

Consumption smoothing, saving and liquidity constraints

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Introduction

- Understanding of consumption behaviour
 - Policy implications
- SA's consumption patterns & political history
 - The effects of pre-democracy remain
- Importance of consumption smoothing
 - Households don't consume on basis of current income

Objectives

- Has consumption become smoother since 1994?
 - Time series data analysis
- Liquidity constraints: any impact on consumption smoothness?
 - Cross-section data analysis

Consumption theory

- Keynesian theory
- Life cycle & Permanent income hypothesis
- Buffer-stock model

National empirical literature

- **Wirjanto (1991)**
 - Growth in consumption not explained by its lags under PIH
- **Shea (1995)**
 - Myopia (y increase) vs liquidity constraints (y decreases)
- **Himarios (2000)**
 - 2 types of households: Myopic (few/no assets) & PIH
- **Dejuan et al (2004)**
 - Under the PIH revisions to Y_p should equal that of consumption

Household data empirical literature

- **Miles (1997),**
 - Estimates Y_p via earnings function to test the PIH validity
- **Browning & Collado (2001),**
 - Households under a bonus scheme vs other households (compares consumption behaviour)
- **Hsieh (2003),**
 - Models cons on predictable APF payouts & other variables

Data

• National data analysis

- Annual SARB Quarterly Bulletin data (1975-2007)

• Household level data analysis

- 2000 IES merged with the Sept 2000 LFS (education data)
Both surveys based on same sample.

- IES n = 30,000 merging leads to n = 26265

National data analysis

• De Juan et al (2004)

- Estimate Y^p by fitting an ARIMA (Box-Jenkins)
- Regress per capita c on per capita y^p & y^T
- Additional Interaction term (Y^T & dum94)

$$c = \beta_0 * \Delta y_t^T + \beta_1 * \Delta y_t^T + \epsilon_t$$

• Decision rule:

- Interaction term coeff. is positive & statistically sig. consumption has become smoother since 1994 & vice versa

National data results

• c = expenditure excl. durables

$$c = (0.57) * \Delta y_t^T + (0.44) * \Delta y_t^T * \text{dum94} + (0.069) * \text{dum80}$$

R-squared = 0.72

• c = expenditure incl. semi-durables

$$c = (0.57) * \Delta y_t^T + (0.45) * \Delta y_t^T * \text{dum94} + (0.068) * \text{dum80}$$

R-squared = 0.71

Consumption has become more sensitive to transitory income changes
(all 3rd order tests satisfactory $\alpha = 5\%$)

Household level data analysis

• Step one:

- Proxy Y^p via an earnings function
 $Y = f(\text{age}, \text{age}^2, \text{gen}, \text{race}, \text{geo}, \text{emp}, \text{educ})$

NB: modeled under 2 scenarios (Y = total/regular income)

• Step two:

- Model consumption on Y^p & Y^T estimates
 $C = f(Y^p, Y^T, Y^{T^2})$

Results

• Total income

$$Y = 317.7 * \text{age} - 0.2 * \text{age}^2 - 9083.7 * \text{gen} + 78806.9 * \text{race} - 3169.3 * \text{geo} - 4955.3 * \text{emp} + 9574.7 * \text{nomatric} + 16086.0 * \text{matric} + 37925.6 * \text{dip} + 74734.4 * \text{deg}$$

R-squared = 0.327, n = 26095

• Regular income

$$Y = 291.3 * \text{age} - 0.2 * \text{age}^2 - 8085.3 * \text{gen} + 65740.7 * \text{race} - 3695.6 * \text{geo} - 4929.1 * \text{emp} + 8644.7 * \text{nomatric} + 14551.5 * \text{matric} + 32968.5 * \text{dip} + 68108.8 * \text{deg}$$

R-squared = 0.331, n = 26085

All statistically significant @ 5% level. Heteroskedasticity consistent std errors

Results

• Total income

$$C = 0.82 * Y^p + 0.51 * Y^T + 0.00 * Y^{T^2}$$

R-squared = 0.719, n = 26086, F-equality test = 12.25***

• Regular income

$$C = 0.87 * Y^p + 0.49 * Y^T + 0.00 * Y^{T^2}$$

R-squared = 0.717, n = 26085, F-equality test = 14.02***

All statistically significant @ 1% level (Y^{T^2} @ 10%). Heteroskedasticity consistent std errors.

Liquidity constraints

- Identifying “liquidity constrained” households:

- × Accessed banking credit in past 12 months
- × Availability of past savings
- × Accessed retail credit
- × All of the above

Dummy variables interacted with Y^T

Results

- Banking credit (*total income*)

$$C = 0.81 \cdot Y^P + 0.54 \cdot Y^T + 0.00 \cdot Y^{T^2} - 0.06 \cdot \text{Dum} \cdot Y^T$$

R- squared = 0.719, n = 26086

- Banking credit (*regular income*)

$$C = 0.86 \cdot Y^P + 0.53 \cdot Y^T + 0.00 \cdot Y^{T^2} - 0.06 \cdot \text{Dum} \cdot Y^T$$

R- squared = 0.717, n = 26085

(rural female & white, Urban female & white (+ve))

Results

- Retail credit (*total income*)

$$C = 0.81 \cdot Y^P + 0.54 \cdot Y^T + 0.00 \cdot Y^{T^2} - 0.05 \cdot \text{Dum} \cdot Y^T$$

R- squared = 0.719, n = 26086

- Retail credit (*regular income*)

$$C = 0.87 \cdot Y^P + 0.52 \cdot Y^T + 0.00 \cdot Y^{T^2} - 0.05 \cdot \text{Dum} \cdot Y^T$$

R- squared = 0.717, n = 26085

(Urban female & white (+ve))
(All non-white in urban (-ve))

Results

- Past savings (*total income*)

$$C = 0.81 \cdot Y^P + 0.55 \cdot Y^T + 0.00 \cdot Y^{T^2} - 0.06 \cdot \text{Dum} \cdot Y^T$$

R- squared = 0.719, n = 26086

- Past savings (*regular income*)

$$C = 0.86 \cdot Y^P + 0.53 \cdot Y^T + 0.00 \cdot Y^{T^2} - 0.07 \cdot \text{Dum} \cdot Y^T$$

R- squared = 0.717, n = 26085

(Urban female & white, Rural male white (+ve))

Results

- “Liquidity constraints” (*total income*)

$$C = 0.82 \cdot Y^P + 0.33 \cdot Y^T + 0.00 \cdot Y^{T^2} - 0.20 \cdot \text{Dum} \cdot Y^T$$

R- squared = 0.720, n = 26086

- “Liquidity constraints” (*regular income*)

$$C = 0.87 \cdot Y^P + 0.32 \cdot Y^T + 0.00 \cdot Y^{T^2} - 0.20 \cdot \text{Dum} \cdot Y^T$$

R- squared = 0.718, n = 26085

(Urban female & white, urban male white (+ve))

Summary

- White female households in urban areas:

- × LCs make consumption more sensitive

- White male households in rural areas:

- × Lack of savings makes consumption more sensitive

- Urban non-white households:

- × Lack of retail credit makes consumption smoother (opp 4 rural male white)

- White male households in rural areas:

- × Lack of banking & retail credit makes consumption more sensitive

Answers to objectives

- **Has consumption become smoother since 1994?**
 - × National analysis tell us "No"!
 - × Policy implications?
- **Impact of liquidity constraints on consumption smoothing?**
 - × Limited to a few members of the population!
 - × Need to analyze the retail credit & consumption patterns of non-whites.

