Investigating Seasonality & Poverty Analysis: The 2004/5 Malawi Integrated Household Survey DRAFT

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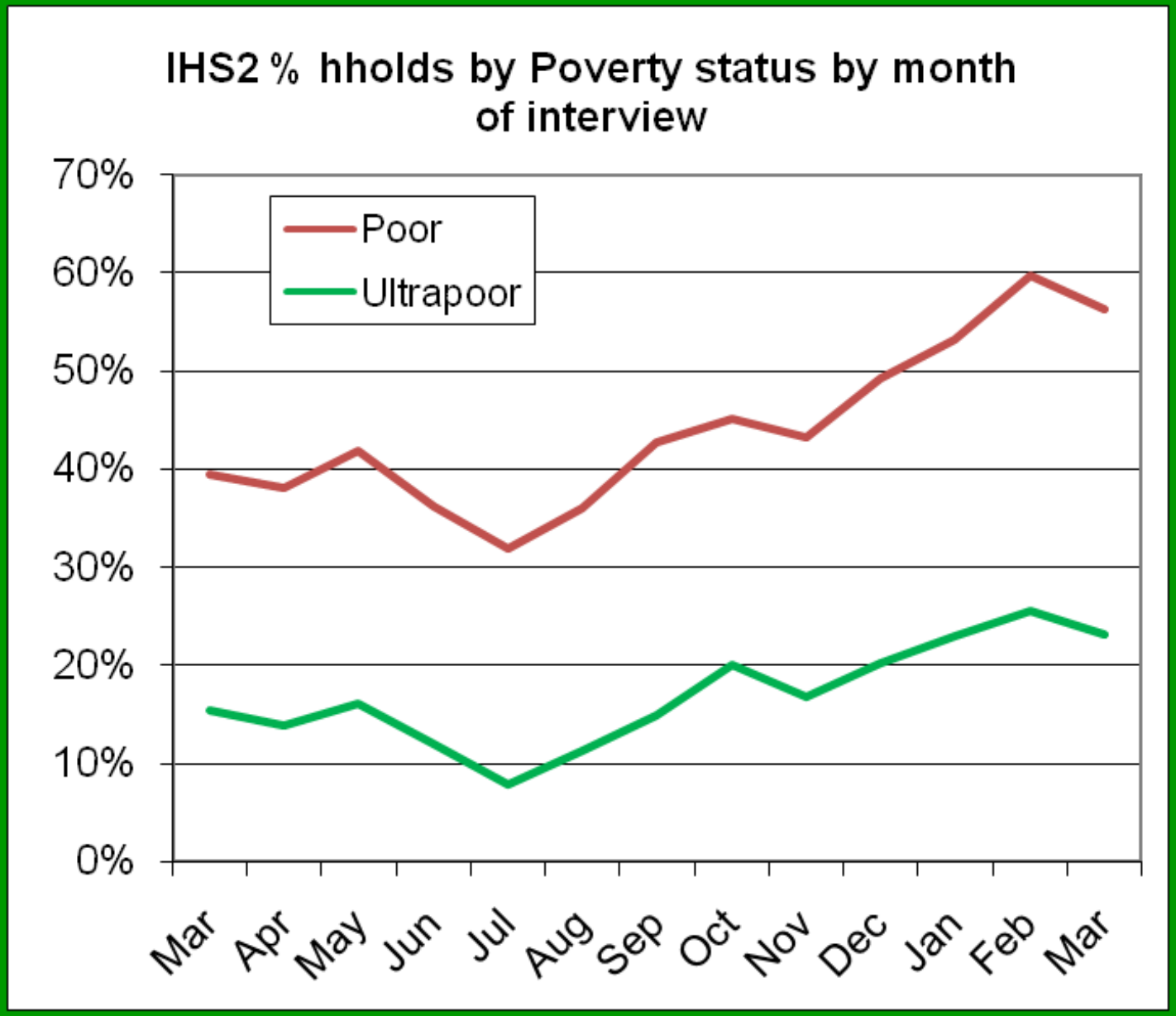
Background

- Many agrarian economies have seasonal patterns of income and expenditure.
- However, most studies that model determinants of poverty do no include variables that capture seasonality.
- In Malawi the non-seasonally adjusted model is used to predict poverty in subsequent years.
- Critical effects of seasonality on livelihoods of poor people in Malawi should affect their seasonal consumption
  - Declining food stocks & increasing purchases
  - Increasing food prices
  - Declining asset prices
  - Reliance on ganyu labour

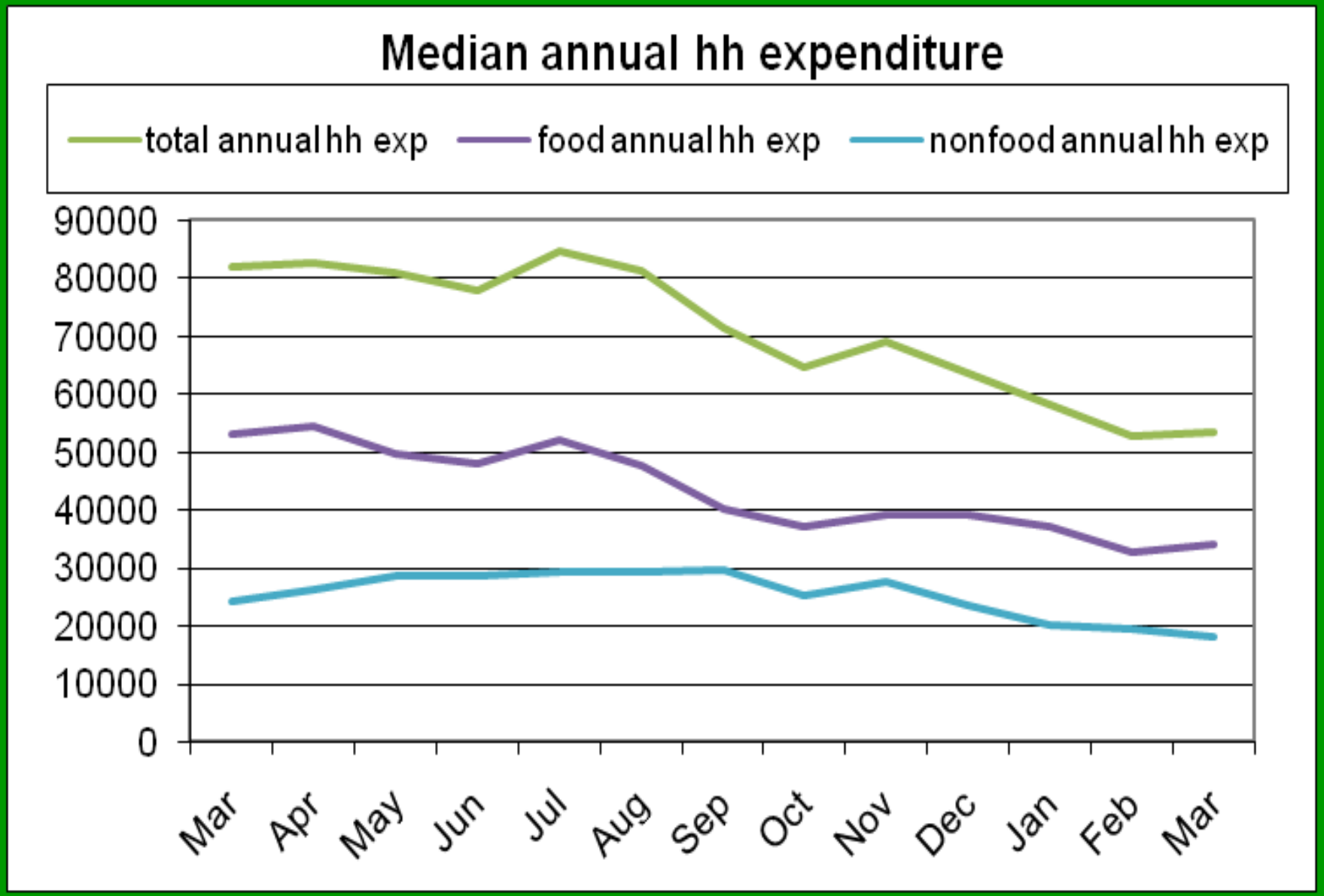
Objectives

- To investigate
  - the importance of seasonality in poverty estimates in the 2004/4 Malawi Integrated Household Survey (IHS2)
  - the effects of ignoring seasonality in investigations & estimates of poverty correlates
  - the effects of ignoring seasonality in poverty models

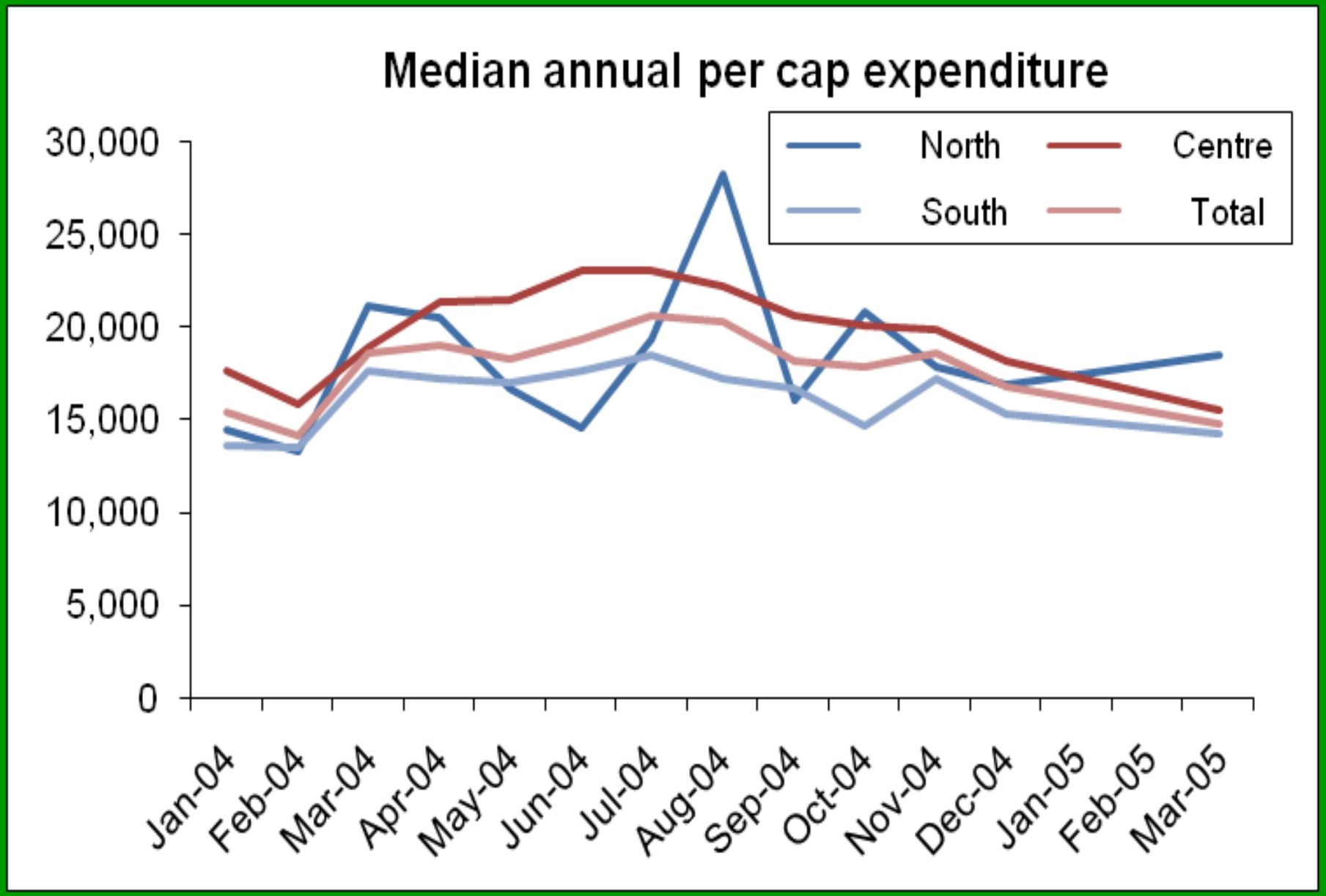
Findings: seasonality effects



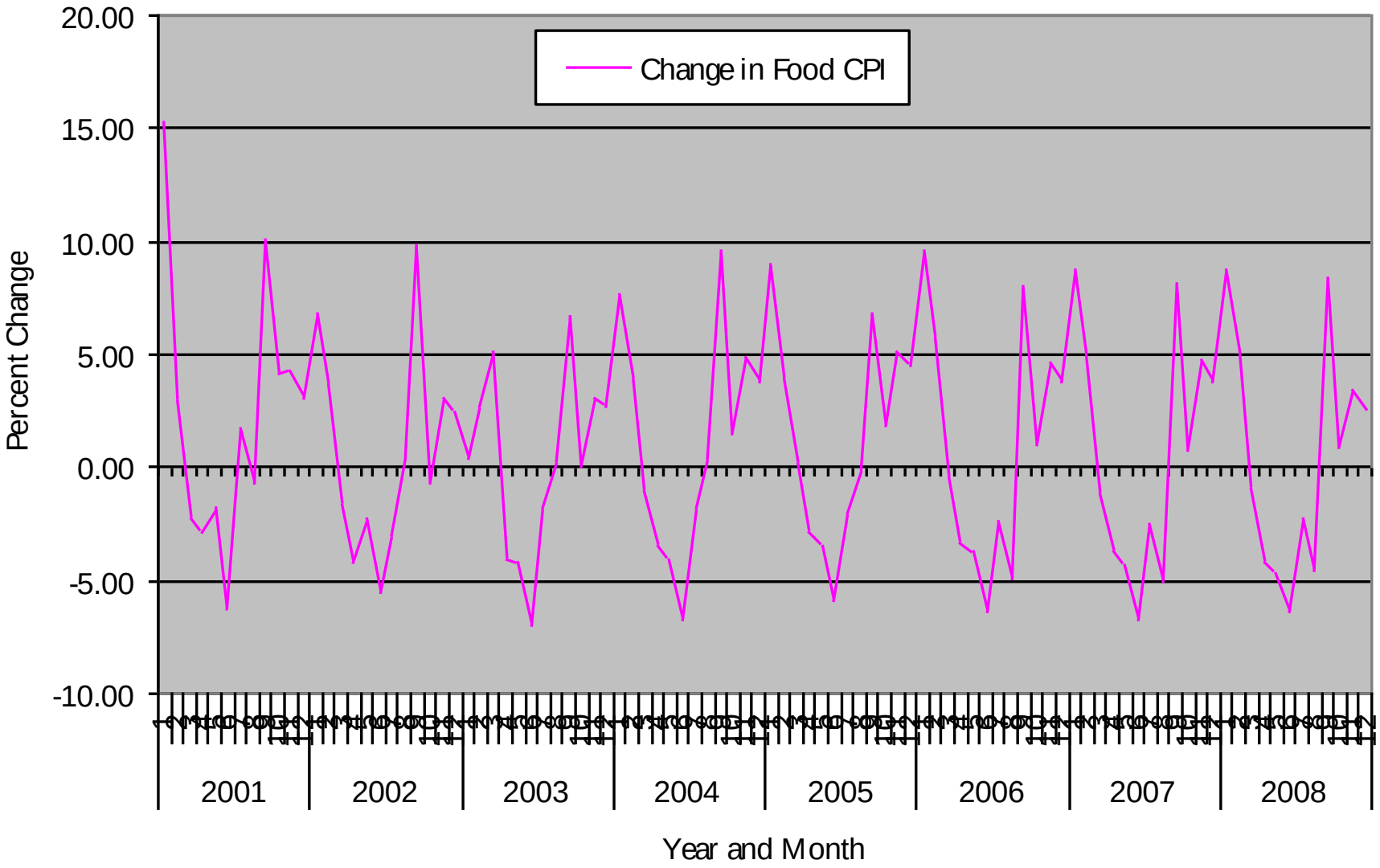
Findings: seasonality effects



Findings: seasonality effects



Changes in Food Prices (2001 – 2008)



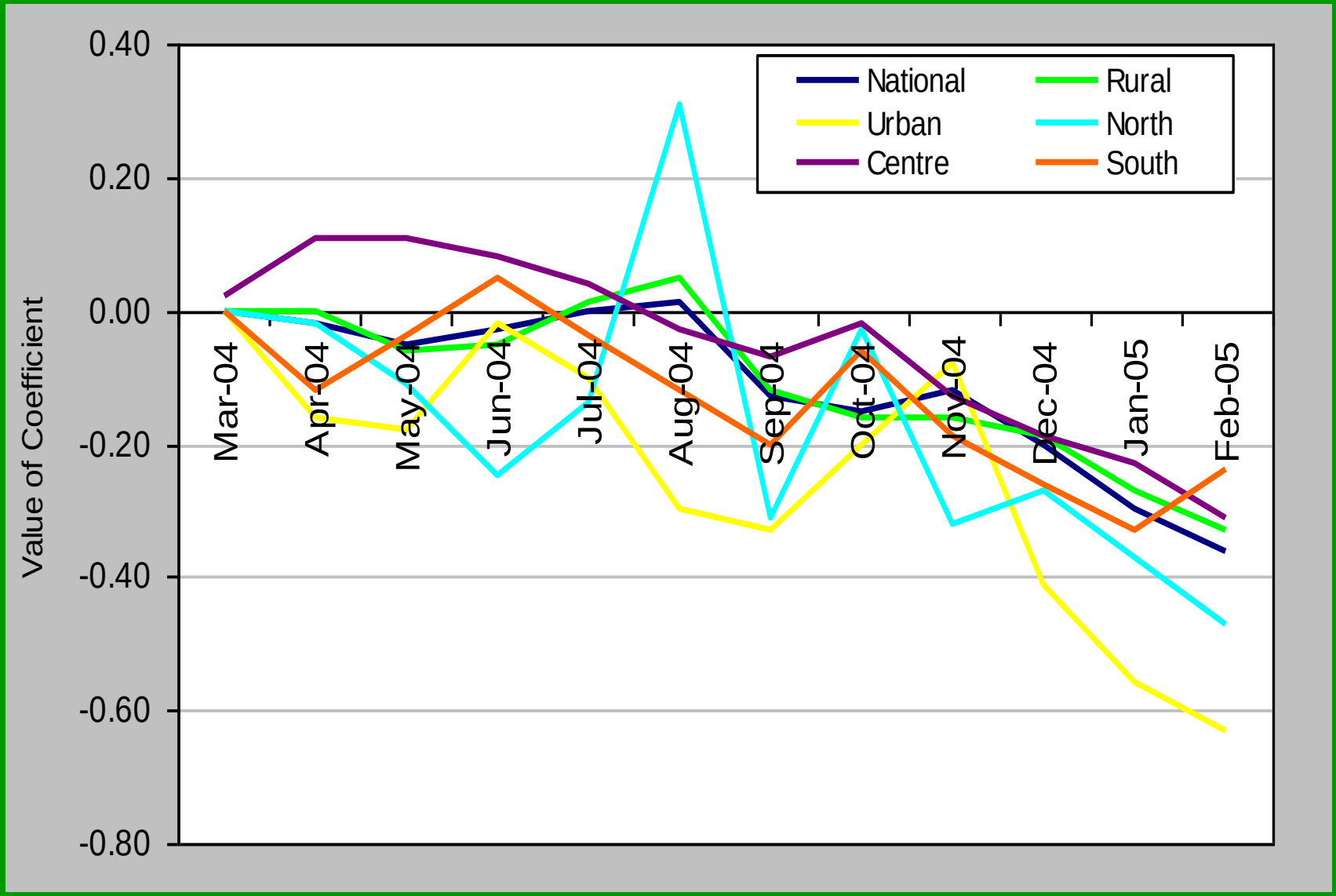
Modelling Poverty Determinants

- We use the Poverty and Vulnerability Analysis model but account for seasonality in the following ways for data collected over 13 months (March 2004 – March 2005):
  - Monthly dummy variables with March 2005 as base category.
  - Farming seasons dummies with March – April 2004 as a base category.
  - Continuous categorical variable (1 to 13) based on the general trend in poverty (???)

Findings: seasonality & model efficiency

- Model 1 results – Monthly seasonal dummies
  - Monthly graph, many months significant across residence and regions. R-sq 0.47 goes to 0.5. Little change in other parameter significance.
  - The incremental contribution of seasonal dummies is statistically significant in all specifications.
  - The seasonal effects range from -0.36 (Jan05) to -0.13 (Aug04).
  - Absolute values of coefficients tend to increase during December, January and February (<-.30) – lean months.

Model 1: Monthly graph



Findings: seasonality effects & model efficiency

- Model 2 results – Farming Seasons
  - Three grouped seasons (May-Aug 04, Sep-Nov 04, Dec04-Mar05) - significant at national and regions and by residence; R-sq 0.47 goes to 0.5.
  - Little change in other parameter significance.
  - Sep-Nov 04 and Dec04-Mar05 statistically significant and absolute value increase during the lean season.
  - At national level, per capita annual expenditure fall by 25% in the lean season.

Poverty forecast in Malawi

- Welfare Monitoring Survey (WMS)
  - IHS2 model of correlation between key consumption variables & poverty headcount ratio by region
  - Annual dry season survey uses model to estimate changing poverty incidence

	2004 (IHS2)	2005 (WMS)	2006 (WMS)	2007 (WMS)
Poverty incidence	52%	50%	45%	40%

- Is there a seasonal bias in WMS dry season estimates?

Conclusions

- Seasonality has significant effects on estimates of poverty incidence & depth.
- Failure to include seasonal variables in poverty models leads to model mis-specification – the parameters are therefore biased and inconsistent.
- Failure to allow for seasonality in poverty models can lead to unreliable estimates of poverty.
- However, we need to determine the direction of the bias in poverty estimates based on WMS.