



PRIVATE CONSUMPTION EXPENDITURE IN SOUTH AFRICA: THE ROLE OF PRICE EXPECTATIONS AND LEARNING

by

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And finally, though not the least, towards our Heavenly Father, for countless blessings.

Reneé Koekemoer.

I am still not confident that I understand the difference between supply and demand.

SUMMARY

PRIVATE CONSUMPTION EXPENDITURE IN SOUTH AFRICA: THE ROLE OF PRICE EXPECTATIONS AND LEARNING

by

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Private consumption expenditure is a major component of aggregate demand, accounting for roughly 60 per cent of gross domestic product in South Africa. Any attempt to explain the dynamics of the South African economy by means of an econometric model must therefore capture aggregate consumption as accurately as possible. The principal objective of the study is to derive a model for consumer behaviour in South Africa, in order to test the hypothesis that consumers are forward-looking with respect to prices when considering consumption expenditure decisions.

Modelling the expectations formation process of the consumer is therefore central in this study. It is assumed that consumers learn through a Kalman filter-based (boundedly rational learning) process for updating their expectations, conditional on prior errors made when forecasting the future price level. The first stage of implementing the boundedly rational learning approach involves the estimation of the time-varying mechanism, which represents economic agents using incomplete historical information to form expectations. The expectations rule is formulated in an attempt to capture the psychological learning process of intelligent economic agents who, despite having incomplete information, learn about their environment as time progresses. In the next stage, the expectations formation mechanism is incorporated into the behavioural equations. The theoretical specification of the behavioural equations is based on the forward-looking theories of consumption, in particular the life-cycle model of Modigliani and Brumberg, and Ando and Modigliani, and the permanent-income hypothesis of Friedman.

Consumption expenditure, for purposes of this study, is disaggregated into three categories, namely durable consumption, non-durable consumption and services. These categories, as well as total private consumption expenditure, are considered separately for unique determinants to be included in the information set. The Johansen approach, a multivariate cointegration technique, is applied in the estimation of the behavioural equations. Empirical findings prove that consumption, non-human (financial) wealth and current disposable income constitute a long-run equilibrium relationship in the case of total consumption expenditure. The same holds for expenditure on durables. In the case of non-durable consumption, a long-run cointegration equation includes only current disposable income as explanatory variable. Variables that contribute towards explaining the short-run dynamics of the system include wealth stock, the return on wealth, current disposable income, interest rates, relative prices and a variable reflecting labour market conditions, namely the employment rate in the non-agricultural sector. Interest rates prove to be significant in the explanation of durable consumption only, while the employment rate variable is only significant in the non-durable consumption function. Apart from the above, the one-period-ahead price expectations variable (the result from the Kalman filter estimation) is included in the behavioural functions to test for the role of forward-looking inflation in consumption expenditure decisions. This variable only proves to be significant in the case of durable and total private consumption expenditure.

Two sets of empirical results are thus presented: first, the time-varying coefficients of the price expectations rule and associated Kalman filter result of the estimated one-period-ahead consumer price level and second, the set of behavioural equations containing the price expectations variable.

SAMEVATTING

PRIVATE VERBRUIKSBESTEDING IN SUID-AFRIKA: DIE ROL VAN PRYSVERWAGTINGS EN LEER

deur

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Private verbruiksbesteding is 'n belangrike vraagkantkomponent wat verantwoordelik is vir ongeveer 60 persent van Suid-Afrika se bruto binnelandse produk. Enige poging om die dinamiek van die Suid-Afrikaanse ekonomie met behulp van 'n ekonometriese model te verklaar, moet dus totale verbruiksbesteding so akkuraat moontlik vaslê. Die hoofdoel van hierdie studie is om 'n model vir Suid-Afrikaanse verbruikersgedrag af te lei en om die hipotese te toets dat verbruikersverwagtings met betrekking tot toekomstige prysvlakke bestedingsbesluite beïnvloed.

Die modellering van die proses waarvolgens verbruikers verwagtings vorm is sentraal tot hierdie studie. Daar word aanvaar dat verbruikers hul verwagtings opdateer volgens 'n Kalman filter-gebaseerde (beperkte rasionale) leerproses, voorwaardelik tot vorige foute wat begaan is tydens die vooruitskatting van die prysvlak. Die eerste stap in die implimentering van hierdie benadering behels die beraming van die tydsveranderlike meganisme wat verteenwoordigend is van die ekonomiese agent se gebruik van onvolledige historiese inligting in die vorming van prysverwagtings. Die verwagtingsreël word geformuleer in 'n poging om die psigologiese leerproses vas te lê van intelligente ekonomiese agente wat, ten spyte van onvolledige inligting, mettertyd vanuit hulle omgewing leer. In die volgende stap word die meganisme van verwagtingsvorming in die gedragsvergelykings geïnkorporeer. Vooruitskouende verbruiksteorieë, spesifiek die lewensiklusmodel van Modigliani en Brumberg, en Ando en Modigliani, en die permanente-inkome hipotese van Friedman, vorm die basis van die teoretiese spesifikasie van die gedragsvergelykings.

Vir doeleindes van hierdie studie is verbruiksbesteding opgedeel in drie kategorieë, naamlik duursame verbruik, nie-duursame verbruik en dienste. Hierdie kategorieë, sowel as totale verbruiksbesteding, word afsonderlik beskou ten einde unieke determinante vir die inligtingstel te bepaal. Empiriese bevindings bewys dat daar in die geval van totale verbruiksbesteding 'n langtermyn ewewigsverwantskap tussen verbruik, nie-menslike (finansiële) welvaart en huidige besteebare inkome bestaan. Dieselfde geld vir die besteding op duursame goedere. In die geval van nie-duursame verbruik, sluit die langtermyn ko-integrasie vergelyking slegs huidige besteebare inkome as verklarende veranderlike in. Die welvaartsvlak, opbrengs op welvaart, huidige besteebare inkome, rentekoerse, relatiewe pryse en 'n veranderlike wat toestande in die arbeidsmark reflekteer, naamlik indiensname in die nie-landbousektor, dra by tot die verklaring van die korttermyn dinamika van die stelsel. Rentekoerse is slegs betekenisvol in die verklaring van duursame verbruik, terwyl die indiensnamekoers slegs in die nie-duursame verbruiksfunksie betekenisvol is. Behalwe vir die bogenoemde, is die prysverwagting ten opsigte van een periode in die toekoms (die resultaat van die Kalman filter beraming) in die gedragsvergelings ingesluit om die rol van inflasieverwagtings in die besluite rakende verbruiksbesteding te toets. Hierdie veranderlike is slegs betekenisvol in die geval van duursame- en totale verbruiksbesteding.

Die Johansen-benadering, 'n meer veranderlike ko-integrasie tegniek, is gebruik in die beraming van die gedragsvergelings. Twee stelle empiriese resultate is ingesluit: eerstens die tydsveranderlike koëffisiënte van die prysverwagtingsreël en die ooreenstemmende Kalman filter resultaat van die beraamde vlak van die verbruikersprys een-periode-vooruit, en tweedens, die stel gedragsvergelings wat die prysverwagtings bevat.

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey Fuller
AIC	Akaike Information Criterion
AIH	Absolute Income Hypothesis
APC	Average propensity to consume
BMR	Bureau for Market Research
ECM	Error correction model
EG	Engle-Granger
DBSA	Development Bank of Southern Africa
DF	Dickey Fuller
GEM	Global Econometric Model
LCH	Life Cycle Hypothesis
MPC	Marginal propensity to consume
NIESR	National Institute for Economic and Social Research
PIH	Permanent Income Hypothesis
REF	Rational Expectations Hypothesis
SARB	South African Reserve Bank
SBC	Schwarz Bayesian Criterion
STATS SA	Statistics South Africa
VAR model	Vector autoregressive model



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