

Measure for Measure

Systematic Patterns of Deviation between Measures of Income and Consumption in Household Surveys

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Rural Income Generating Activities (RIGA) Project

<http://www.fao.org/es/ESA/riga/>

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Wye City Group Conference

ERS, Washington DC, 24 May 2010

“The practical and conceptual difficulties of collecting good income data are severe enough to raise doubts about the value of trying”

A. Deaton (1997), p. 30

Outline

- Motivation & objectives
- Data
- Hypotheses, research questions
- Evidence
- Implications for analysis, data collection, further work

Motivation

- Understand Y measurement error
 - Quantify observed ranges
 - By income sources
 - By respondent and hh characteristics
 - Questionnaire design issues
- Goals:
 - Improve future data collection
 - Understand implications for analysis
- Focus on ag and rural

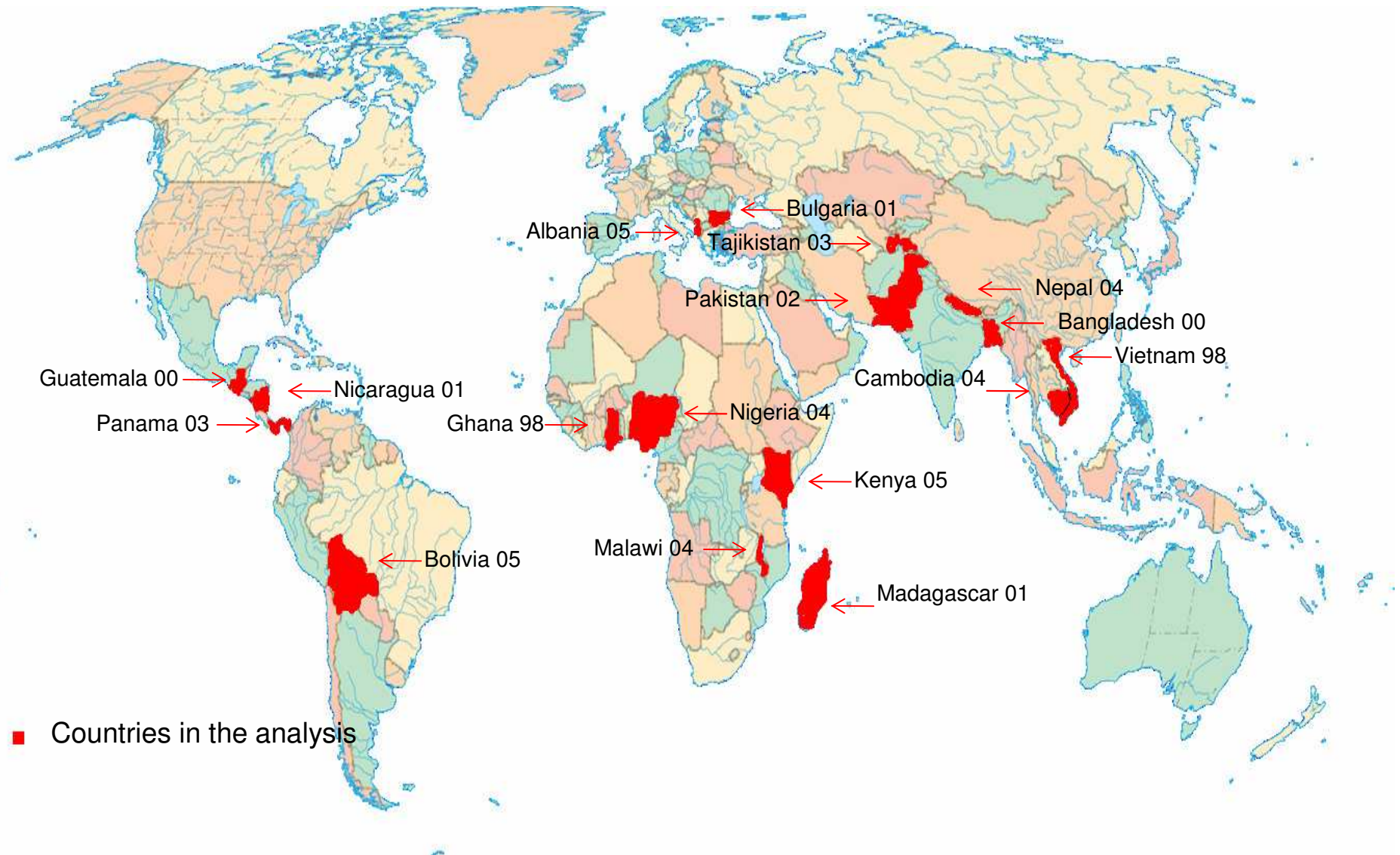
RIGA Project

- Rural Income Generating Activities
- 32 surveys, 19 countries
- FAO, World Bank collaboration
- High-quality surveys, comparability
- Objectives:
 - Analysis: Understand rural income and poverty
 - Improve income data collection
 - Promote use of hh survey data

Income and Consumption

- Income (Y) information important for other uses (besides poverty & inequality)
 - Livelihood strategies (income shares)
 - Productivity/efficiency analysis
 - Net buyer/net sellers, impact of high food prices
- Consumption (C) preferred welfare measure in developing countries
 - More stable (short-term fluctuations)
 - Income harder to measure (self-employment)
 - Less incentive to mis-report

17 national hh surveys used



Surveys used

Country	Name of Survey	Year of Survey
<i>Africa</i>		
Ghana	Ghana Living Standards Survey	1998
Kenya	Integrated Household Budget Survey	2004-2005
Madagascar	Enquête Permanente Auprès Des Ménages	2000-2001
Malawi	Integrated Household Survey 2	2004-2005
Nigeria	Living Standards Survey	2003-2004
<i>Asia</i>		
Bangladesh	Household Income-Expenditure Survey	2000
Cambodia	Household Socio-Economic Survey	2003-2004
Nepal	Living Standards Survey II	2003-2004
Pakistan	Integrated Household Survey	2001-2002
Vietnam	Living Standards Survey	1997-1998
<i>Eastern Europe</i>		
Albania	Living Standards Measurement Survey	2005
Bulgaria	Integrated Household Survey	2001
Tajikistan	Living Standards Survey	2003
<i>Latin America</i>		
Bolivia	Encuesta de Hogares	2005
Guatemala	Encuesta de Condiciones de Vida	2000
Nicaragua	Encuesta Nacional de Hogares ...	2001
Panama	Encuesta de Niveles de Vida	2002-2003

Methods

- Measure of income ‘under-estimation”:

$$D=(Y-C)/C$$

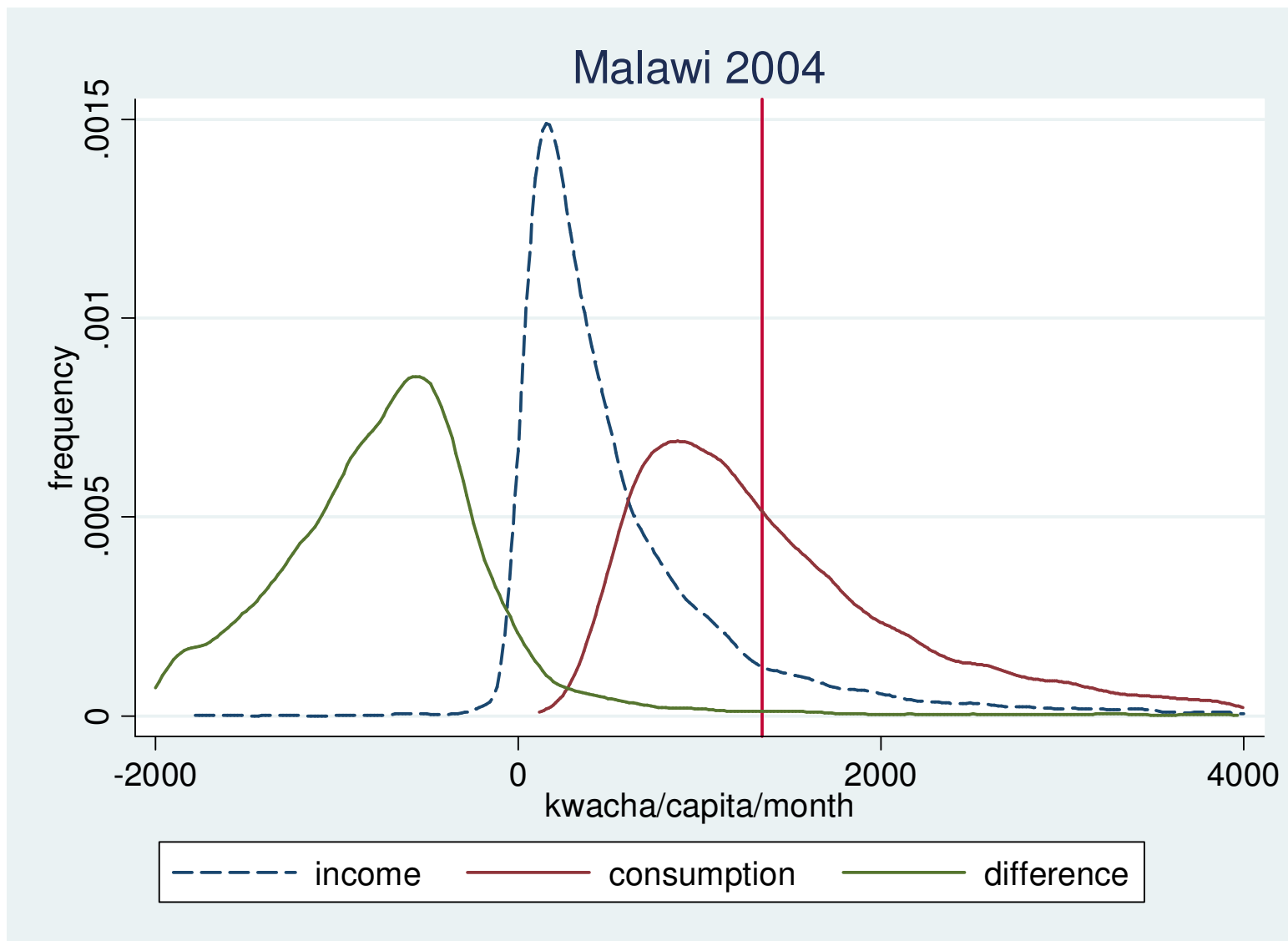
- Descriptives
- Regression

$$D = \alpha + \beta_1 HH_CHARS + \beta_2 ASSETS + \beta_3 SPECIAL + \varepsilon$$

Hypotheses tested

- Whether Y is underestimated (quantify)
- How Y measurement error varies with:
 - Income sources
 - Farm, self-employment, wage
 - Respondent and hh characteristics
 - Literacy, gender, wealth
 - Questionnaire design issues
 - Revenues, costs (esp. in ag)

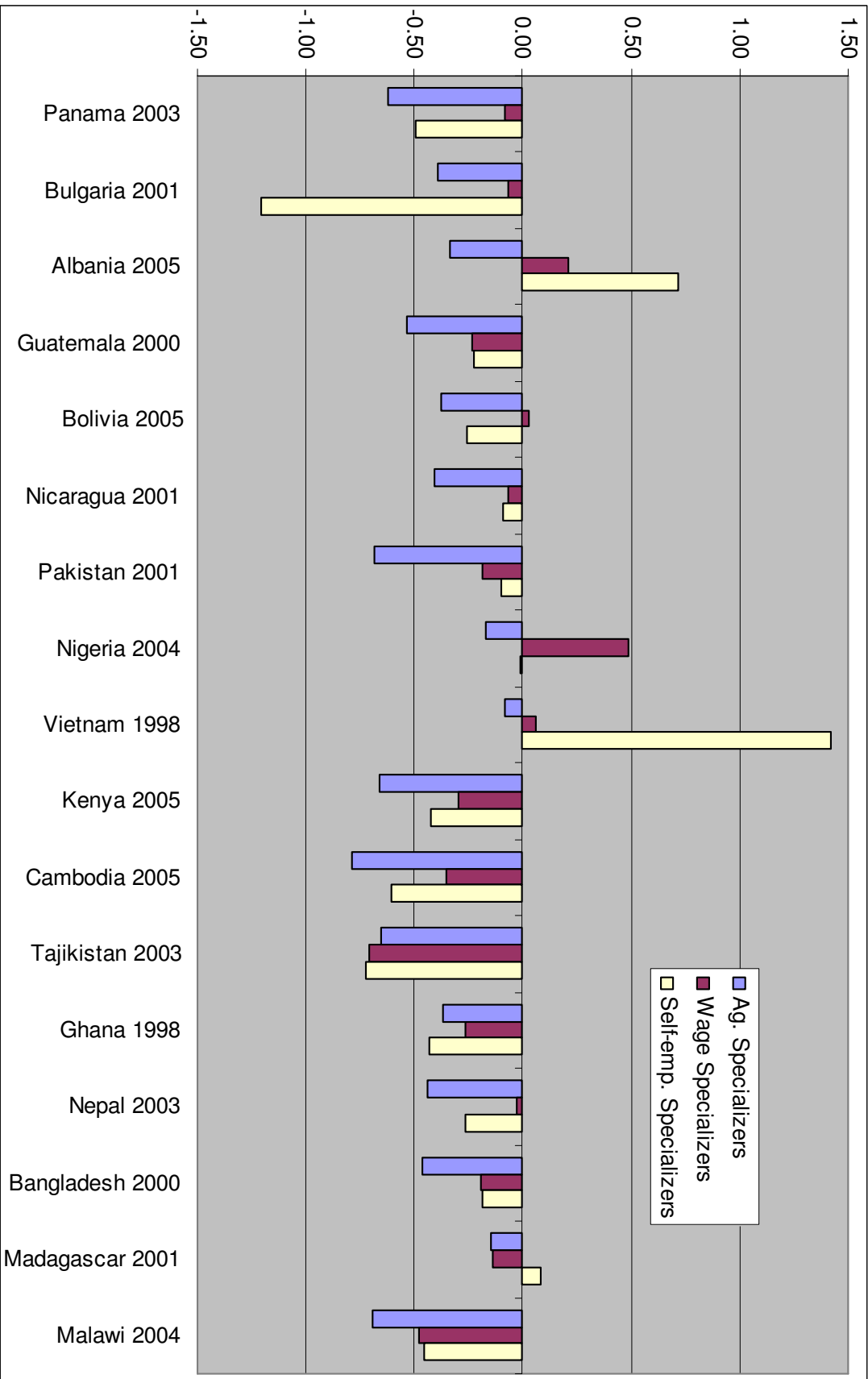
How do Y & C compare in practice?



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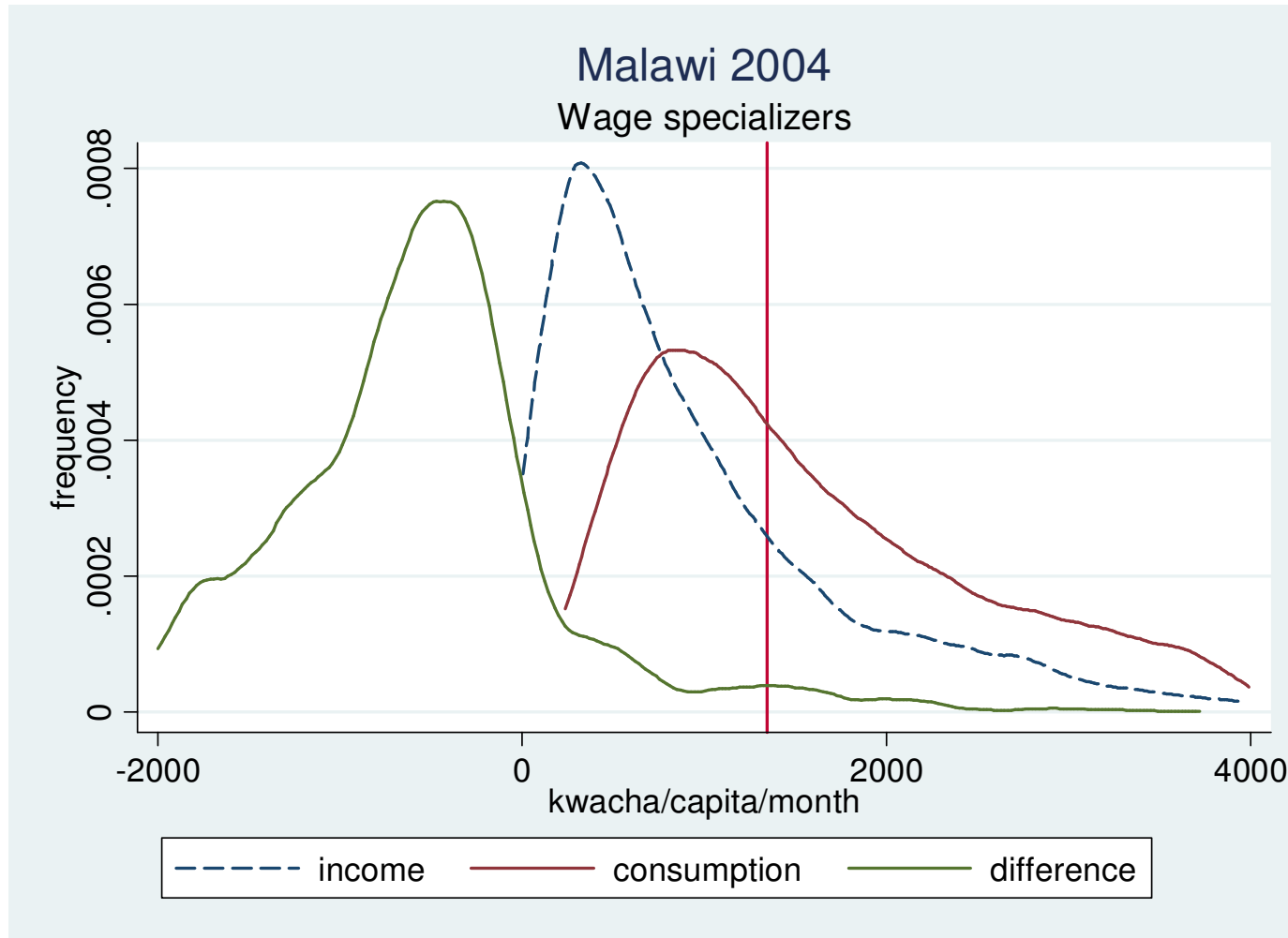
Survey	Y/C	(Y-C)/C hh level median
Panama 2003	0.748	-0.264
Bulgaria 2001	0.718	-0.271
Albania 2005	1.083	-0.108
Guatemala 2000	0.573	-0.399
Bolivia 2005	0.899	-0.139
Nicaragua 2001	0.728	-0.236
Pakistan 2001	0.697	-0.235
Nigeria 2004	0.763	-0.145
Vietnam 1998	1.372	0.030
Kenya 2005	0.610	-0.543
Cambodia 2004	0.390	-0.707
Tajikistan 2003	0.278	-0.725
Ghana 1998	0.530	-0.468
Nepal 2003	0.660	-0.273
Bangladesh 2000	0.735	-0.209
Madagascar 2001	0.834	-0.178
Malawi 2004	0.428	-0.660
mean	0.709	-0.325
min	0.278	-0.725
max	1.372	0.030

$(Y-C)/C$ ('under-estimates') by income component



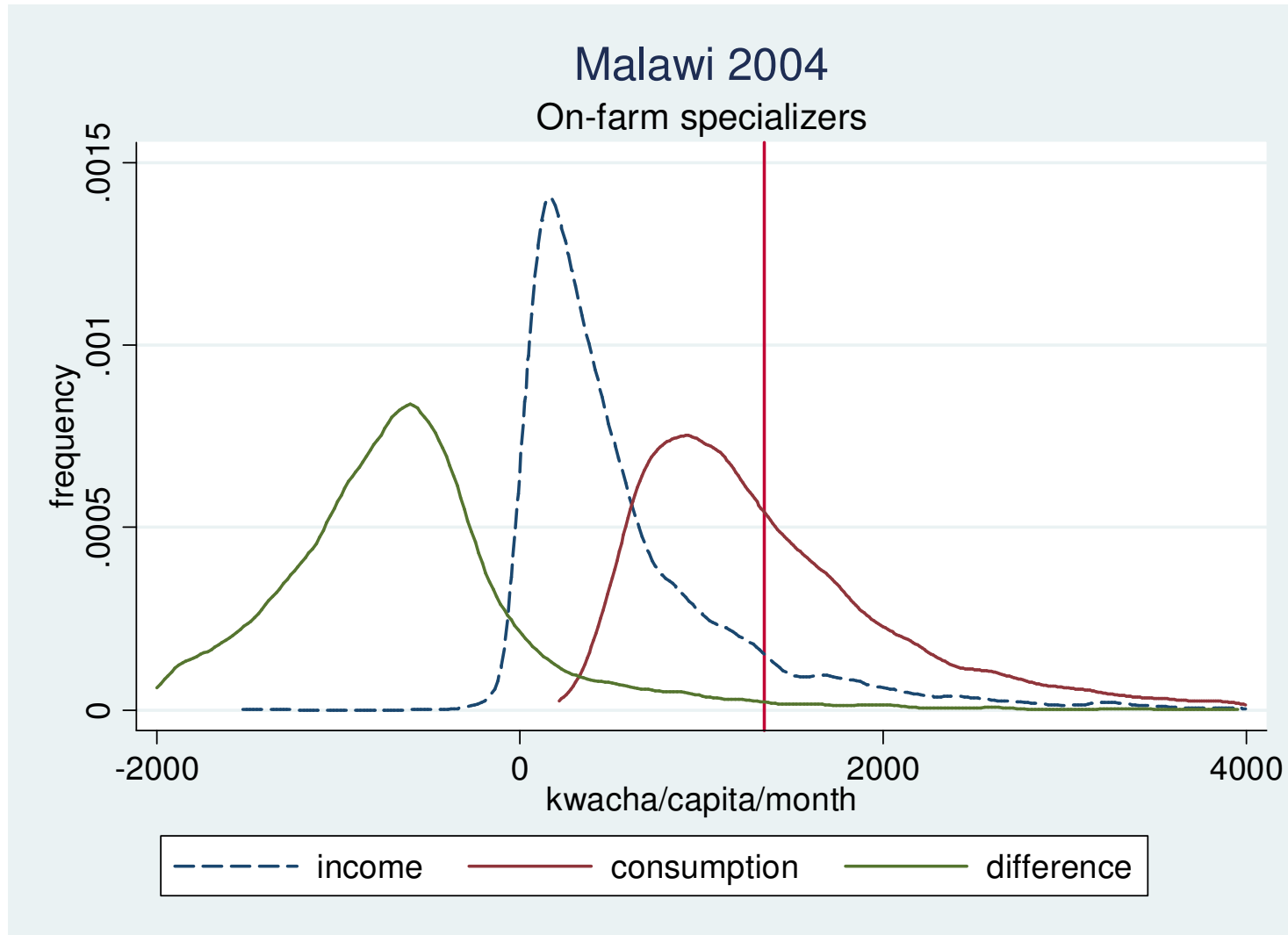
A closer look at Y components

Wages



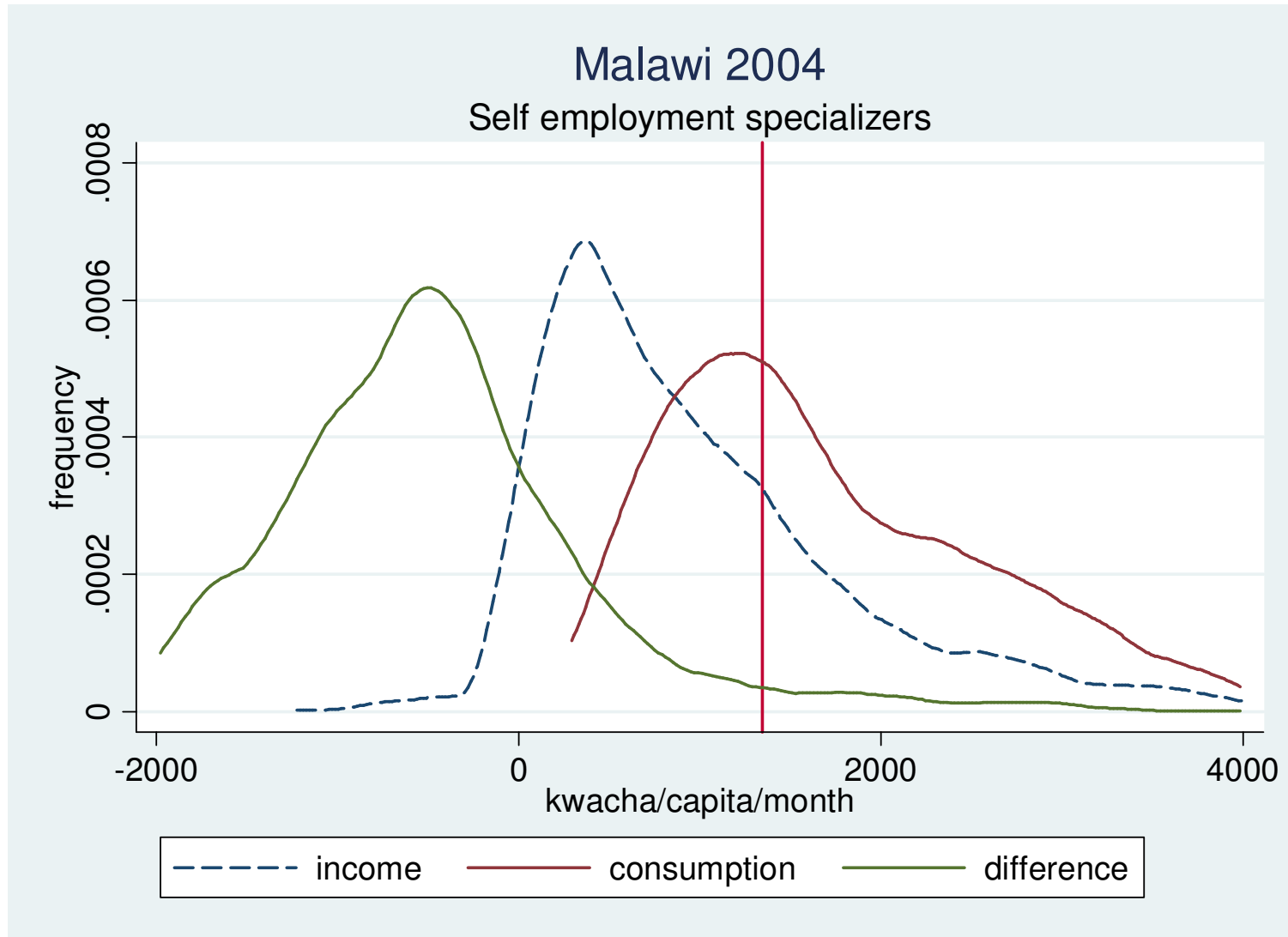
A closer look at Y components

Agriculture

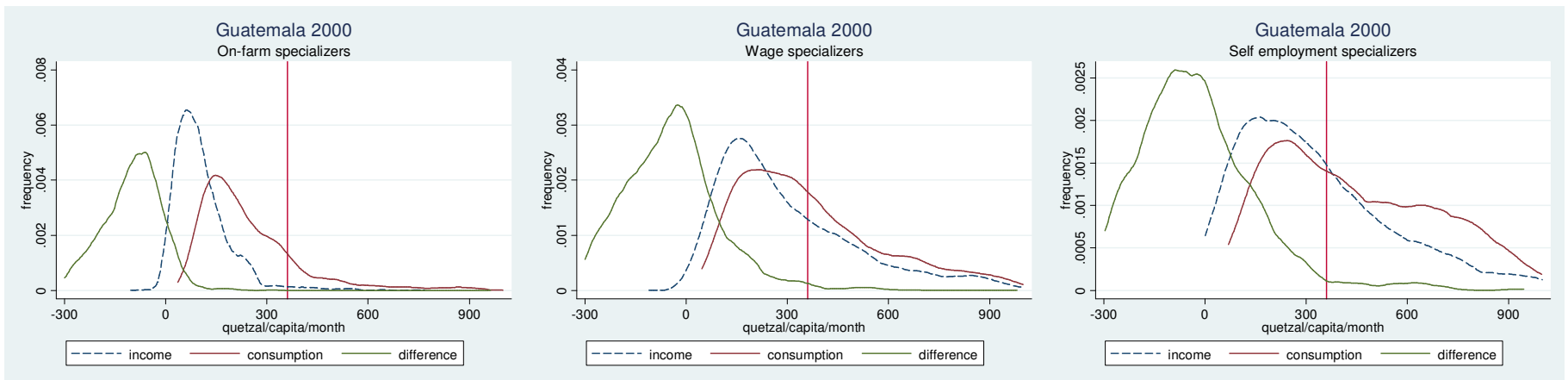
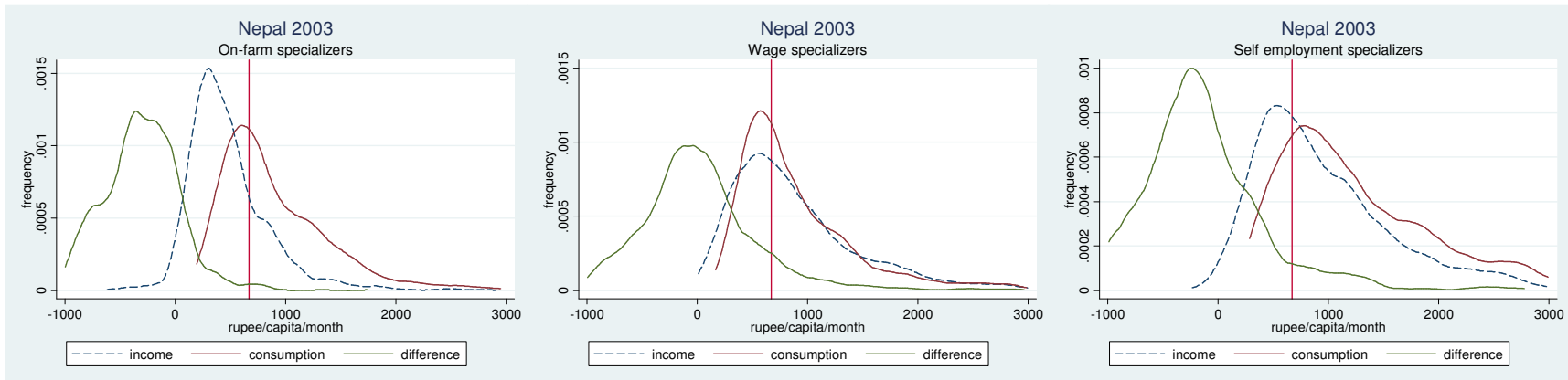


A closer look at Y components

Non-ag self-employment



Y components: more examples



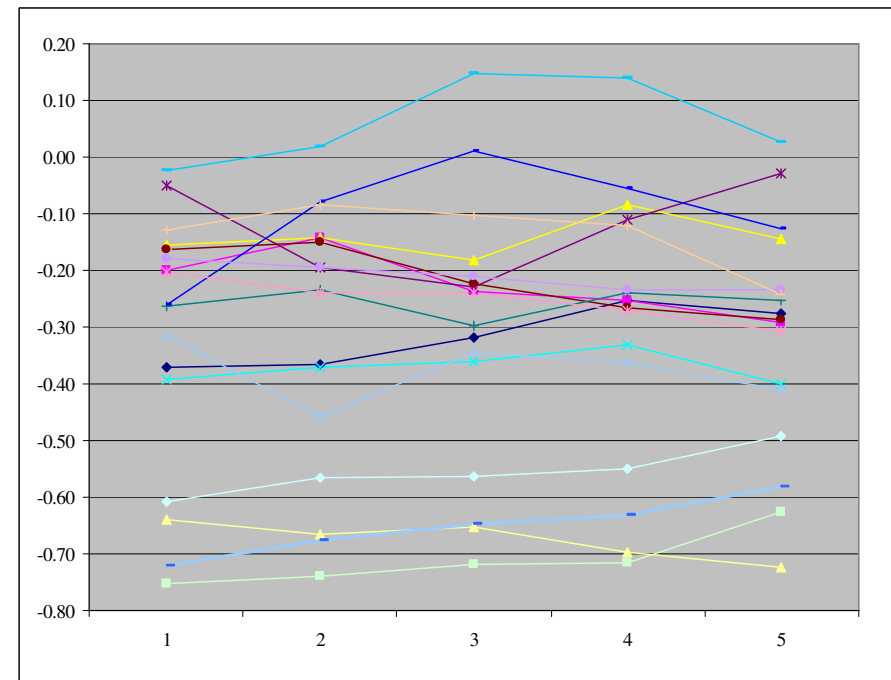
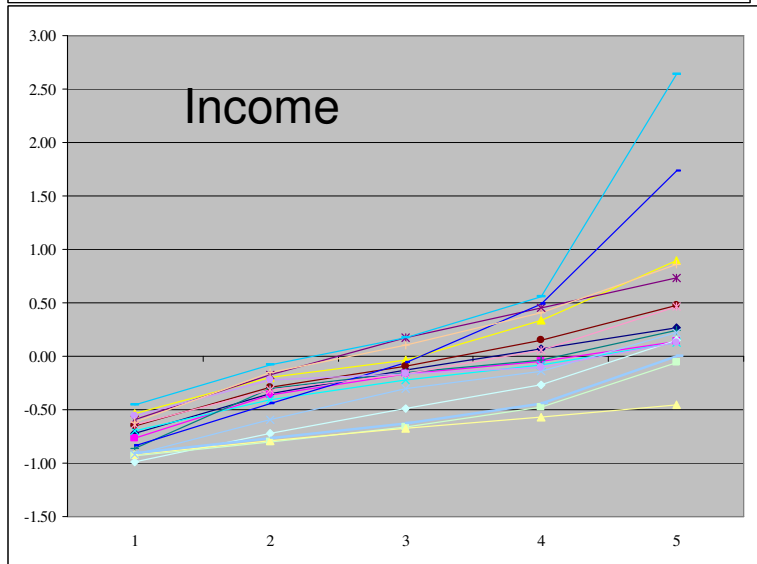
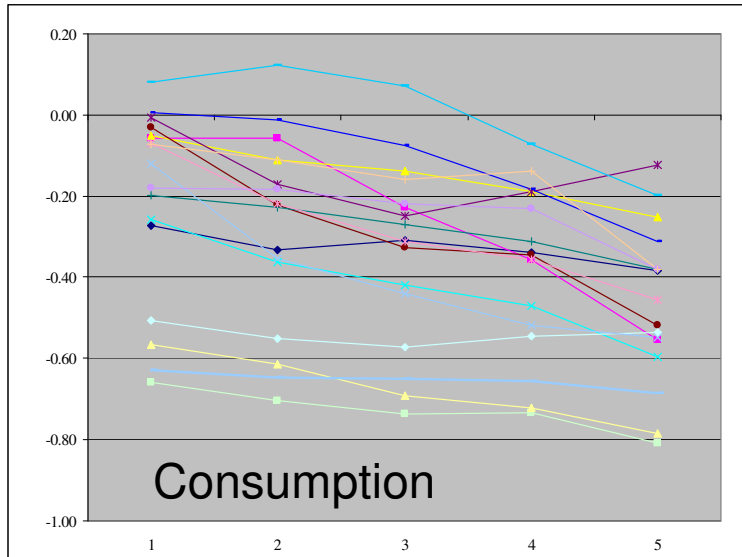
Regression results: Y source

Spec category	+ve	-ve
Farm	--	13
Wage	11	6
Self-employed	7	2
Tranfers	2	11
Diversified	<i>reference category</i>	

Statistically significant coefficient, 17 country regression
Dependent variable: $(Y-C)/C$

Table 3

Y 'under-estimate' by wealth category



Asset Index

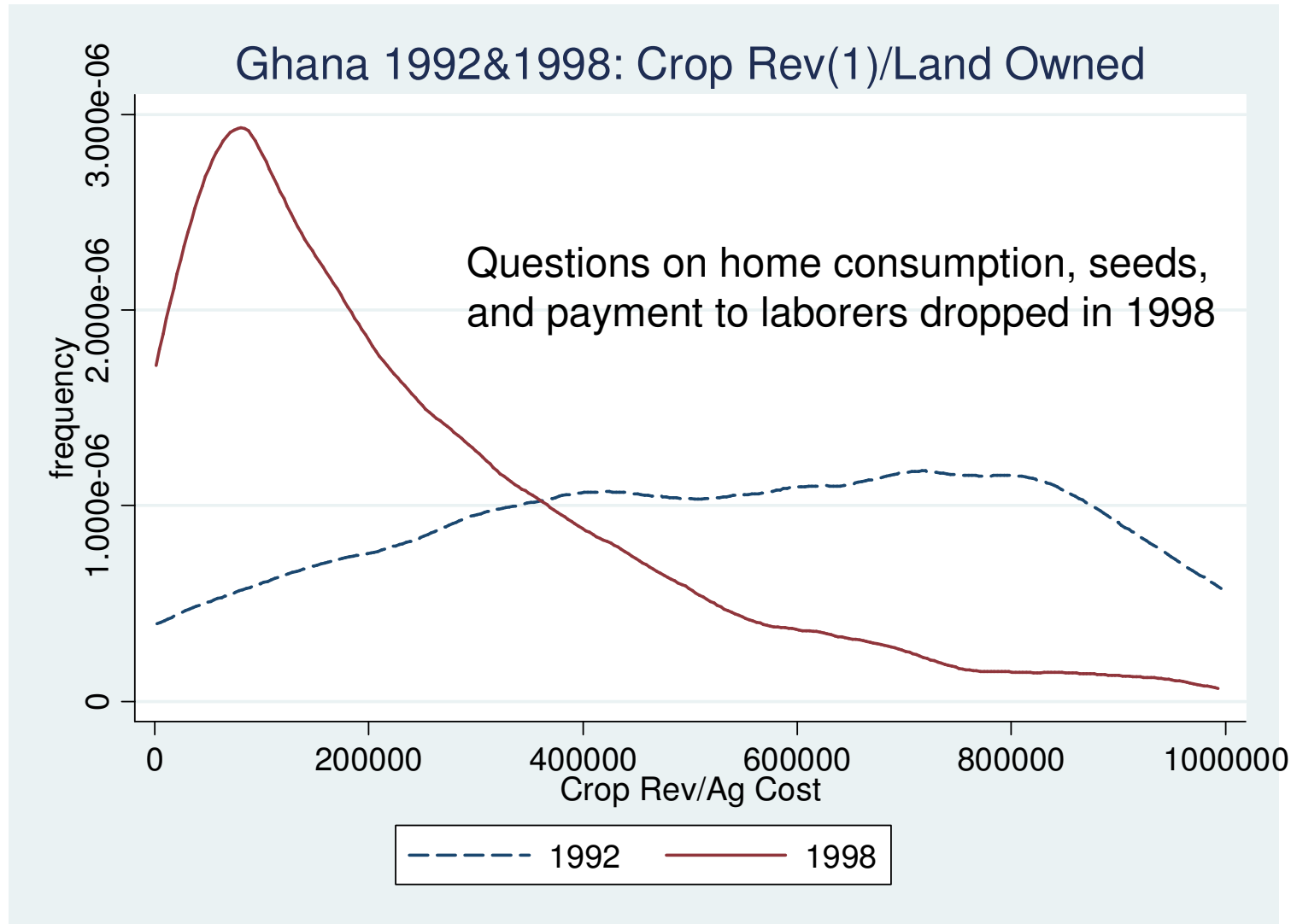
Y 'under-estimate' & wealth

	+ve	-ve
Asset index	--	12

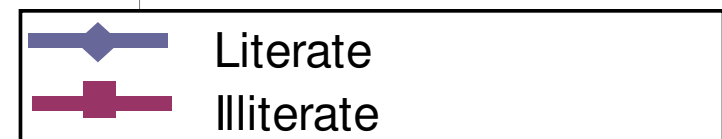
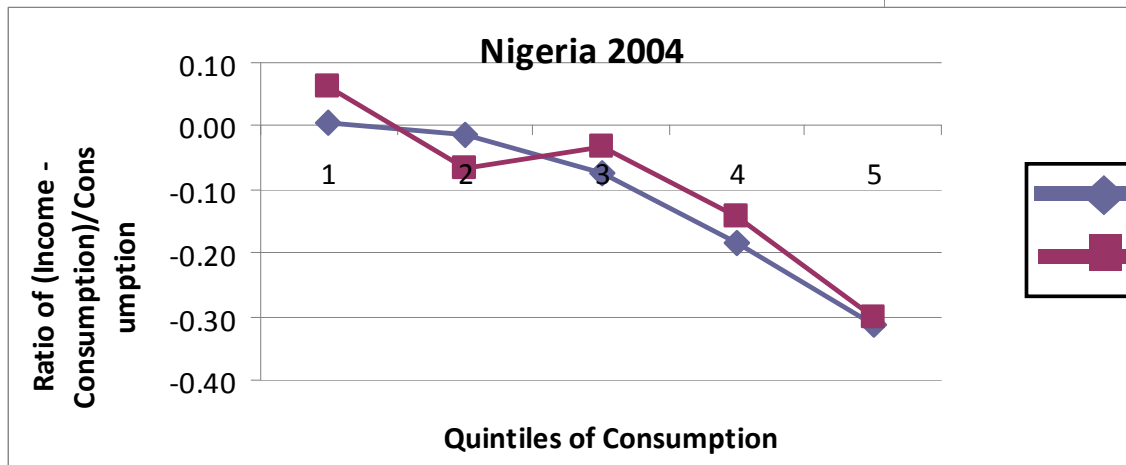
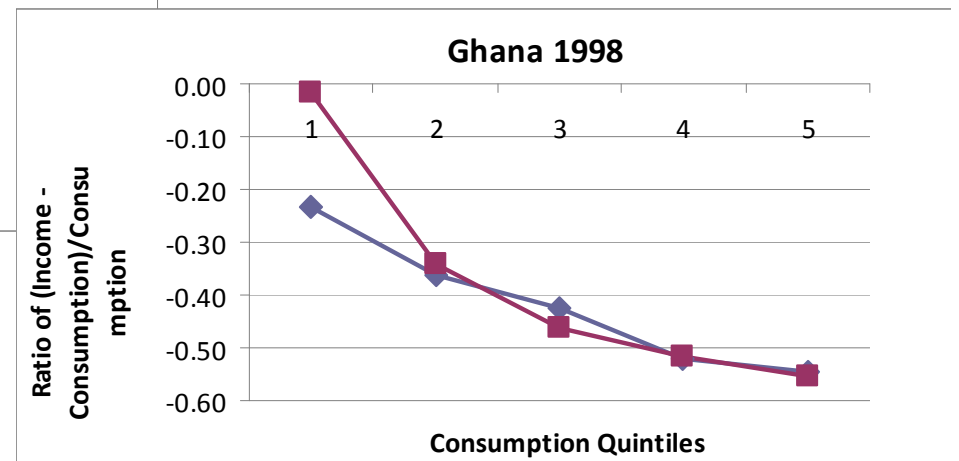
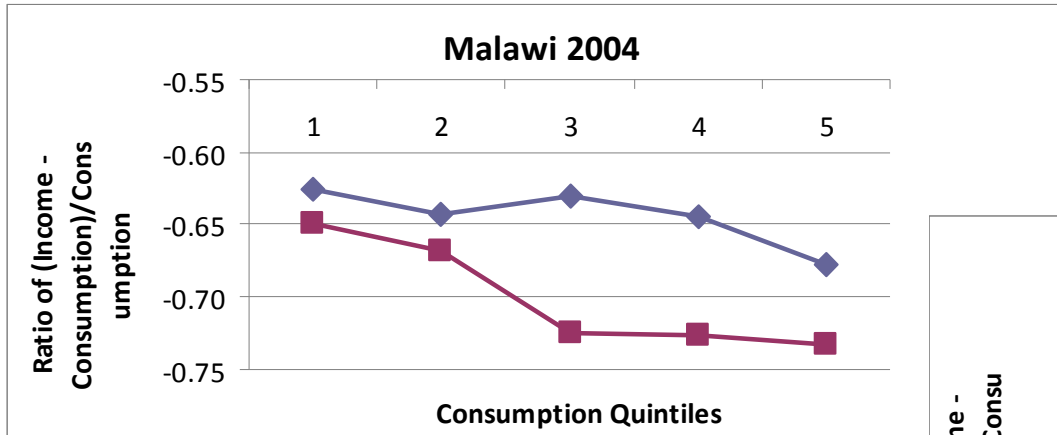
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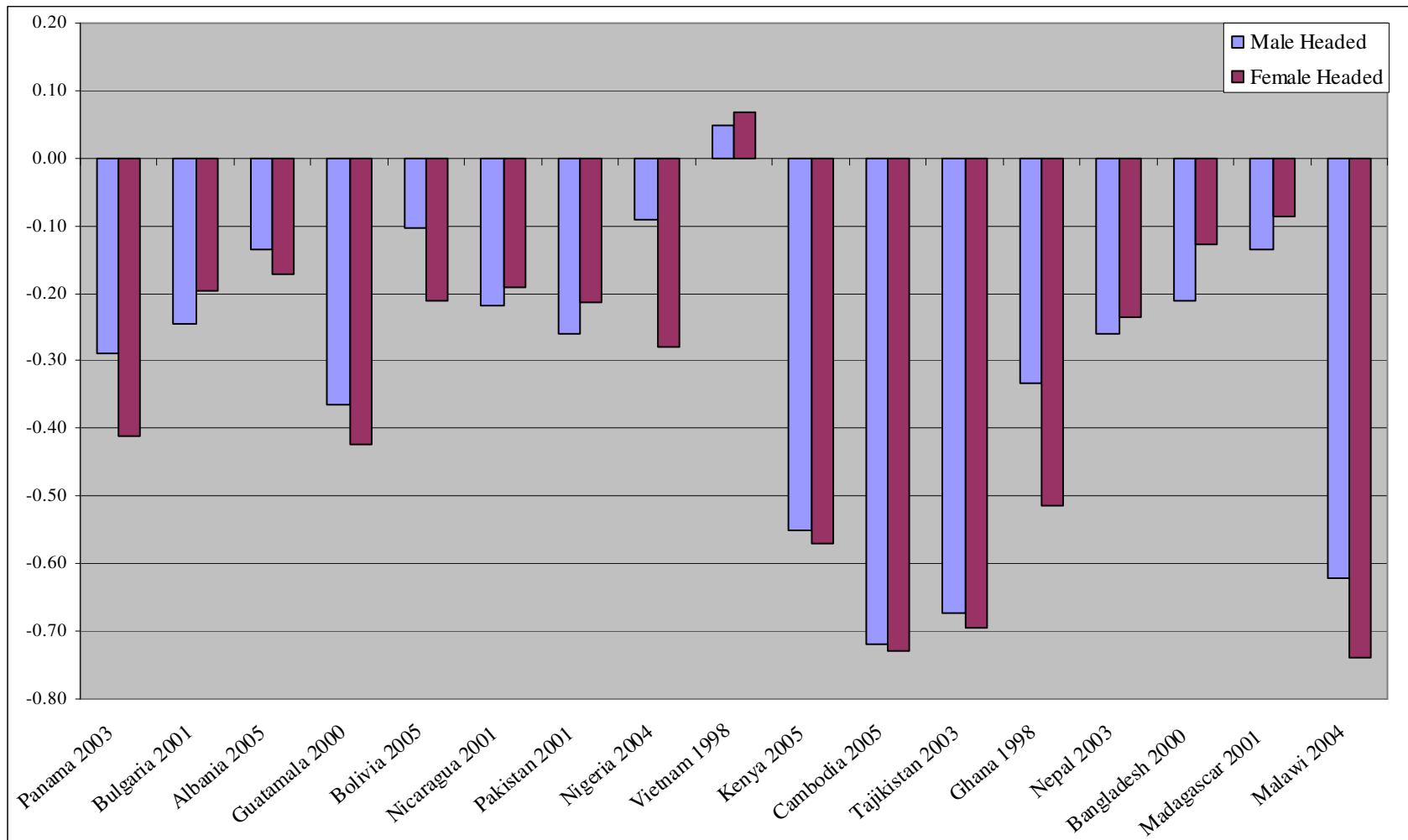
Questionnaire design changes and crop revenues



Effect of literacy



Differences by gender of hh head



Conclusions /1

- Quantification
 - 31% avg., often over 50% (4 cases), highest 72%
- Strong association with source of Y (ag)
- Associations with wealth
- Questionnaire design matters
- Literacy, gender, age

Conclusions /2

- Importance for analysis of poverty elasticity to sectoral growth, returns to assets, productivity, income profiles
- Survey design and implementation can reduce under-reporting
- More work needed to understand how to collect better income data (especially ag)

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FOOD AND AGRICULTURE ORGANIZATION
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RIGA

Rural Income Generating Activities



FAO Agricultural and Development Economics Division (ESA)

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Welcome ■ ■

Rural households in the developing world are involved in a variety of economic activities, as part of complex livelihood strategies. Agriculture, while remaining important, is not the sole nor, in some cases, necessarily the principal activity of the poor.

The Rural Income Generating Activities (RIGA) project aims at promoting the understanding of the role of such activities for poverty reduction and development through:

- An **innovative database** on sources of income, with 32 surveys covering 18 countries in Africa, Asia, Eastern Europe and Latin America.
- **Research papers** investigating key policy research issues based on the RIGA data.

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