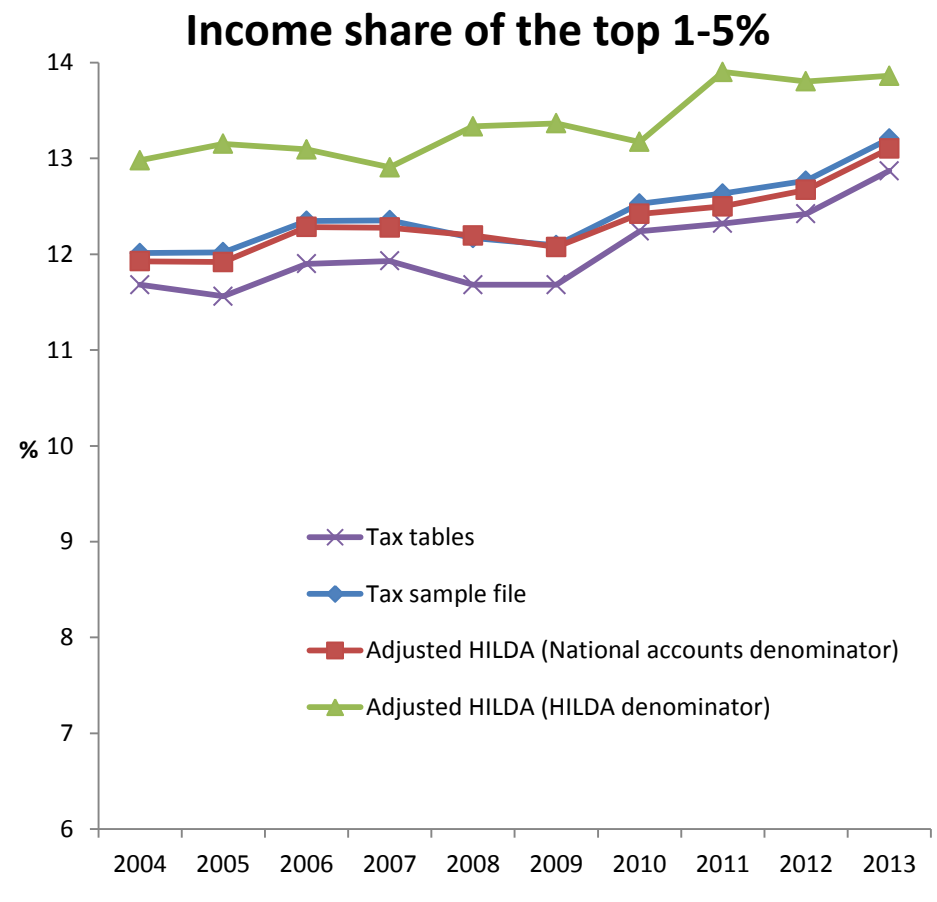


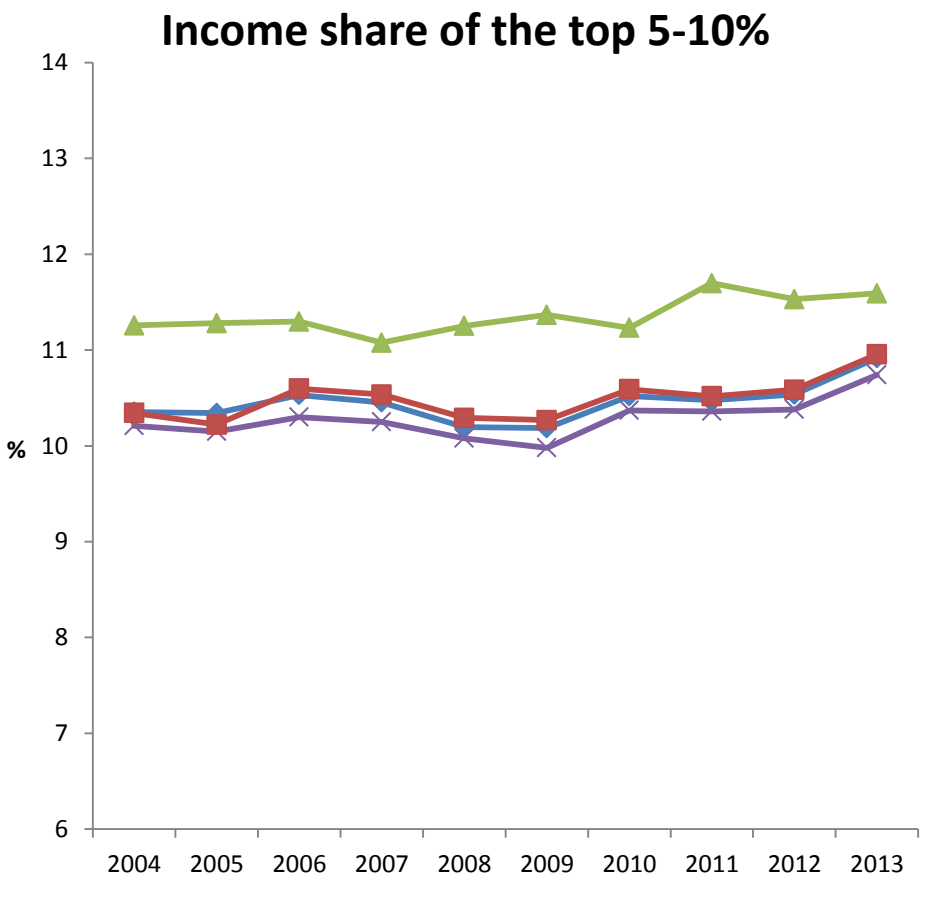
Adjusting HILDA with unit record tax data

We replace the top 10% of personal ‘declarable’ gross incomes with counterparts in unit record tax data



HILDA adjusted with unit record tax data



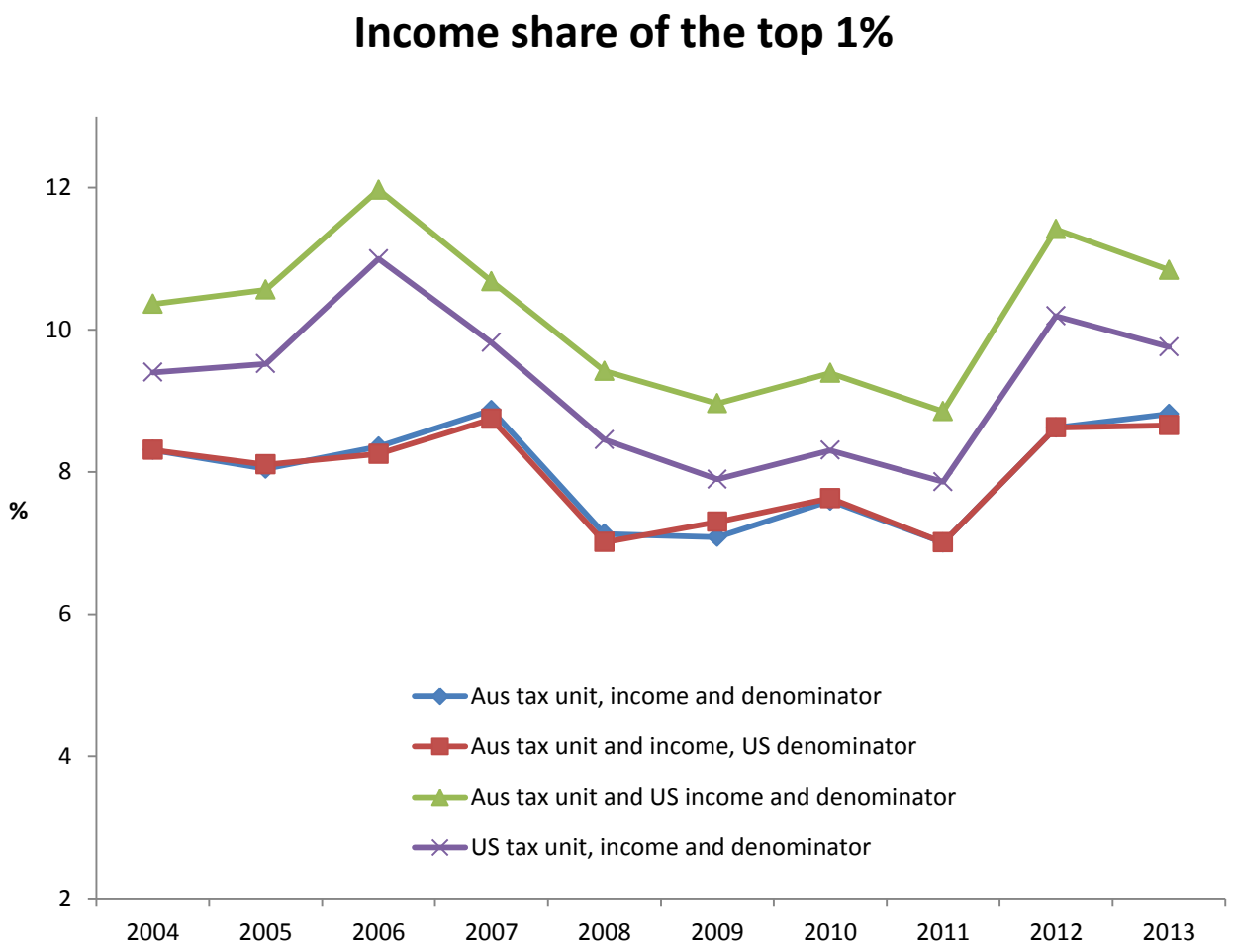


‘Crosswalking’ from Australian to US top incomes

Key differences between Australian and US measures of top income shares (World Top Incomes Database)

	Australia	US
Income in numerator	Gross ‘declarable’ income	Market income
Tax unit (income unit and unit of analysis)	Individual	Family
Income in denominator	National Accounts measure of household income	Multiple of total market income captured by tax records

Top income shares: Using adjusted HILDA data to crosswalk from Australian to US measure



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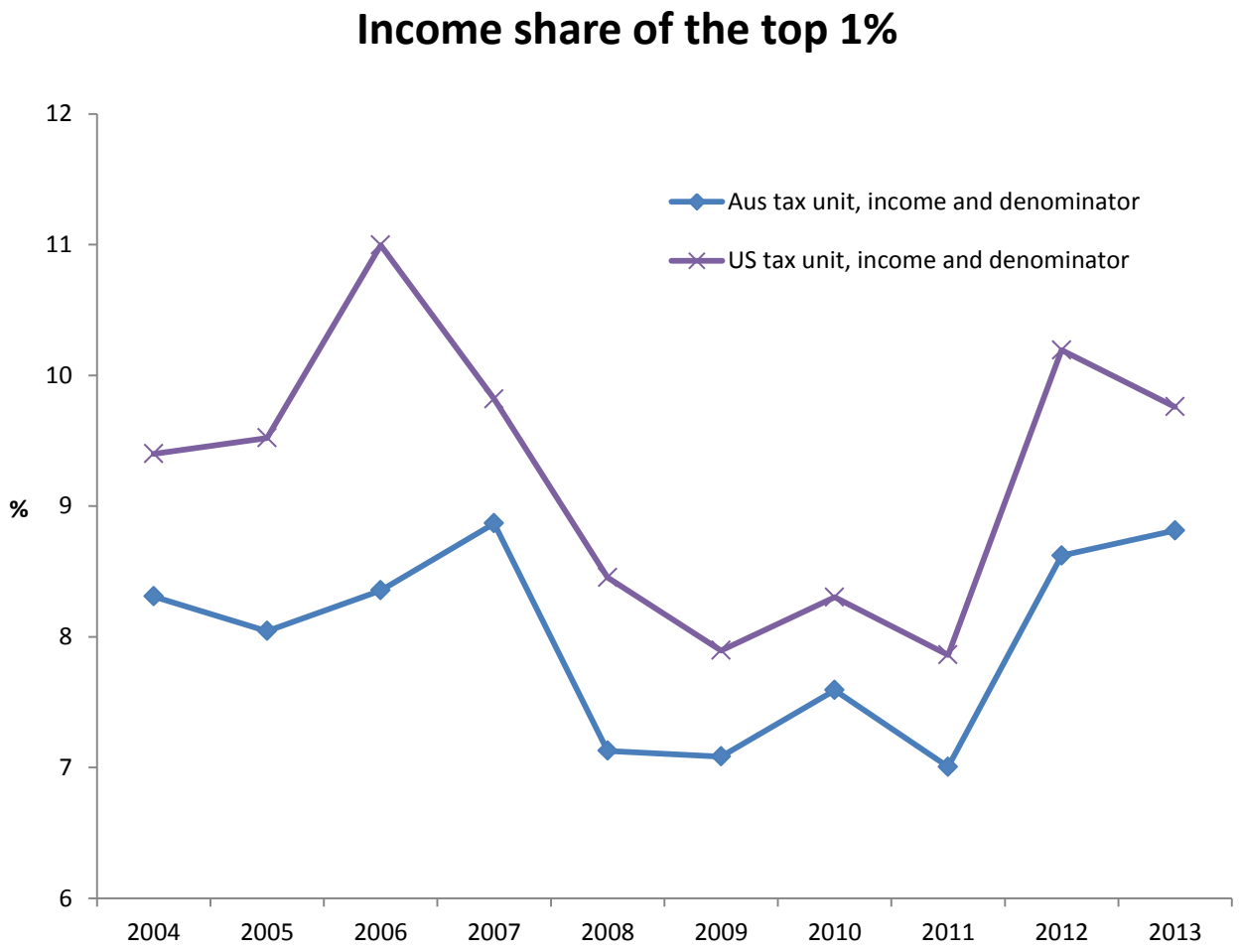
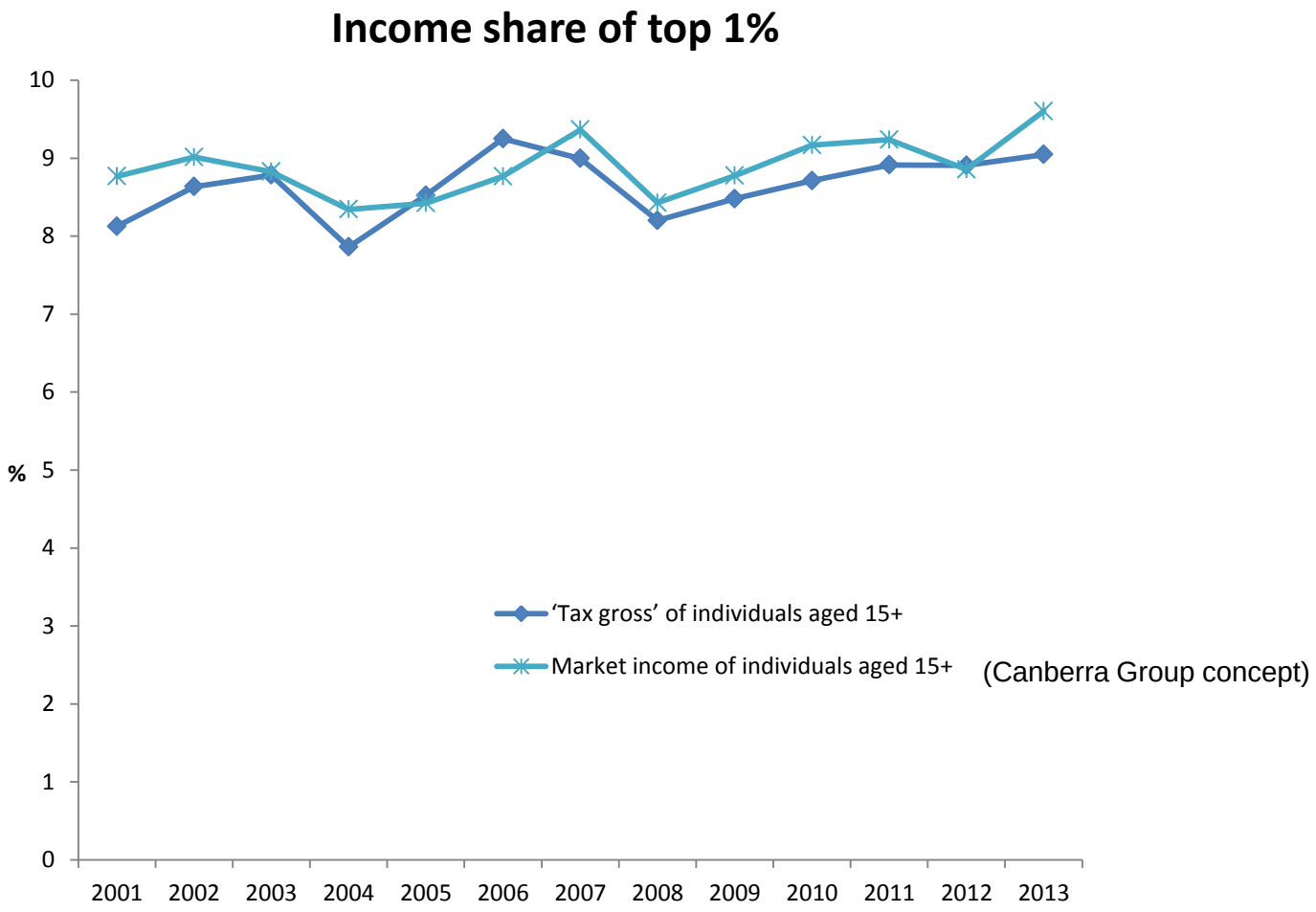


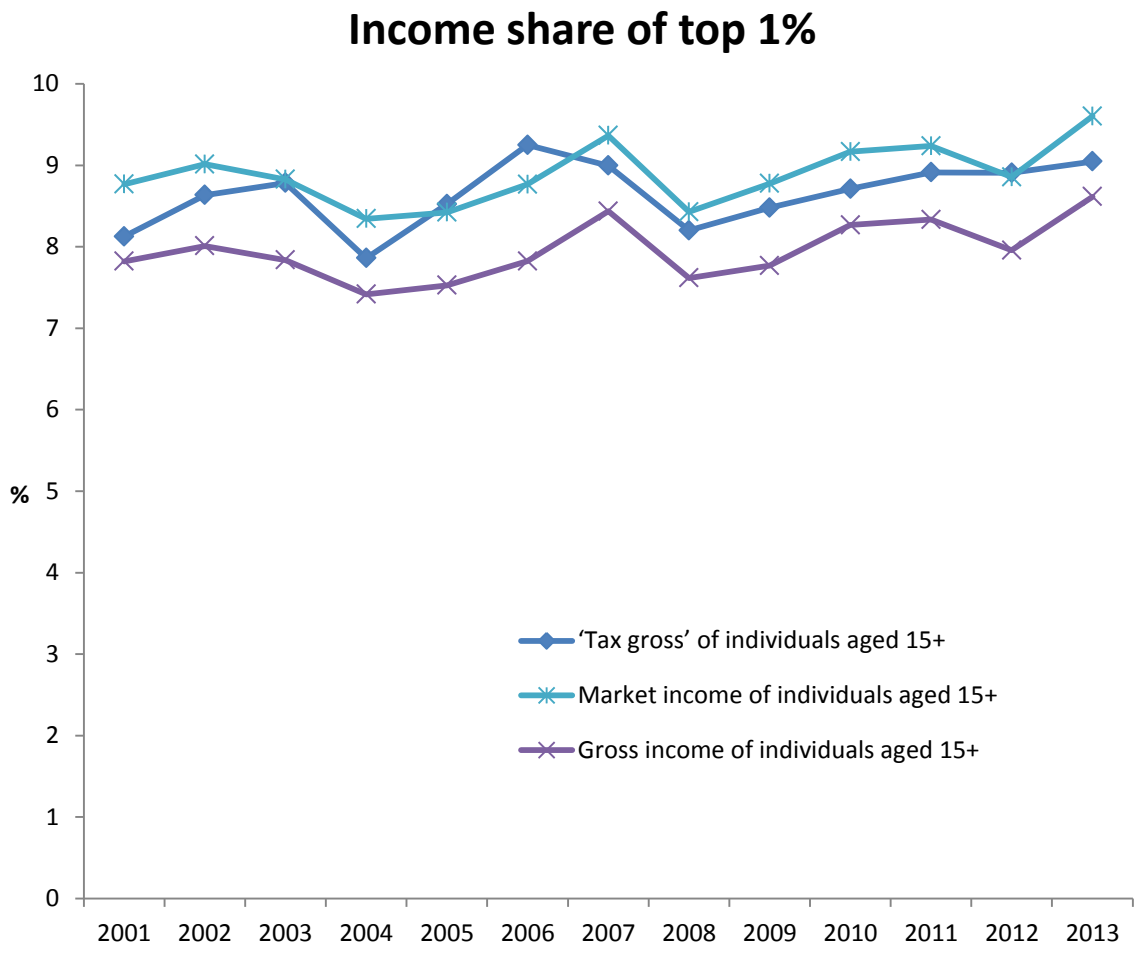
Reconciling tax-based measures with household survey-based measures

- How is the top 1% income share affected by income concept and assumed sharing unit?
- What do other distributional features (eg median and Gini) look like as we move from the tax-based income concept and sharing unit to the household-survey based income concept and sharing unit?
  - Using HILDA Survey data only (not adjusted using unit record tax data)

Top income shares – HILDA Survey estimates



Top income shares – HILDA Survey estimates



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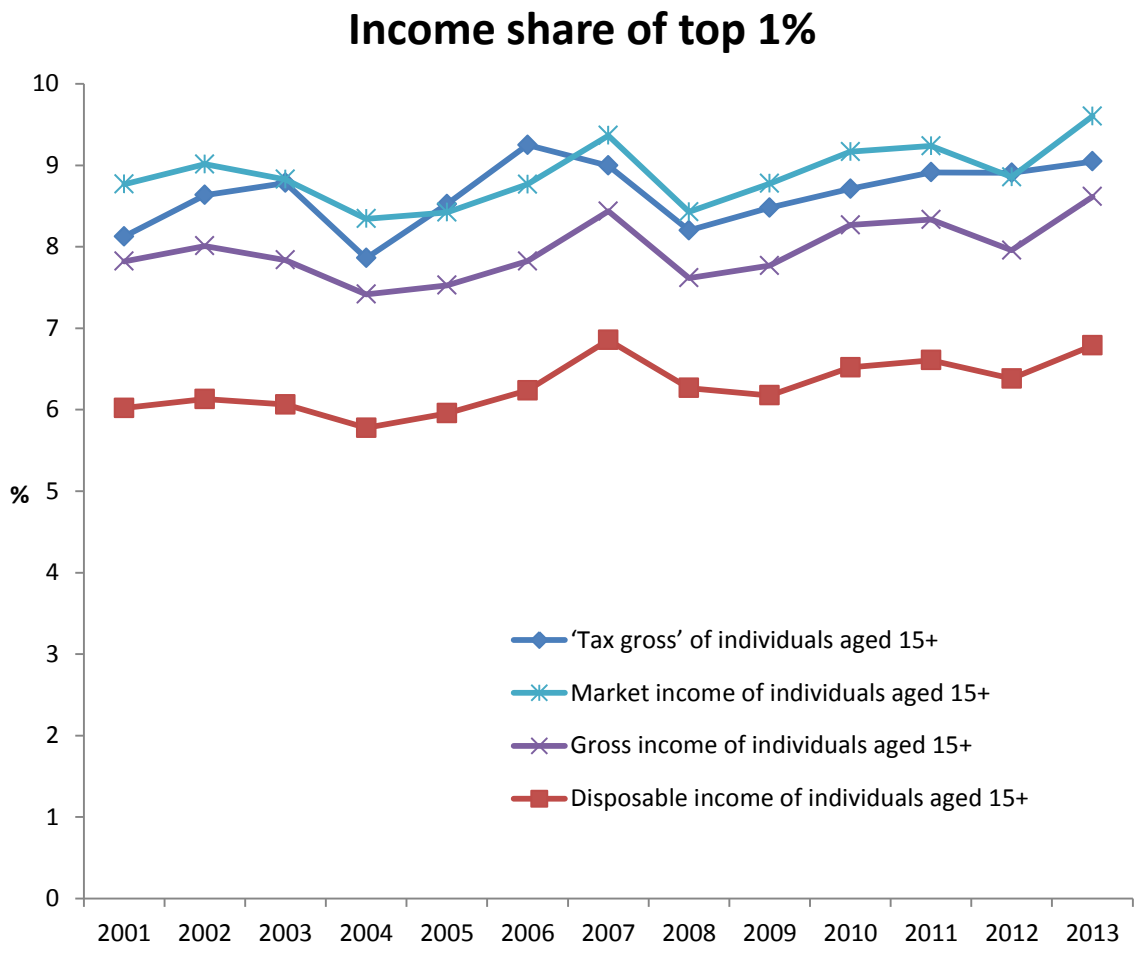

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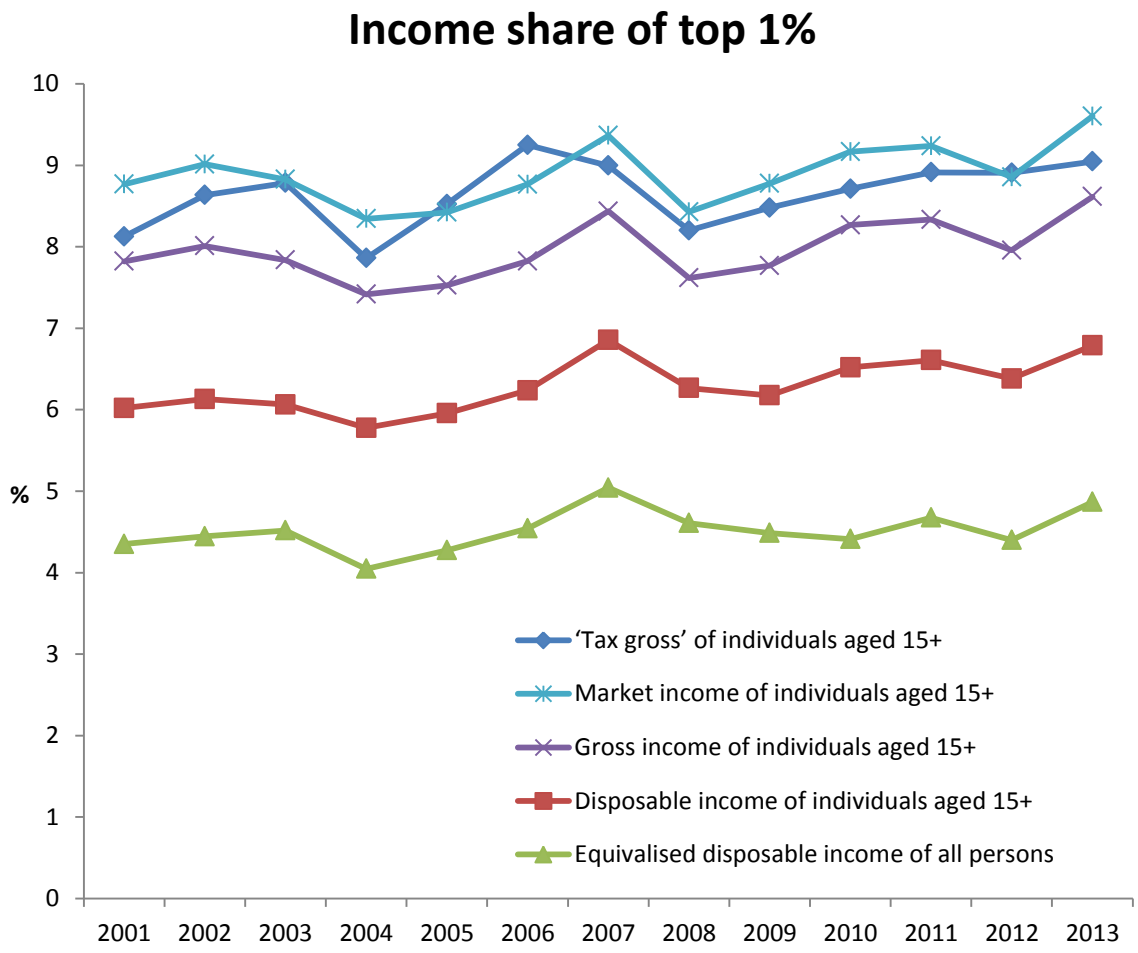

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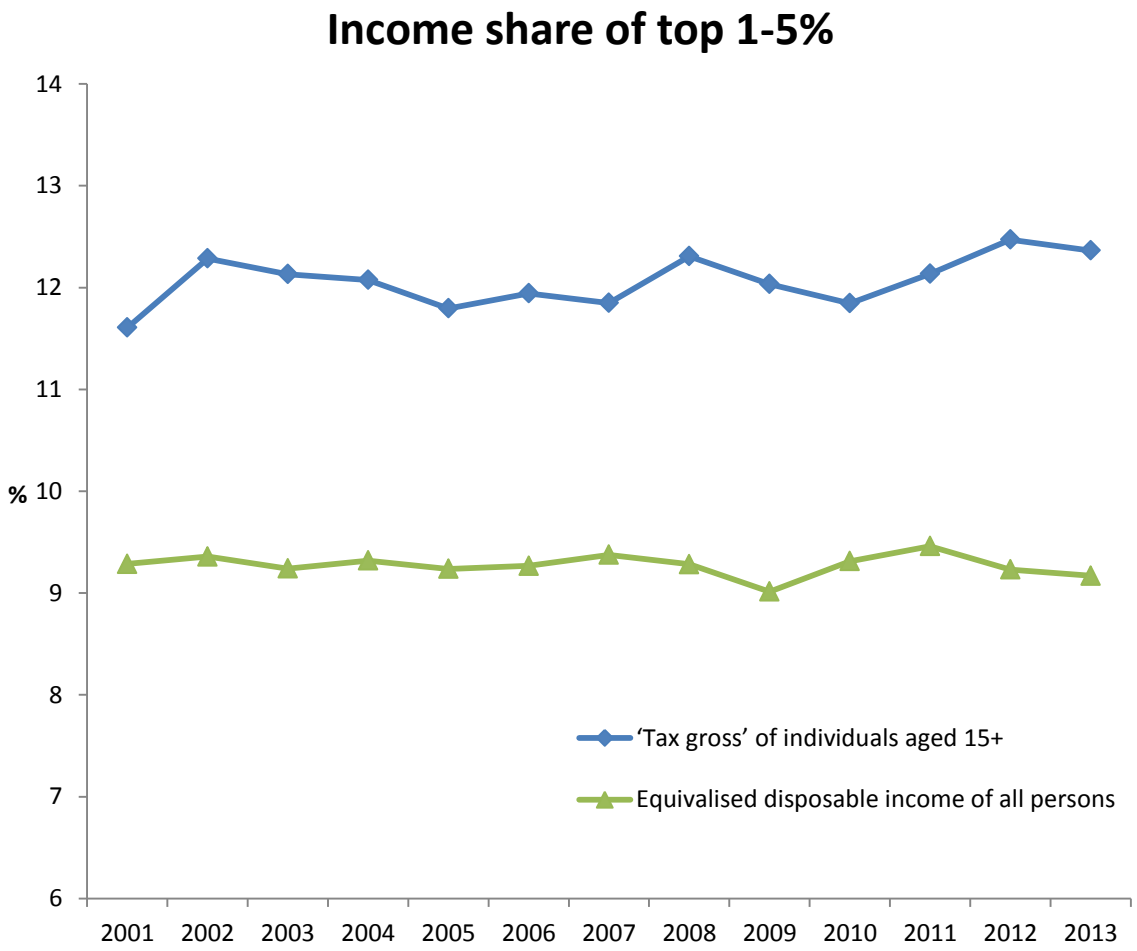

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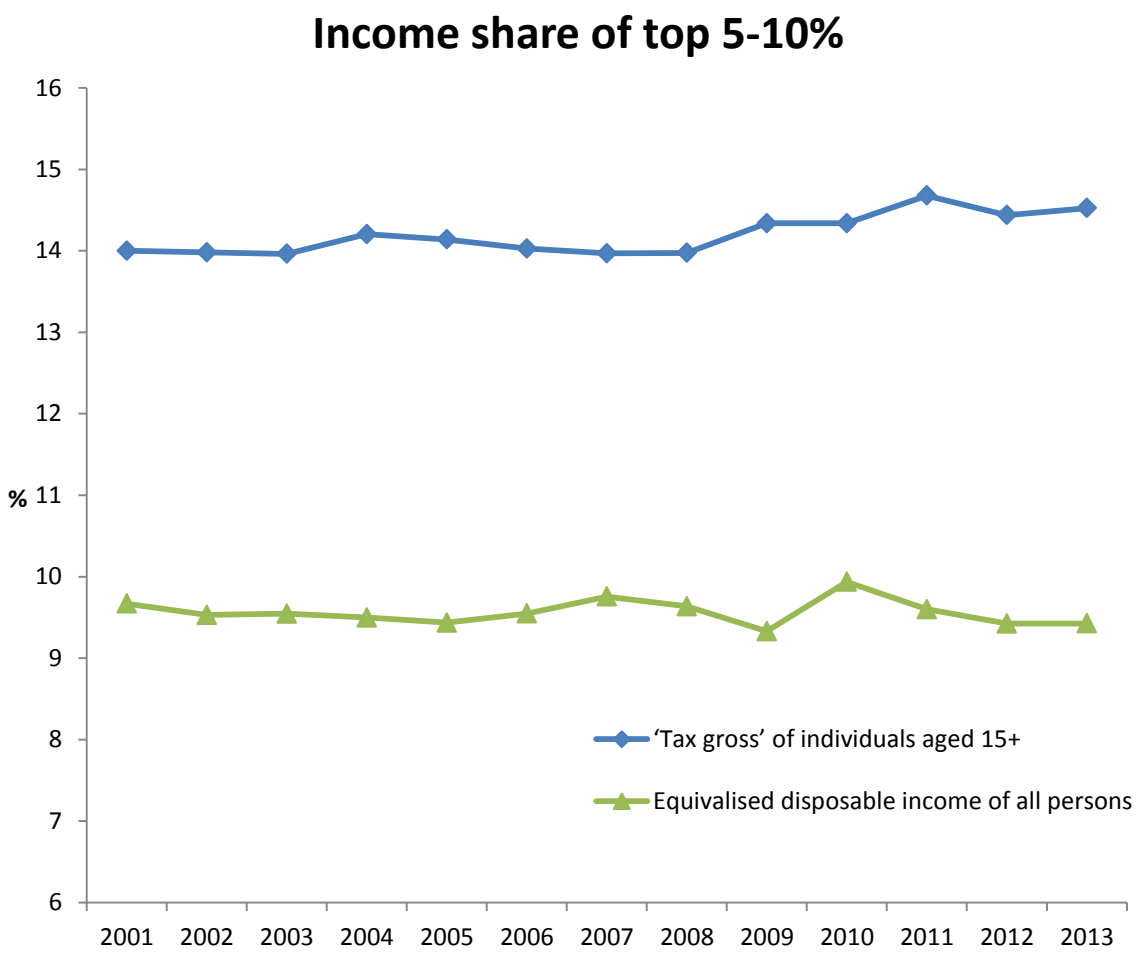
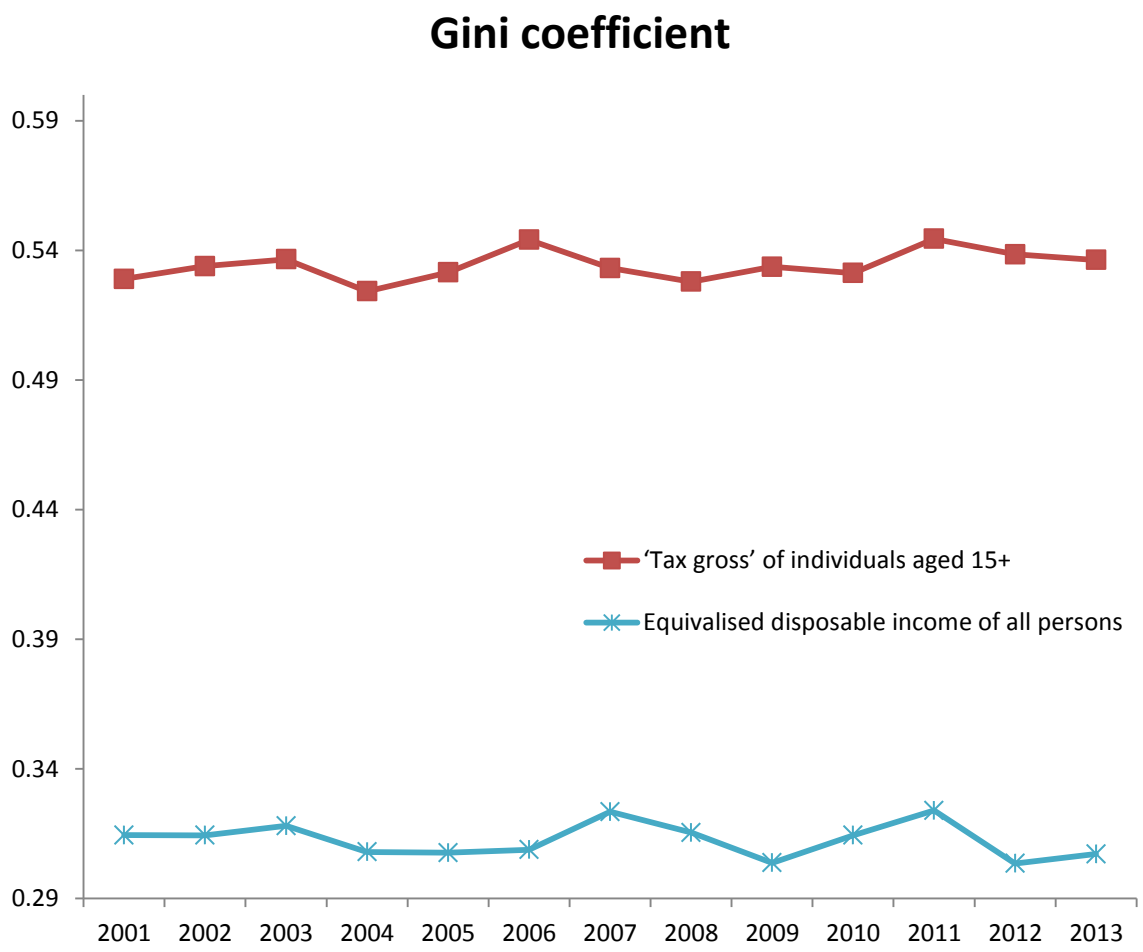
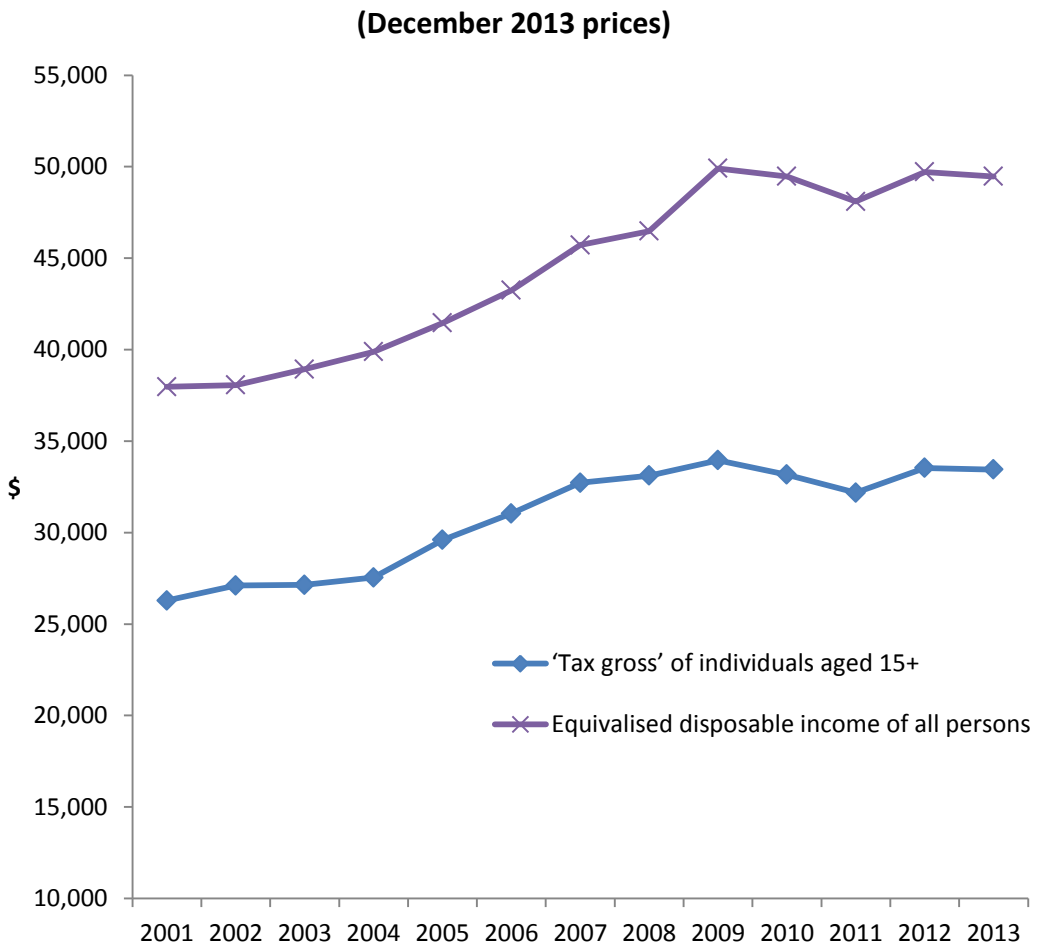


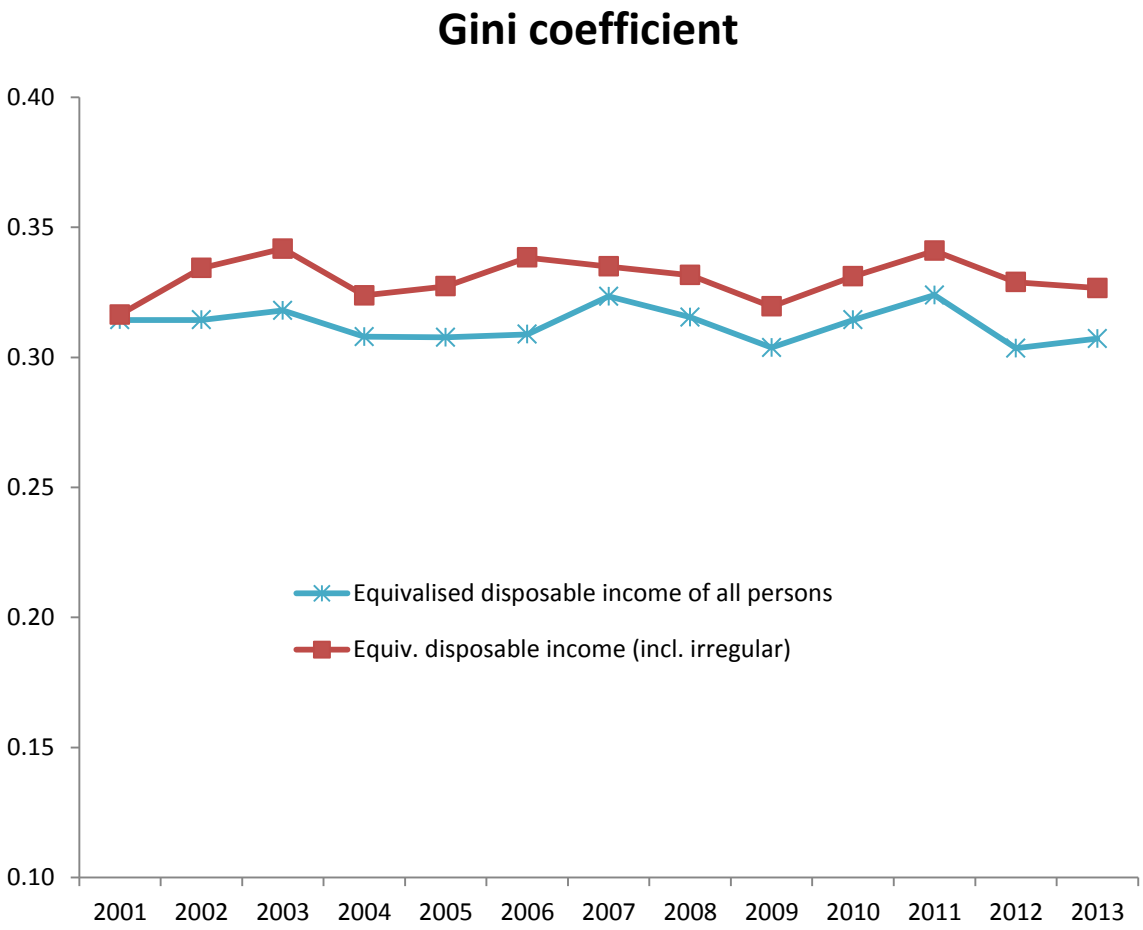
Gini coefficient – HILDA Survey estimates



Median income – HILDA Survey estimates



Accounting for additional income components – Irregular income



Accounting for additional income components

Public health

- Take an ‘insurance value’ approach
- Method:
  - Use ABS household Expenditure Survey (HES) 2003-04 and 2009-10
  - Estimate (by OLS) value of household in-kind health services received from government as a function of the number of household members in each 5-year age-range
  - Predicted value is the insurance value
  - Non-HES years: Use health CPI to interpolate between 2003-04 and 2009-10, and to project back from 2003-04 and forward from 2009-10

Accounting for additional income components

Other government ‘social transfers in-kind’

- Use HES to estimate regression model of value for household as a function of household characteristics:
  - Number of school-age children (interacted with income quintile)
  - Number of pre-school-age children (interacted with income quintile)
  - Number aged 18-59 (interacted with income quintile)
  - Number aged 60 and over (interacted with income quintile)
  - Number of adults in full-time education
  - Number of adults in part-time education
  - Whether in public housing (interacted with number of household members)
  - Number of income support recipients aged less than 60
  - Number of income support recipients aged 60 or over
- Non-HES years: Use education CPI to interpolate & project

Accounting for additional income components

Expenditure taxes

- Use HES to estimate regression models of the share of household disposable income going in expenditure taxes. Estimated as a function of household type and income decile (interacted).
- Linearly interpolate between 2003-04 and 2009-10 and assume constant before and after this period.

Accounting for additional income components

- A limitation in respect of both 'other social transfers in-kind' and expenditure taxes is that this method artificially reduces dispersion in these income components.
  - But the net effect is reasonably small:

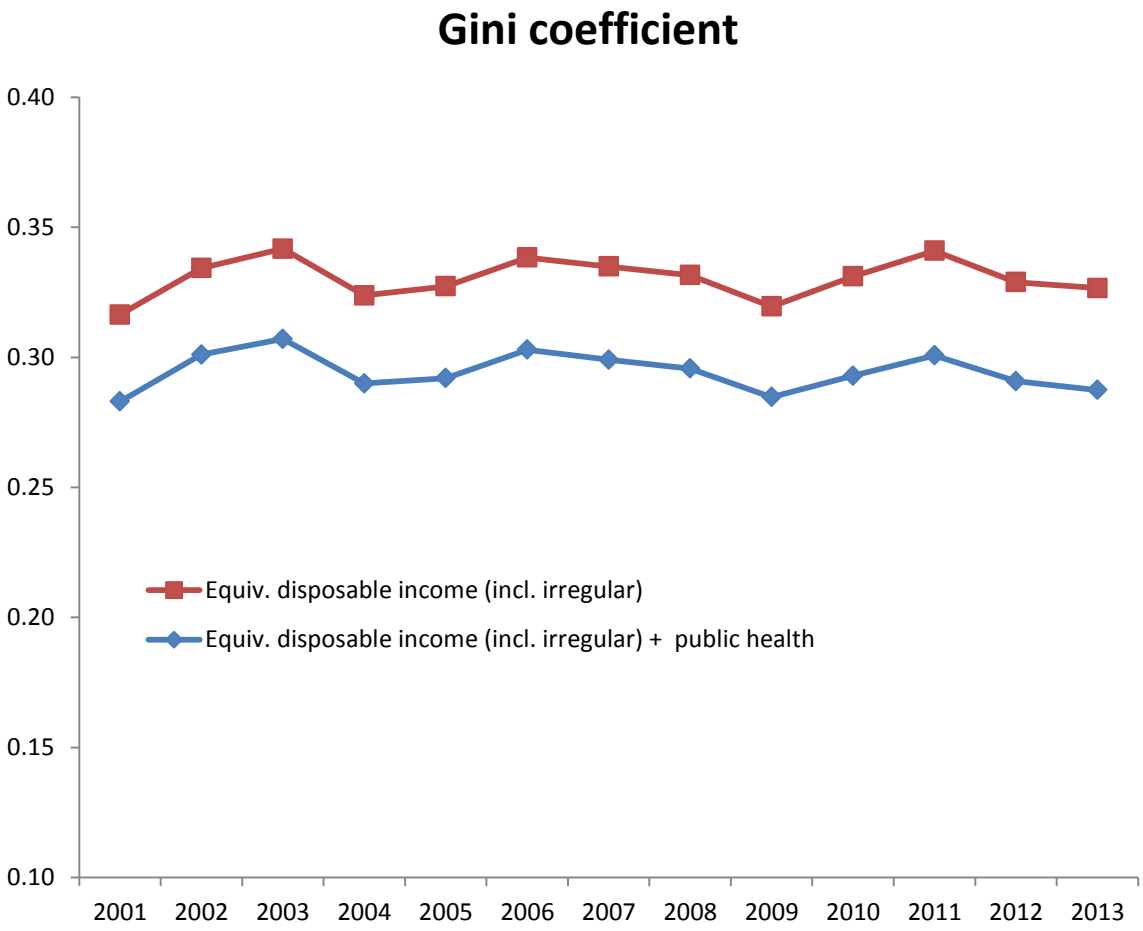
Gini coefficient for equivalised disposable income net of expenditure taxes and including non-health government social transfers in-kind			
	With actual values	With predicted values	Difference
HES 03-04	0.268	0.261	0.007
HES 09-10	0.293	0.287	0.006

Accounting for additional income components

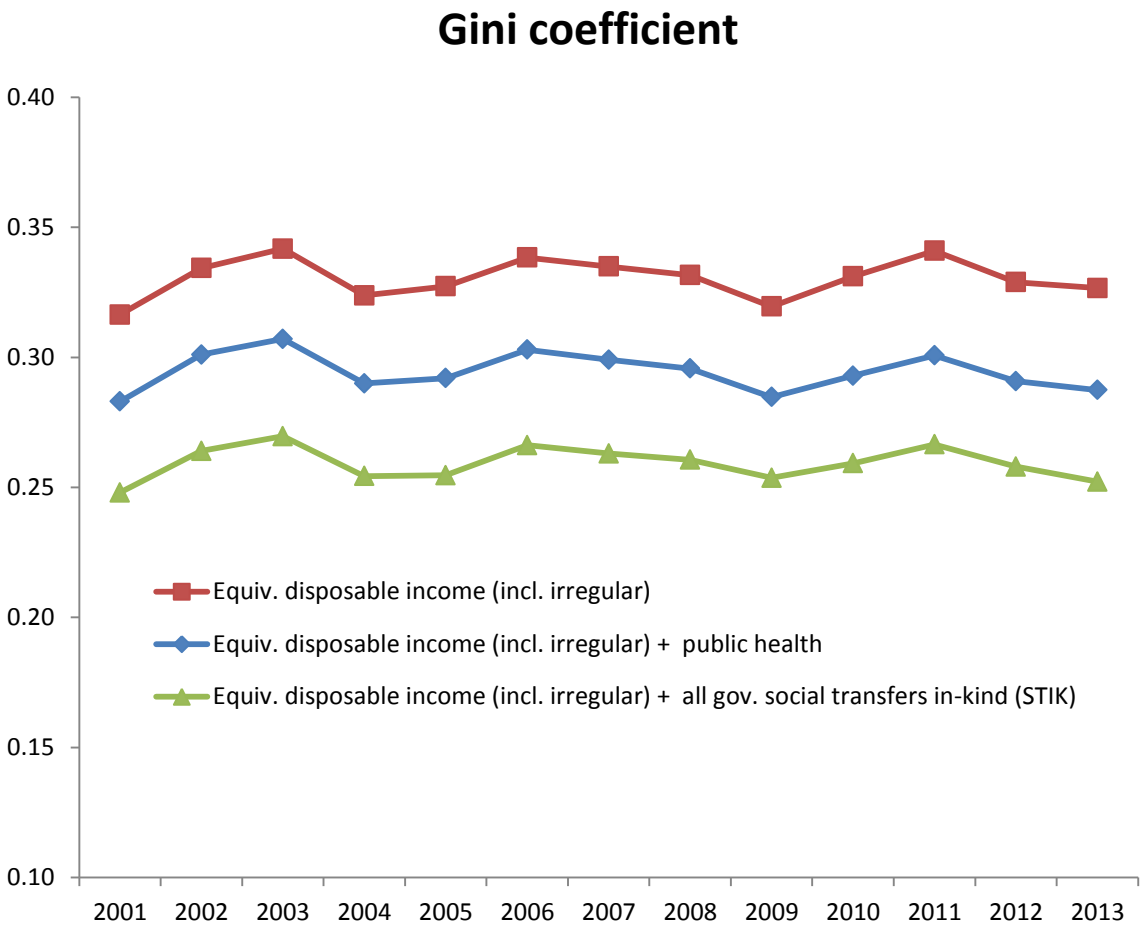
Imputed rental income from owner-occupied housing

- Variable constructed for CNEF
  - 4% of the difference between home value and mortgage debt on the home.

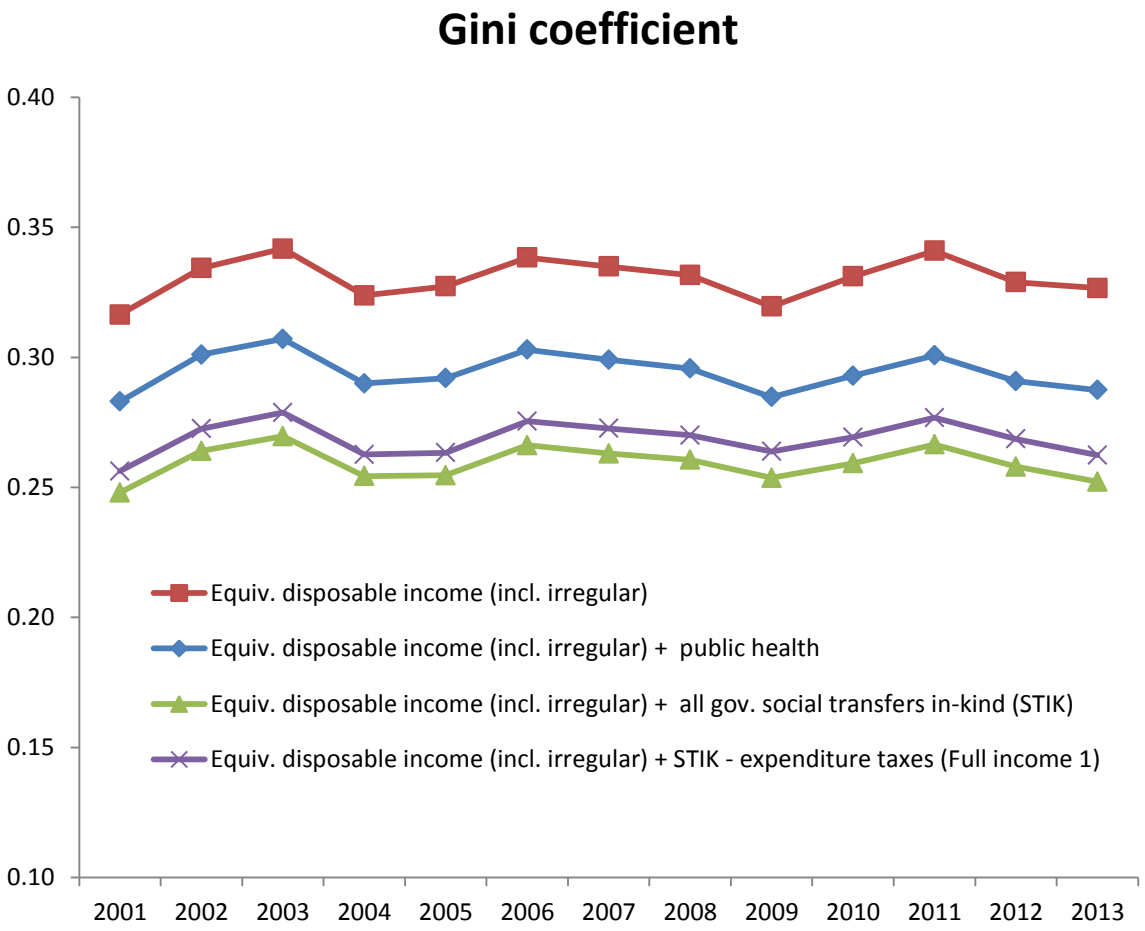
Accounting for in-kind income



Accounting for in-kind income



Accounting for in-kind income and expenditure taxes



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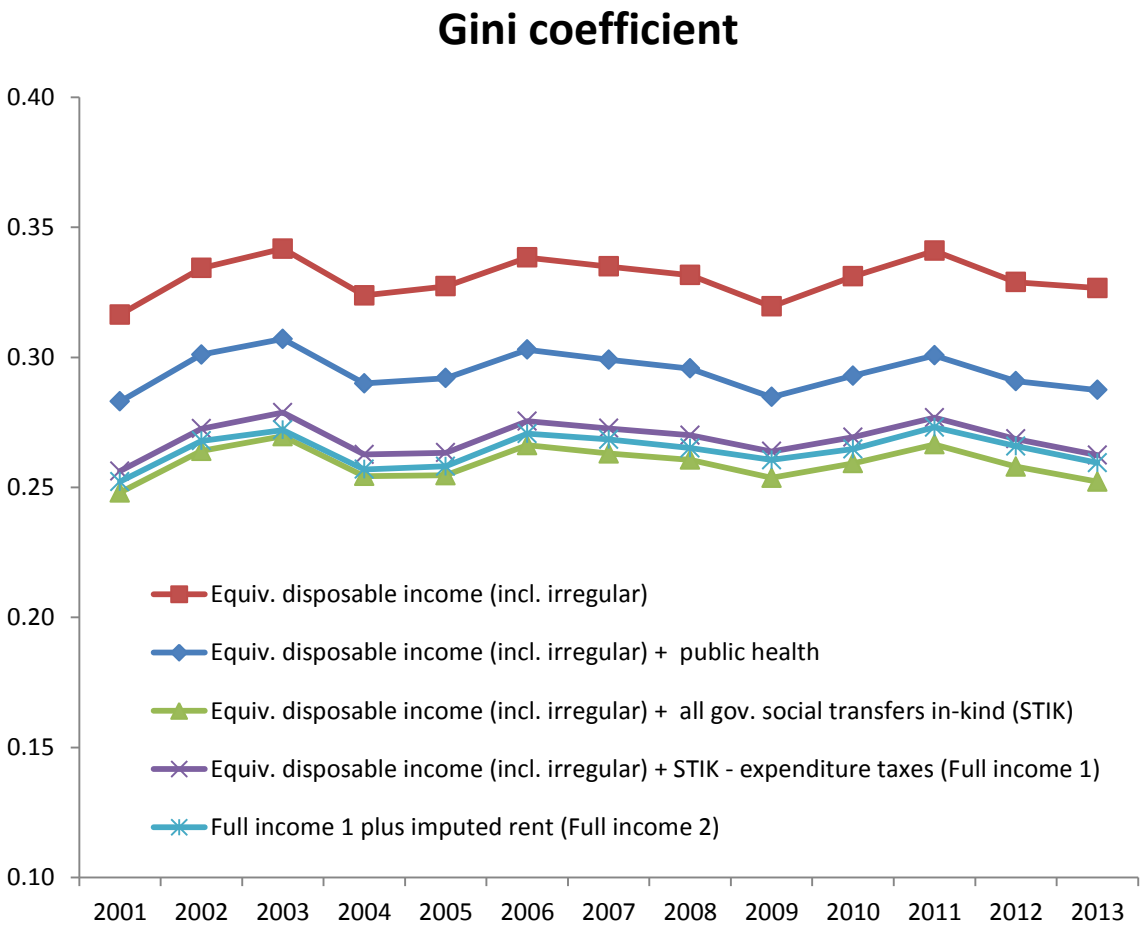

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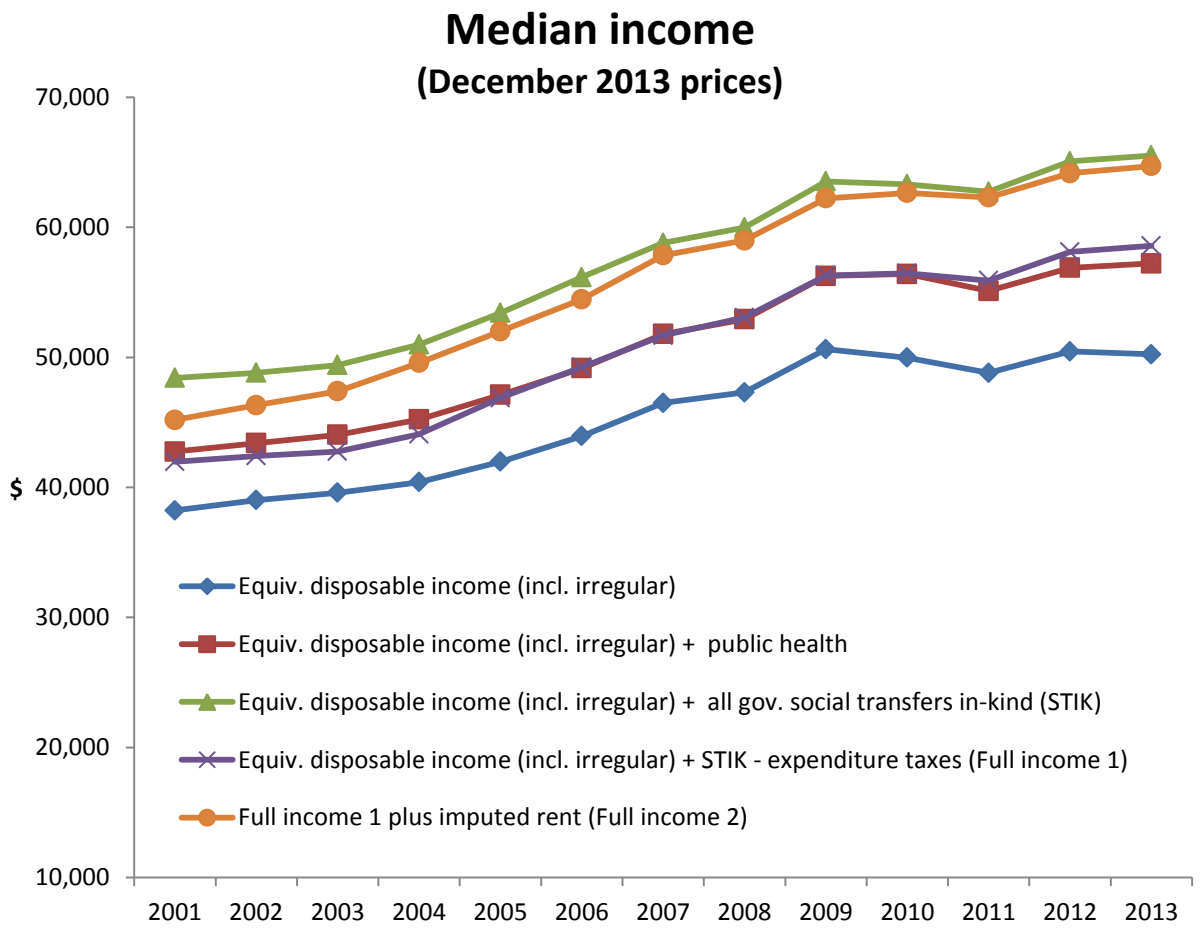
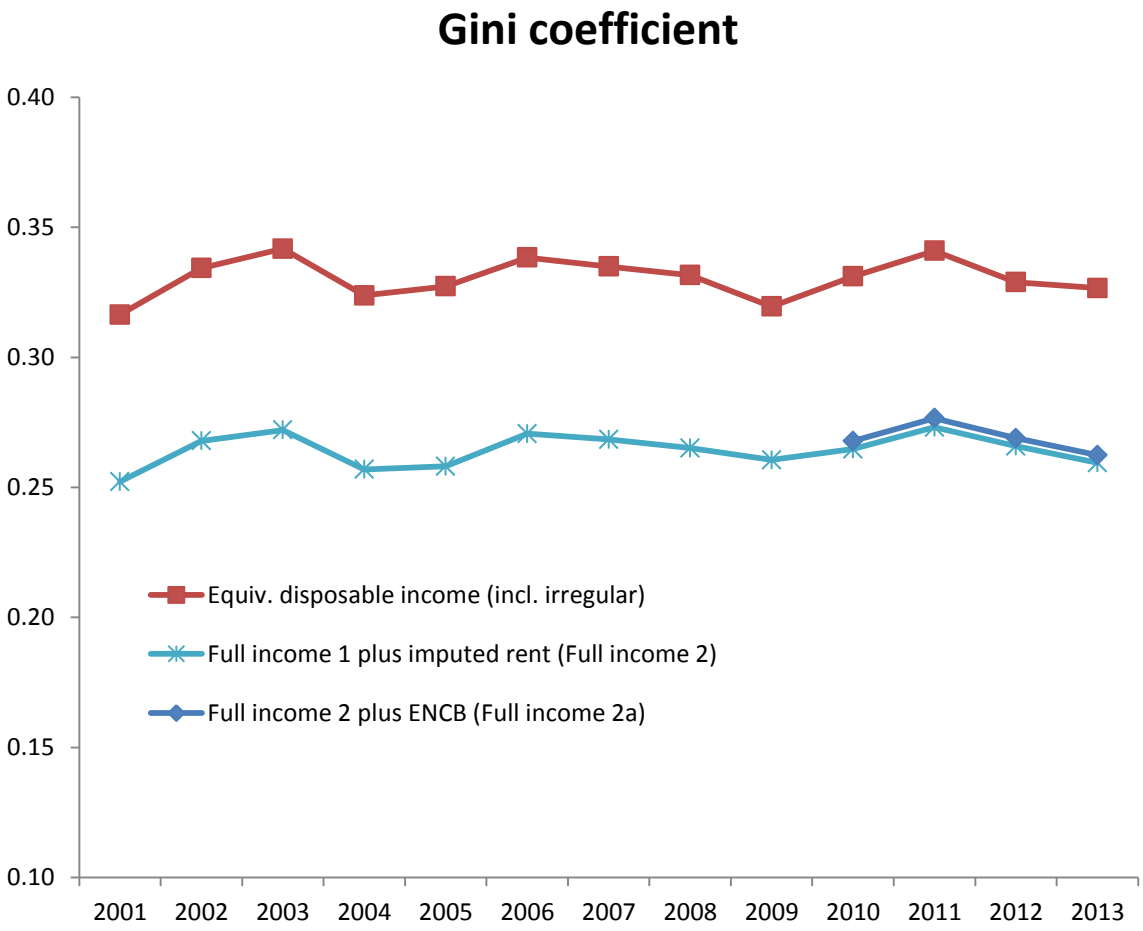
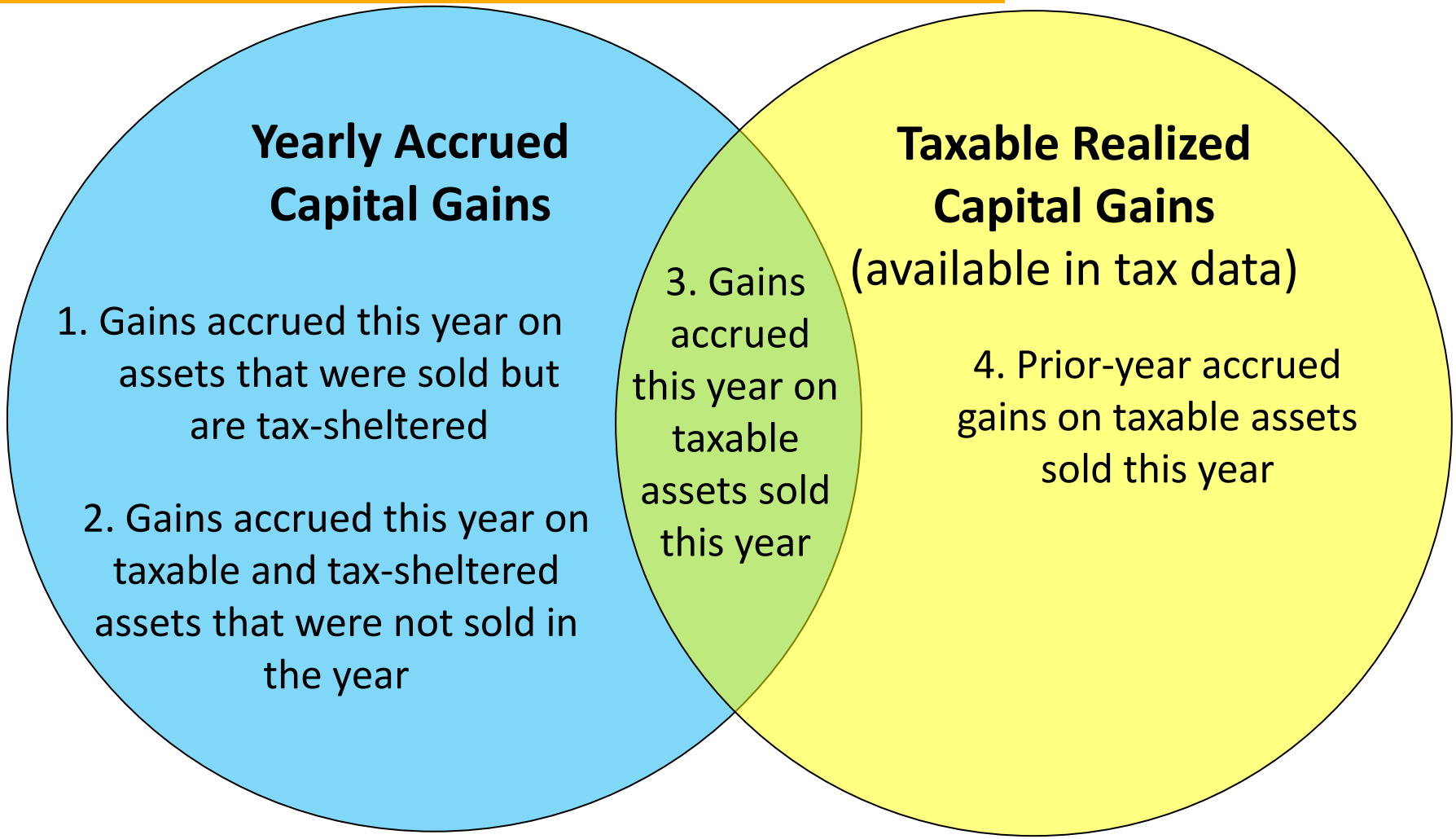


Accounting for employee non-cash benefits



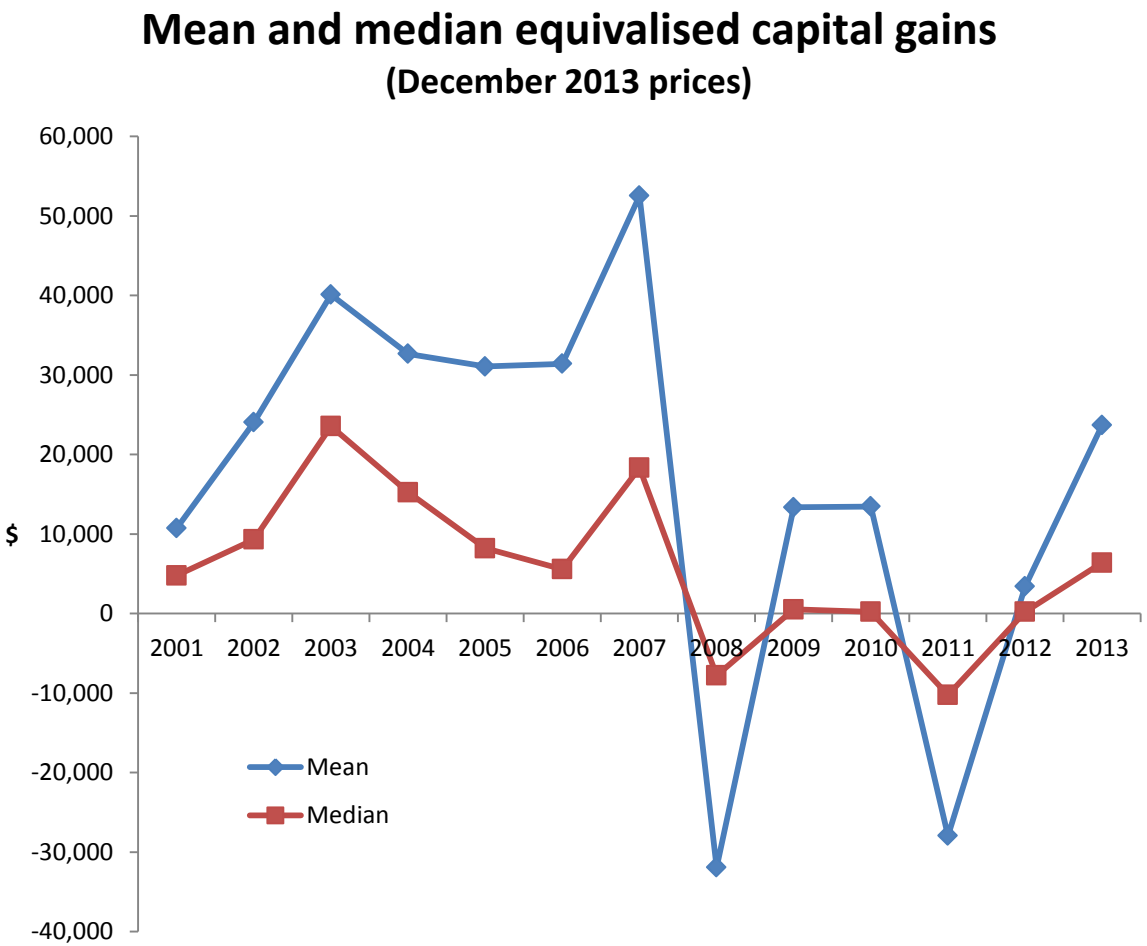
Capital gains



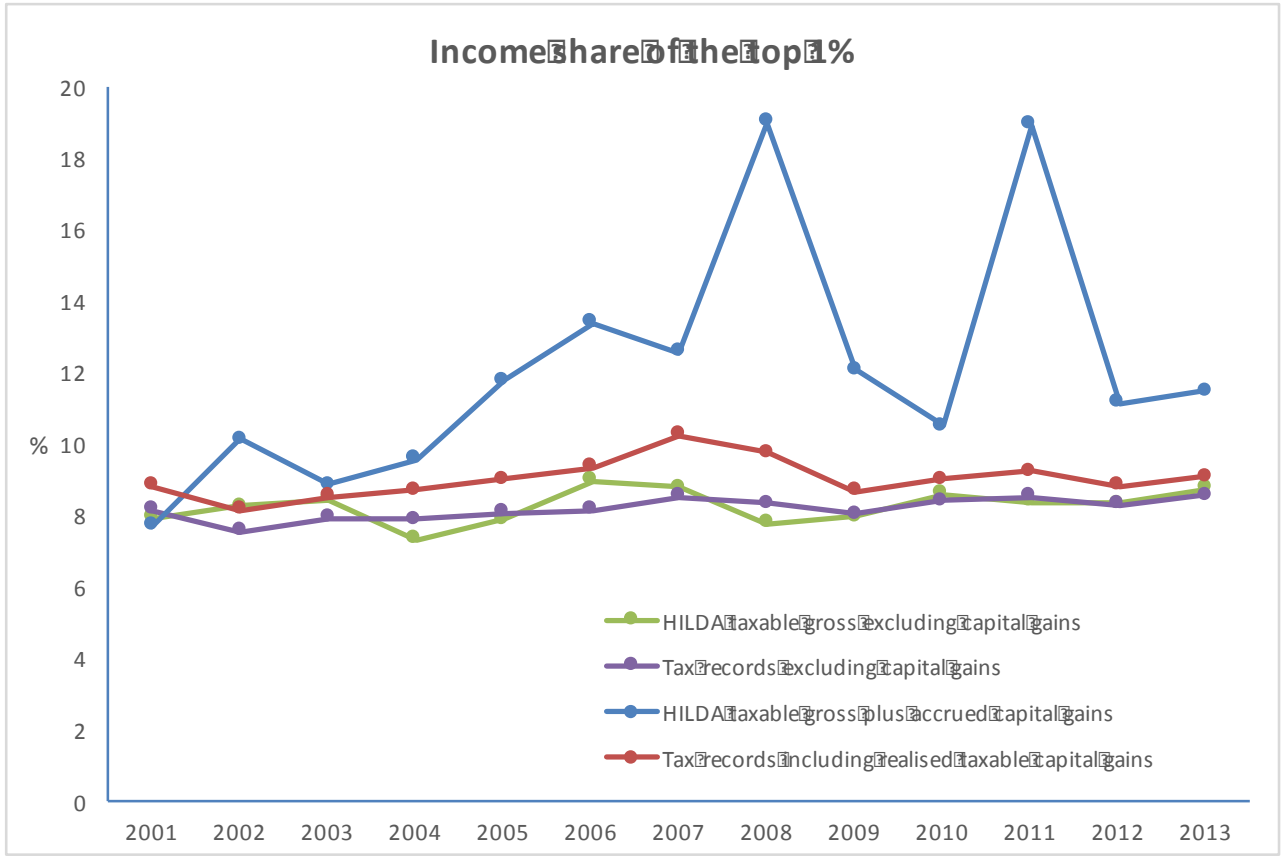
Capital gains

- Tax data contains taxable realised capital gains
- But in principle, yearly accrued capital gains on all assets is the quantity of interest.
- We use HILDA Survey data on wealth to estimate yearly accrued capital gains on housing, investments and businesses.
  - Brief intuition:
    - We observe holdings of these assets in 2002, 2006 and 2010
    - Housing (including investment properties): Capital gain is approximated by the ABS house price index (by state)
    - Investments and businesses: Capital gain is approximated by the ASX200

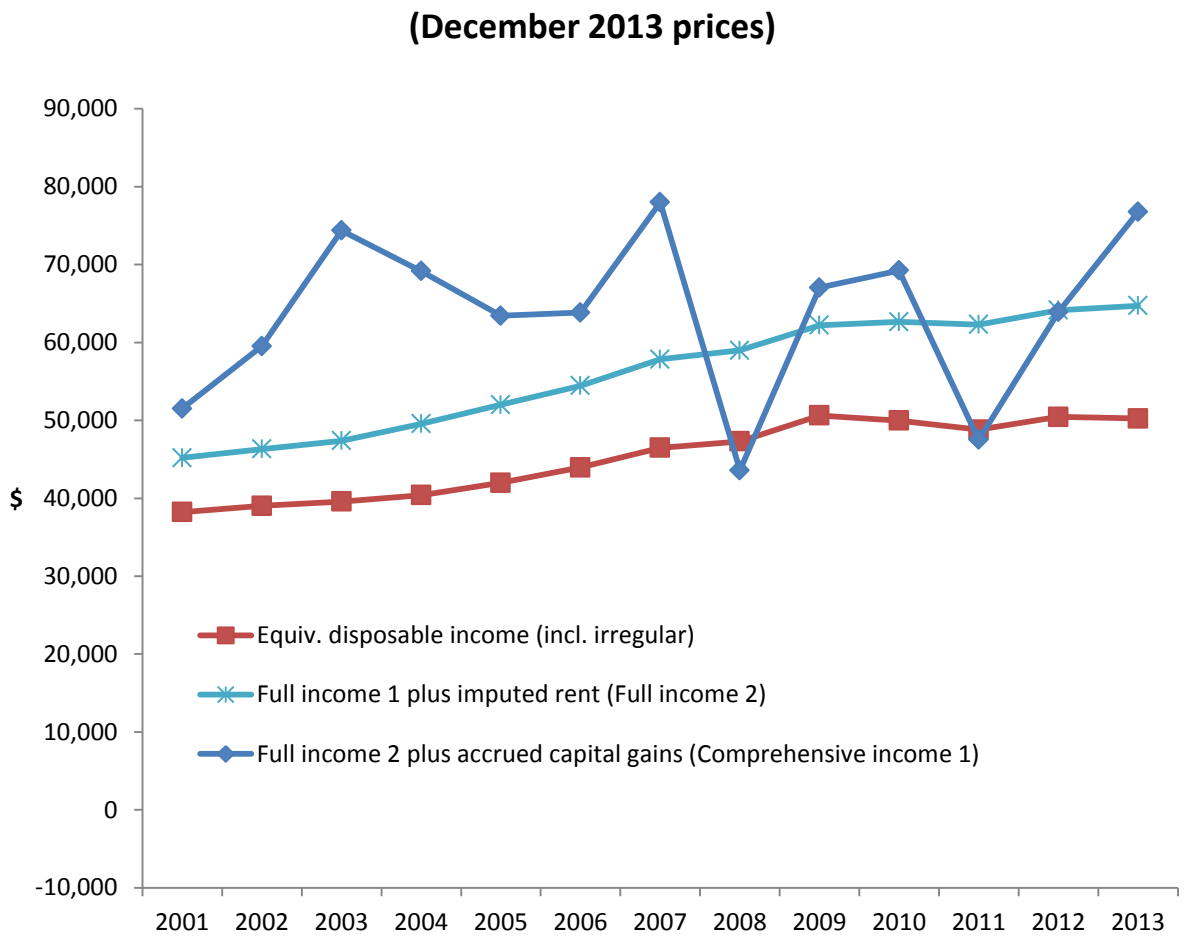
Yearly accrued capital gains – Estimated from HILDA Survey data



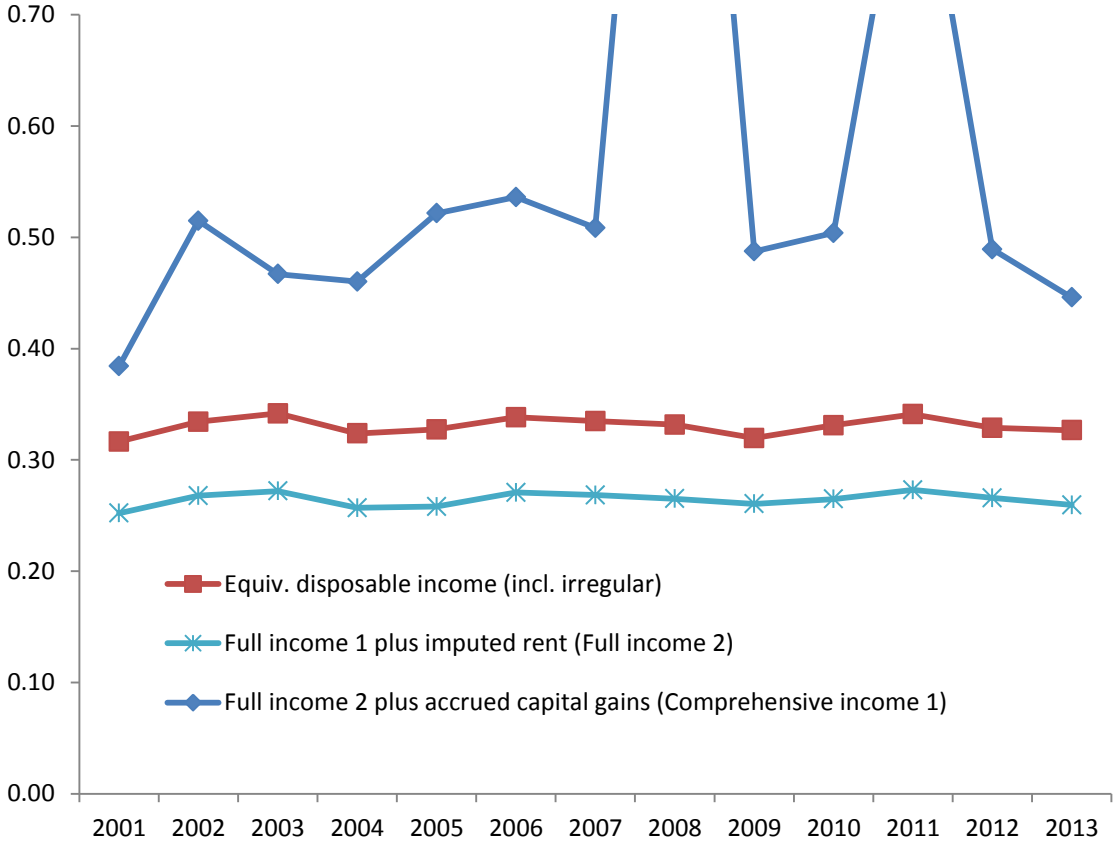
Top 1% income share including yearly accrued capital gains



Median income including yearly accrued capital gains



Gini coefficient including yearly accrued capital gains



Concluding comments

- Income concept and sharing unit matter a lot
- Tax records data are measuring quite different things in different countries
- Tax records data and household survey data are measuring quite different things
- Broader notions of income change the story quite a bit also
  - (As others have shown) adding in-kind income reduces measured inequality
  - Adding accrued capital gains dramatically increases measured inequality and also substantially increases volatility over time