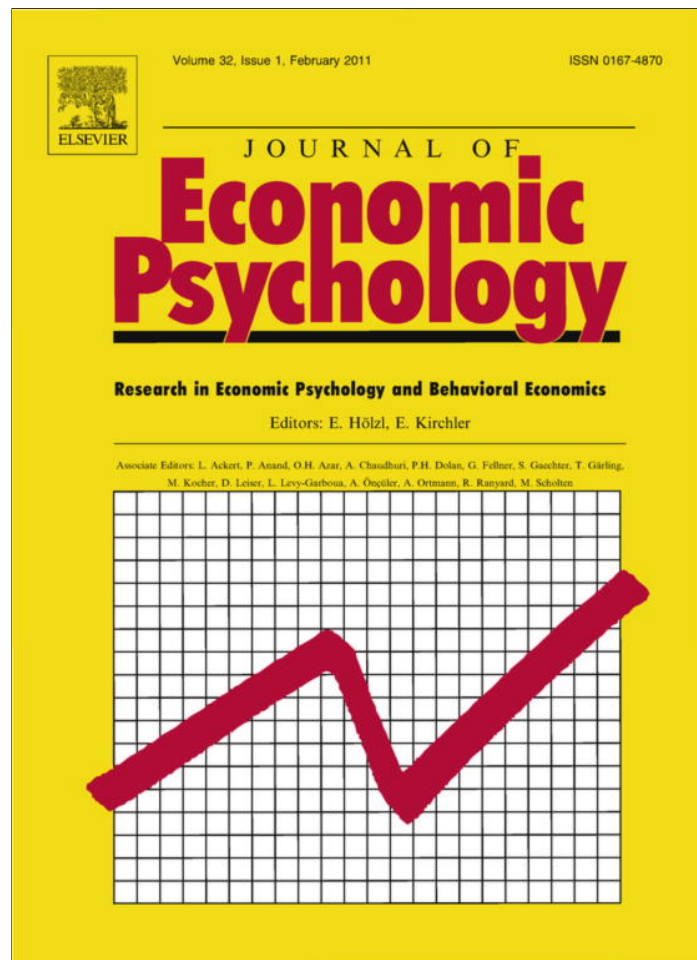


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Lifecycle effects on consumer financial product portfolios in South Africa: An exploratory analysis of four ethnic groups

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ABSTRACT

This paper assesses ownership of 16 financial products by households in different lifecycle stages amongst four ethnic groups (Africans, Coloureds, Asians, and Whites) in South Africa. The lifecycle hypothesis indicates younger households should own more debt-related financial products, whereas households in intermediate lifecycle stages should own more financial products to accumulate assets; both these claims are disconfirmed for all groups. However, White households in intermediate household stages own more financial products than younger and older households, consistent with previously reported lifecycle findings in Western countries. Consistent with the literature on innovation adoption we find that younger, affluent and highly educated households amongst the other three ethnic groups tend to own more financial products than older Africans, Coloureds and Asians. These results indicate that innovation adoption literature may better describe financial product ownership in developing countries than the lifecycle hypothesis.

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1. Introduction

Consumer financial product portfolios are combinations in which individuals own products such as checking accounts, saving accounts, loans and investment products. Such product portfolios have received considerable attention in the extant literature (e.g., Gunnarson & Wahlund, 1997; Kamakura, Ramaswami, & Srivastava, 1991; Stafford, Kasulis, & Lusch, 1982). This is because combinations in which products are owned can be useful for gaining insight into household's financial strategies (Gunnarson & Wahlund, 1997), for detecting consumers that are interested in specific financial products (Kamakura et al., 1991; Paas & Molenaar, 2005) and for assessing the priorities that consumers have for owning various financial products (Paas, 1998; Stafford et al., 1982).

In this paper we assess applicability of the lifecycle hypothesis and findings from the literature on the adoption of innovative products and services for explaining financial product ownership in a country with a developing economy, South Africa. The lifecycle hypothesis has been the prominent theory in explaining borrowing and saving behavior of consumers. However, the lifecycle hypothesis has traditionally been applied to explain financial behavior in Western countries

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(Browning & Lusardi, 1996; Wärneryd, 1999), which we define as Northern America, Western Europe, Australia and New Zealand. It remains unclear whether the lifecycle hypothesis applies outside Western countries. In the theoretical section of this paper, Section 2, we propose that literature on innovation adoption may also explain financial product ownership outside Western countries, as financial products in newly emerging economies can be considered as innovations for most consumers (Roos et al., 2005; Steenkamp & Burgess, 2002). Note that we provide one of the few studies of consumer financial behavior outside Western countries (cf. Davies, Easaw, & Ghoshray, 2009; Roos et al., 2005). Researching the relevance of theories, which were developed on data from Western countries only, in newly emerging economies not only provides insights into the generalizability of such theories but also knowledge about the conditions in which such theories apply or not (Burgess & Steenkamp, 2006).

In an empirical study, we analyze a data set of 18,965 respondents from the four main ethnic groups in South Africa: Africans, Coloureds, Asians, and Whites – we use the generally accepted terms for these ethnic groups in South Africa, according to the South African Bureau of Statistics; www.statssa.gov.za, see also Steenkamp and Burgess (2002). The data indicate, for each respondent, ownership of seven products used for borrowing purposes, such as loans and mortgages, and nine products for saving or investing, such as savings accounts and stocks. Using data on age, marital status, and parental status, we define the lifecycle stages in line with Murphy and Staples's (1979) lifecycle operationalization, with necessary adjustments to describe the South African context. We then apply the lifecycle phase of each respondent to predict household financial product portfolios among Africans, Coloureds, Asians, and Whites according to a segmentation technique, latent class analysis (LCA; Fernandez-Blanco, Orea, & Prieto-Rodríguez, 2009; Oppewal, Paas, Crouch, & Huybers, 2010; Wedel & Kamakura, 2000). In our application, the LCA technique simultaneously segments households on the basis of their financial product portfolios and estimates the effects of household lifecycle phase and ethnic group membership on the likelihood for financial product portfolios to occur. On the basis of our findings, we consider the applicability of the lifecycle hypothesis in developing economies or, alternatively, the findings from the innovation adoption literature that are discussed below.

Accordingly, in Section 2, we discuss the lifecycle hypothesis and its applicability in South Africa. In Section 2 we also discuss relevance of findings from the innovation adoption literature for financial product ownership in South Africa. In Section 3 we introduce our data set, describe the revised lifecycle coding that we apply, and discuss the conducted LCA analysis. Section 4 contains the results of this analysis, including the household financial product portfolios we found and the effects of lifecycle stage, ethnic group, educational level, and income on the occurrence of these product portfolios. We conclude with a discussion and implications of our findings, in Section 5.

2. Household lifecycle phase and financial product ownership in South Africa

2.1. The lifecycle hypothesis in South Africa

The lifecycle hypothesis (Modigliani & Brumberg, 1954) and the related permanent income hypothesis (Friedman, 1957) have been prominent theories for describing, explaining, and predicting financial behavior (Browning & Lusardi, 1996; Wärneryd, 1999). Their basic assumption indicates that households avoid income fluctuations across their lifetimes to sustain a constant consumption pattern. As a result, young households should have debts, households in intermediate lifecycle phases save and invest to pay off debts and build a reserve for their old age, and older households tend to spend assets that they accumulated earlier in life (Browning & Lusardi, 1996; Wärneryd, 1999).

Various studies in Western countries show that the variables that constitute the lifecycle hypothesis, such as age, marital status, and having children, all influence the household's financial product portfolio (e.g., Gunnarson & Wahlund, 1997; Paas, Bijmolt, & Vermunt, 2007; Soutar & Cornish-Ward, 1997; Stanley, Ford, & Richards, 1985; Tin, 2000). Households in the intermediate lifecycle stages own financial products for saving or investing purposes, which is in line with the lifecycle hypothesis (Browning & Lusardi, 1996; Wärneryd, 1999). Findings with regard to debts indicate that products such as loans and mortgages are more prominent among younger households (Gunnarson & Wahlund, 1997; Stanley et al., 1985). Furthermore, households in intermediate lifecycle phases own more financial products than others, i.e., they are financially the most active groups (Gunnarson & Wahlund, 1997; Paas et al., 2007; Soutar & Cornish-Ward, 1997).

It remains unclear whether the findings regarding financial product ownership across different lifecycle phases also apply to non-Western countries. Theories developed using only data from Western countries do not necessarily apply in newly emerging markets (Burgess & Steenkamp, 2006; Steenkamp, 2005). Deaton (1989) and Gersovitz (1988) suggest several reasons the lifecycle affects may differ. First, in developing countries, households usually are indecomposable units that survive beyond the individual members, implying that financial decisions occur at the household level rather than the individual level. Saving for retirement becomes less relevant under such circumstances, because children will take care of the elderly members of a family. Second, households in developing countries have lower and less certain incomes, so it may be very difficult, if not impossible, for them to save. Third, borrowing constraints may be stronger for low-income households in developing nations, and thus, borrowing also becomes more difficult if not completely impossible. Fourth, savings may serve as a buffer against uncertain and unpredictable events, instead of for inter-temporal consumption smoothing.

The conditions in developing countries that lead to a questionable applicability of the lifecycle hypothesis apply most strongly to Africans and least to Whites in South Africa (Nga, 2007). The ethnic groups in South Africa have different incomes,

are culturally diverse, and have highly divergent historical backgrounds (Burgess & Steenkamp, 2006; Nga, 2007; Roos et al., 2005; Steenkamp & Burgess, 2002). In terms of income, Whites have the highest incomes, then Asians and Coloureds; Africans have the lowest incomes (Casale & Desmond, 2007). Income levels affect household financial product portfolios of households in Western countries (Paas et al., 2007; Soutar & Cornish-Ward, 1997), and we predict they may have similar influences in South Africa. With regard to cultural background, Africans in particular often invest some of their assets in informal institutions, such as *Stokvels* (Finscope, 2009) based on the African principle of *ubuntu*, which encompasses reciprocity and socially shared responsibility for the financial distress of any member, such as when there is death in a family (Nga, 2007). Moreover, members from historically disadvantaged ethnic groups lack an opportunity to extract knowledge from direct observation of their parents, the mass media, or conversations with other adults. They thus may find themselves in situations in which they have the financial means to acquire financial products and services but lack an understanding of the implications of these products (Roos et al., 2005).

2.2. Consumer innovativeness and financial product ownership

In Section 2.1, we pointed out that lifecycle based predictions may not hold for the previously disadvantaged groups in South Africa: Africans, Coloureds and Asians. Most relevant herein is that financial products and services are relatively new for many Africans, Coloureds and Asians in South Africa, as a result of its history of apartheid (Roos et al., 2005). In fact, Steenkamp and Burgess (2002) used financial product ownership to assess consumer innovativeness in South Africa. Therefore, we conjecture that from the perspective of Africans, Coloureds and Asians financial products can be considered as innovations, i.e., ideas, practices or objects perceived to be new by a person or another adopting entity (Chakravarty & Dubinsky, 2005; Rogers, 1995).

When an innovation is introduced to a market there are innovators, who adopt the product very early, and others who adopt the product later. Innovators generate the initial levels of penetration of the products and also influence others by using the product, possibly displaying it and encouraging others to try the product. Researchers have investigated many antecedents of innovativeness (Chakravarty & Dubinsky, 2005). Socio-demographics play a role in the adoption of innovations. It has been found that young, relatively wealthy, and relatively highly educated consumers often adopt innovations before others (Arts, Frambach, & Bijmolt, 2011; Gatignon & Robertson, 1985; Im, Bayus, & Mason, 2003; Steenkamp & Gielens, 2003). Innovators are relatively wealthy, because the wealthy can better absorb the loss resulting from the acquisition of a failing innovation (Rogers, 1995). That is, not all innovations are successful and wealthy consumers can take the risk that they allocate resources to an unsuccessful innovation. Furthermore, innovators are less dogmatic, more rational and more intelligent (Rogers, 1995). These are characteristics of the higher educated. Next to this innovators have more favorable attitudes towards change (1995), which is an attribute distinguishing younger individuals from their older counterparts (Musteen, Berker, & Baeten, 2006).

Assuming that young, relatively wealthy and highly educated consumers are more likely to adopt financial products that are perceived to be relatively new is not only consistent with the general literature on innovation adoption, but also with the literature on the adoption of novel financial products and services. In a series of previous studies the acquisition of relatively new financial products and services was studied from the perspective of innovation adoption (e.g., Black, Lockett, Winklhofer, & Ennew, 2001; Hoffmann & Broekhuizen, 2010; Lockett & Littler, 1997). The most recent of these studies shows that higher levels of affluence and higher educational levels increase the probability of owning new investment products (Hoffmann & Broekhuizen, 2010). Furthermore, in an empirical investigation of the Turkish consumer's acceptance of Internet banking services (Polatoglu & Ekin, 2001, p. 161), which is an innovation in the financial domain, it was found that young, affluent and highly educated groups accept this new service more readily. Another type of innovation, direct banking, was also found to be adopted more readily by young and affluent consumers in the UK (Lockett & Littler, 1997).

Based on the discussion above, we propose that young, relatively wealthy, relatively highly educated Africans, Coloureds and Asians may own more financial products than other members of these three ethnic groups. That is, due to affirmative action policies, which require companies to meet minimum employment percentages of historically disadvantaged groups in their employment profiles (South Africa, 1998), the emerging situation allows younger Africans, Coloureds, and Asians to earn incomes that their older counterparts did not earn at their ages, even after taking inflation into account (Maisonave, Decaluwé, & Chitiga, 2009). Unlike Whites, who always had access to these employment and income opportunities, such that cohort behavior across different generations likely has reached a stationery state, the non-White groups, especially Africans, indicate significant changes across generations. Besides, this younger Africans, Coloureds and Asians have had more access to educational institutions than the older members of their ethnic groups (Maisonave et al., 2009).

In sum, the lifecycle based prediction that young households own more credit related financial products and intermediate aged households own more financial products, particularly products for saving and investing, may hold for white South African consumers. For the three other ethnic groups, Africans, Coloureds, and Asians, it is could also be the case that younger households own more financial products than the older households of the same ethnic group. This latter tendency would be consistent with the literature on innovation adoption and inconsistent with literature on the lifecycle hypothesis.

Table 1
Product ownership across ethnic groups.

Product	African (%)	Coloured (%)	Asian (%)	White (%)	Overall (%)
Micro loan	0.3	0.4	0.2	0.2	0.3
Vehicle finance	1.5	2.9	2.7	6.9	3.4
Mortgage	1.5	4.2	2.9	7.3	3.7
Student loan	0.3	0.4	0.4	0.8	0.5
Credit card	3.7	7.5	10.3	24.9	11.1
Overdraft facility	1.1	2.0	3.0	7.6	3.3
Other loan	0.6	2.2	0.9	1.3	1.1
Mzansi	4.7	1.3	0.2	0.5	2.6
Savings account	54.6	59.6	62.3	70.1	60.5
Investment trust or mutual fund	2.8	4.2	4.9	11.3	5.7
Stocks	0.8	1.2	2.4	4.9	2.2
Retirement annuity	4.8	6.9	6.3	17.4	9.0
Endowment investment saving – no life insurance	1.4	2.4	2.2	4.4	2.5
Endowment investment saving – with life insurance	3.4	5.9	7.1	12.7	6.8
Life coverage policy	10.6	16.7	16.9	32.5	18.5
Shares	1.1	1.6	1.9	8.2	3.4

3. Methodology

3.1. Data

The analyzed database comes from the All Media and Products Survey and was collected between July 2007 and June 2008 (SAARF, 2008). The survey covered both the purchase of media products and a wide range of non-media products, including ownership of financial products. The survey population in South Africa was anyone aged 16 years or older, in both urban and rural areas. All questions dealing with demographic factors and ownership of financial services were close-ended. The total sample size is 19,755 respondents. We only analyzed people aged 18 years or older, resulting in a sample of 18,965 respondents.

The sample is not representative for the South African population. Most notably, Africans are underrepresented, as are individuals with lower income and educational levels. The sample is representative with regard to gender, about 50% of the sample is female, which reflects the South African population. Weighting has been applied to correct for discrepancies between the sample and the South African population. Moreover, because the sample is large and heterogeneous across the target population, we conclude that after the application of weighting it represents various segments across all four ethnic groups.

We list the product ownership percentages for each of the financial products by the four ethnic groups in Table 1.² As Table 1 shows, Africans tend to have lower propensities to own each of the financial products, Coloureds and Asians take intermediate positions, and Whites have the highest propensities for owning all products. Members of some ethnic groups, Africans in particular, may own products in an informal banking sector (Cross, 1987). Finscope (2009) estimates that about 10% of South African adults rely only on informal products, such as Stokvels and Mashonisa (an informal, usually unregistered money lender who lends small amounts). Thus, the product penetrations reported in Table 1 may underestimate financial product ownership to some degree.

3.2. Coding the household lifecycle phase

Data on age, marital status, and dependent and independent children are available in the analyzed database. We used these data to allocate the interviewed households into 13 categories, according to Murphy and Staples's (1979) household lifecycle operationalization, as we show in Table 2. Note that the Murphy and Staples (1979) approach has not been without criticism (e.g., Derrick & Lehfeld, 1980; Wagner & Hanna, 1983). Some have noted that it does not add much to a simple categorization of households according to age (e.g., Wagner & Hanna, 1983). However, in research concerning the ownership of financial assets it was found that the other lifecycle variables, next to age (e.g., presence of children in the household, marital status), significantly affect financial product ownership (Baek & Hong, 2004; Tin, 2000; Xiao, 1996). Nevertheless, in our application we found that the Murphy and Staples (1979) lifecycle model needed adjustments. Using their precise operationalization led to missing values regarding the household lifecycle for 22% of the respondents in our data set—that is, these households could not be placed in any of the 13 categories in Table 2.

We find that most of the missing values consist of (1) young (<35 years) singles with children, (2) middle-aged (35–64 years) singles with children, and (3) middle-aged singles without children. Hence we add these three categories

² The Mzansi Account is a low income, transactional banking account, developed to fulfill the commitments of South Africa's Financial Sector Charter. Financial firms are required to enhance people's access to financial products and services and specifically to increase the reach of banking services to all communities, including those that historically have been underserved.

Table 2
Murphy and Staples's (1979) household lifecycle phases.

Stage	Age	Marital status	Children
1. Young single	<35	Single	No
2. Young married without children	<35	Married	No
3a. Young married without children	<35	Married	No
3b. Young married with children	<35	Married	Yes
3c. Young divorced without children	<35	Divorced	No
4a. Middle-aged married without children	35–64	Married	No
4b. Middle-aged divorced without children	35–64	Divorced	No
4c. Middle-aged married with young and adolescent children	35–64	Married	Young and adolescent
4d. Middle-aged divorced with young and adolescent children	35–64	Divorced	Young and adolescent
4e. Middle-aged married without dependent children	35–64	Married	Independent
4f. Middle-aged divorced without dependent children	35–64	Divorced	Independent
5a. Older married	>64	Married	Not specified
5b. Older unmarried	>64	Divorced widowed	Not specified

Table 3
South African household lifecycle phases.

Stage	Age	Marital status	Children
1a. Young single without children	<35	Single	No
1b. Young single with children	<35	Single	Yes
2. Young married without children	<35	Married	No
3. Young married with children	<35	Married	Yes
4a. Middle-aged single without children	35–64	Single	No
4b. Middle-aged single with children	35–64	Single	Yes
4c. Middle-aged married without children	35–64	Married	No
4d. Middle-aged married with young and adolescent children	35–64	Married	Young and adolescent
4e. Middle-aged married without dependent children	35–64	Married	Independent
5a. Older married	>64	Married	Not specified
5b. Older unmarried	>64	Divorced Widowed	Not specified

to Murphy and Staples's (1979) classification. Furthermore, we deleted four categories in Table 2, referring to divorce status: young divorced with children (3c in Table 2), middle-aged divorced without children (4b), middle-aged divorced with young children (4d), and middle-aged divorced without dependent children (4f). These categories are highly uncommon in our database. Reported numbers of divorced women in South Africa have been historically low and between 2.2% and 3.2% since 1996; the reported figure for men has been even lower and in the range of 1.2% and 1.9% (Statistics South Africa, 2003, 2007).³

We present the revised Murphy and Staples (1979) lifecycle operationalization in Table 3, in which 97.8% of the respondents can be categorized. The incorporation of single parents and middle-aged singles may be an adjustment necessary in Western countries as well, which also have experienced increases in single person/parent households (Michael, Fuchs, & Scott, 1980; Quintano & D'Agostino, 2006).

3.3. Latent class analysis

We apply the LCA model for dichotomous response variables (Vermunt & Magidson, 2007; Wedel & Kamakura, 2000). To define this model, consider a sample of respondents, denoted $i = 1, \dots, I$. For each respondent i , we record whether they own a specific financial product k , $k = 1, \dots, K$. The complete product portfolio of respondent i across the 16 financial products discussed is represented by the vector \mathbf{Y}_i . In this vector, element y_{ik} takes a value of 1 when individual i owns product k , and 0 otherwise. We assume a limited number of segments, denoted $s = 1, \dots, S$, also referred to as latent classes. The vector \mathbf{X}_i represents segment membership probabilities of respondent i , and $P(X_i = s)$ is the probability that respondent i belongs to a specific segment s . These probabilities are determined by the observed product ownership patterns in \mathbf{Y}_i . Respondents with highly similar product portfolios are more likely to belong to the same segment, compared with those with more dissimilar product portfolios. Covariates also can be incorporated in the model. The vector of values respondent i has for these covariates is defined as \mathbf{Z}_i . The model is formally defined as

³ Ziehl (2002) traced the divorce rate per 1000 South African Whites from 1920 to 1996 and showed that it had been steadily increasing, from 0.47% in 1920, to a peak of 3.97% in 1990, then down to 3.57% in 1996. The reported percentage of divorced women may be an underestimate, because women from families whose tradition looks down on divorce may not report themselves as divorced (Hosegood, McGrath, & Moultrie, 2009), and those with failed marriages may not divulge this information, in the belief that never being married would increase their chances of remarriage. Nevertheless, the divorced group remains a small minority in South Africa, which supports our decision to replace the divorced categories within an "other" category.

$$P(\mathbf{Y}_i|\mathbf{Z}_i) = \sum_{s=1}^S P(X_i = s|\mathbf{Z}_i) \prod_{k=1}^K P(Y_{ik}|X_i = s). \quad (1)$$

Eq. (1) is a model for $P(\mathbf{Y}_i|\mathbf{Z}_i)$. It refers to the probability density relevant for the occurrence of a particular financial product portfolio for individual i , \mathbf{Y}_i , assuming that this person has values \mathbf{Z}_i on the covariates. In turn, $P(X_i = s|\mathbf{Z}_i)$ refers to the probability of belonging to segment s , given the values for person i on the vector of covariates \mathbf{Z}_i . Moreover, $P(Y_{ik}|X_i = s)$ is the probability that person i owns product k , given this person's probability to be in segment s , $X_i = s$.

Allocation to segments is probabilistic, implying a respondent i may have nonzero segment membership probabilities for multiple segments. The probability that respondent i is a member of segment s is calculated as

$$P_{is}(\delta_s) = \frac{\exp(\delta_s \mathbf{Y}_i)}{\sum_{s'=1}^S \exp(\delta_{s'} \mathbf{Y}_i)}, \quad (2)$$

where δ_s is the vector of parameters to be estimated. The conventional modal assignment rule allocates respondents to a single segment, such that respondent i enters the segment for which s/he has the highest membership probability (Wedel & Kamakura, 2000).

The model incorporates the effects of the covariates on the probability of belonging to a particular segment s , using a multinomial logit equation (Vermunt & Magidson, 2007). For the covariate effects, the linear model for the log of the ratio of the probability of being in latent class s , relative to being in the reference class S , takes the following form:

$$\log \left[\frac{P(X_i = s|\mathbf{Z}_i)}{P(X_i = S|\mathbf{Z}_i)} \right] = \gamma_s + \sum_{c=1}^C \gamma_{sc} z_{ic}, \quad \text{for } 1 \leq s \leq S - 1, \quad (3)$$

where γ_s denotes an intercept; γ_{sc} , $1 \leq c \leq C$, is the slope for the c th covariate; and z_{ic} is the value for respondent i on the c th covariate. Because the distribution of the log of the ratio of the probabilities in Eq. (3) is known, we can test the significance of covariate effects (Vermunt & Magidson, 2007).

We estimated the LCA model parameters using maximum likelihood estimation. Maximization of the likelihood function was realized by the EM algorithm (Dempster, Laird, & Rubin, 1977), implemented in Latent Gold 4.5 (Vermunt & Magidson, 2007). The relative fit of alternative model specifications is evaluated for different numbers of segments using the minimum Bayesian Information Criterion (BIC) and Constant Akaike Information Criterion (CAIC) rules (Wedel & Kamakura, 2000). Another important criterion is whether the solution can be interpreted and facilitates insight.

We ran three models that included various sets of covariates. In the first model, we included one variable to represent both the ethnic group of respondent i and his or her household lifecycle phase, such as “African single without children”. In the second model, we incorporated ethnic group and household lifecycle phases as separate variables to assess their significance independently. In the third model, we included household income and educational level as control variables for ethnic group and household lifecycle phase. These control variables are highly relevant for financial behavior (Browning & Lusardi, 1996; Wärneryd, 1989, 1999), and people across South Africa's ethnic groups and lifecycle stages may differ on these important variables (Casale & Desmond, 2007; Statistics South Africa, 2007). The aim of the third analysis thus is to assess whether the effects of ethnic group and household lifecycle remain significant even when we include these other relevant variables as controls.

4. Results

4.1. South African financial product portfolios

We ran models with 1–10 latent classes. To avoid local minimums, we ran each of the models 10 times, using 25 different starting sets each time. The minimum values for both the BIC and CAIC statistics emerged from a four-class model, BIC = 110,097 and CAIC = 110,305. The four-class model can be interpreted clearly, and the covariate effects, as we discuss in Section 4.3, are also interpretable. Therefore, the four-class solution has high face validity.

Table 4 defines the four prototypical household financial product portfolios across the four analyzed ethnic groups. To illustrate our interpretation of the model, consider the first cell in the segment 1 column, according to which 0% of the households in segment 1 own micro loans.

Using their segment-specific product penetrations, we label the segments in Table 4 as follows:

1. Inactives: Generally do not own financial products. They are 39% of the sample.
2. Savers: Generally own savings accounts only. They are 32% of the sample.
3. Savings + 1: Often own a savings account and a single additional product, generally life insurance, a credit card, or a retirement annuity. They are 23% of the sample.
4. Actives: Relatively high propensities to own all financial products, except Mzansi. They are 5% of the sample.

The average South African is not highly active in the financial market. Note that this supports the notion of Roos et al. (2005) and Steenkamp and Burgess (2002) that financial products are innovations to many South Africans, as previously

Table 4

Segment-specific product penetrations.

Product	Cluster 1 Inactives (39%)	Cluster 2 Savers (32%)	Cluster 3 Savings + 1 (23%)	Cluster 4 Actives (5%)
Micro loan	0%	0%	1%	2%
Vehicle finance	0%	0%	4%	47%
Mortgage	0%	0%	5%	46%
Student loan	0%	0%	1%	1%
Credit card	0%	0%	28%	78%
Overdraft facility	0%	0%	5%	39%
Other loan	0%	0%	2%	9%
Mzansi	6%	0%	1%	0%
Savings account	24%	98%	73%	55%
Investment trust or mutual fund	0%	1%	14%	40%
Stocks	0%	0%	5%	19%
Retirement annuity	0%	1%	23%	63%
Endowment investment – without life ins.	0%	1%	6%	15%
Endowment investment – with life insurance	0%	2%	17%	45%
Life cover policy	1%	10%	50%	63%
Shares	0%	1%	6%	31%
Average # of products per segment member	0.31	1.14	2.41	5.53

discussed in the current paper. In particular, 39% appear in a segment characterized by a general tendency to own none of the products under research. Furthermore, a savings account is the only product commonly owned in single-product portfolios of savers in Table 4, 32% of the sample. According to acquisition pattern analysis theory, this latter finding in an LCA model implies that savings accounts generally are acquired before the other financial products that we research (Bijmolt, Paas, & Vermunt, 2004; Paas et al., 2007), which is similar to the results in studies conducted in Western countries, where households also acquire savings accounts before other financial products (Paas, 1998; Paas et al., 2007; Soutar & Cornish-Ward, 1997). Thus, the South African context does not seem to influence this tendency. Furthermore, the segmentation solution mostly reflects different levels of financial activity in terms of product ownership; that is, the number of financial products owned is the distinguishing factor across different South African households, not the tendency to borrow or save. This differs strongly from a previous study on household financial product portfolios conducted in Sweden (Gunnarson & Wahlund, 1997). The Swedish study found financial product portfolios reflecting different financial strategies.

4.2. A comparison of alternative model specifications

As we noted in Section 3.3, we ran three alternative models, including different covariates. In each model the segmentation structure reported in Table 4 was included, with variation only in the incorporated covariates. The covariate effects in LCA models assess the influence of exogenous variables on the probabilities of respondents being allocated to various segments.

In the first model we included one variable representing both the ethnic group and household lifecycle. The effect of this single covariate is significant (d.f. = 30, Wald = 2203.465, $p < 0.001$). We ran a second model to assess whether the significance of the variable representing the interaction between ethnic group and lifecycle stage results from the significance of both factors or just one of the two variables. Therefore, in the second model, ethnic group and household lifecycle are incorporated as separate variables, both of which have significant effects on the segment membership probabilities of individual respondents (ethnic group: d.f. = 3, Wald = 1972.160, $p < 0.001$; lifecycle stage: d.f. = 10, Wald = 886.392, $p < 0.001$). In the third model we included household income and educational level as control variables, next to ethnic group and household lifecycle. Both control variables significantly affect segment membership probabilities (household income: d.f. = 7, Wald = 903.020, $p < 0.001$; educational level: d.f. = 1, Wald = 1282.796, $p < 0.001$). Higher incomes and higher educational levels imply a greater probability of appearing in the savings + 1 or active segments. The effects of ethnic group and household lifecycle remain significant after we include these control variables (ethnic group: d.f. = 3, Wald = 396.552, $p < 0.001$; household lifecycle stage: d.f. = 11, Wald = 929.360, $p < 0.001$). This is an important finding, as it implies that the effects of lifecycle and ethnic group membership on allocation to segments are not explained by multicollinearity with income and/or educational level.

4.3. Ethnic differences in household lifecycle effect on financial product portfolios

We report on the allocation of members from the different ethnic groups to the segments in Table 4, according to the covariate effect in the first model, which we discussed in Section 4.2. Table 5A reports lifecycle stage-specific segment membership probabilities for Africans. In Table 5A, we also profile each lifecycle group according to average income in thousands of Rands and the percentage with at least a high school education. The most active groups among Africans are (1) young mar-

Table 5A
Cluster membership across lifecycle phases for Africans.

Stage	Income (x000)	Educated (%)	Cluster 1 Inactives (%)	Cluster 2 Savers (%)	Cluster 3 Savings + 1 (%)	Cluster 4 Actives (%)
1a. Young single without children	6.9	64	66	30	4	0
1b. Young single with children	5.6	57	57	34	8	1
2. Young married without children	7.4	62	48	37	14	2
3. Young married with children	7.1	59	42	39	16	3
4a. Middle-aged single without children	4.6	39	65	24	11	0
4b. Middle-aged single with children	4.6	35	50	36	11	2
4c. Middle-aged married without children	5.8	39	59	23	17	0
4d. Middle-aged married with young and adolescent children	8.1	45	39	34	21	6
4e. Middle-aged married without dependent children	7.4	26	53	28	19	0
5a. Older married	4.2	17	59	33	7	0
5b. Older unmarried	3.6	16	63	31	5	1

Notes: Shaded groups <50% in segment 1 (inactives).

ried without children, (2) young married with children, and (3) middle-aged married with young and adolescent children. Households in these lifecycle phases are relatively less often in the inactive segment. We shade the relatively active groups to enhance interpretations of Table 5A. The three shaded lifecycle phases all have average incomes of at least 7000 Rand. The only other lifecycle phase with this average income level or higher is the middle-aged, married, independent children only group. The average educational level of this group, however, is lower than that of the three relatively active lifecycle groups. We posit that age, income level and educational level are all relevant for financial product ownership at different lifecycle stages among Africans.

The lifecycle hypothesis prediction thus does not hold for Africans in South Africa, because it would imply that young households own more debt-related products, such as loans and mortgages, whereas more mature households would have more products for saving and investing. The hypothesis also would indicate that middle-aged households should be relatively financially active in terms of product ownership. Contrarily, Table 5A shows that the young married without children, young married with children, and middle-aged married with young and adolescent children groups own more financial products than others. This result is consistent with findings in the innovation literature, i.e., young, wealthy, highly educated households are more likely to acquire innovative products, as discussed in Section 2.2.

In Table 5B, we report the results for the Coloured group. In general, Coloureds in all lifecycle stages appear less often in the inactive cluster than Africans. Their position was comparatively better under apartheid than the position of Africans, because “the creation of the ‘colour bar’ rigorously excluded all Black South Africans (i.e. Africans) from any skilled or semi-skilled work. Similar but not quite so stringent restrictions were applied to Coloured and Asian workers” (Feinstein, 2005, p. 74). Yet despite the historical and cultural differences between Africans and Coloureds, we find that the most active lifecycle stages for Coloureds are the same as those for Africans, namely, (1) young married without children, (2) young married with children, and (3) middle-aged married with young and adolescent children, as we show in the shaded areas in Table 5B. Households in these lifecycle phases less often appear in the inactive segment and are relatively more likely to constitute the savings + 1 and active segments. We find relatively high incomes but low educational levels for the group of middle-aged, married, independent children only respondents. Despite their high income level, this group does not belong to the most active lifecycle groups, as was also the case for Africans. This finding indicates that educational level is critical to the ownership of financial products and services, again consistent with innovation adoption literature findings addressed in Section 2.2.

Table 5B
Cluster membership across lifecycle phases for Coloureds.

Stage	Income (x000)	Educated (%)	Cluster 1 Inactives (%)	Cluster 2 Savers (%)	Cluster 3 Savings + 1 (%)	Cluster 4 Actives (%)
1a. Young single without children	9.1	61	49	37	13	1
1b. Young single with children	6.6	45	59	33	7	1
2. Young married without children	9.5	60	37	29	28	6
3. Young married with children	9.0	57	37	29	25	8
4a. Middle-aged single without children	5.7	40	47	34	15	3
4b. Middle-aged single with children	5.1	26	58	20	21	1
4c. Middle-aged married without children	7.6	38	42	33	24	1
4d. Middle-aged married with young and adolescent children	9.6	42	32	27	31	9
4e. Middle-aged married without dependent children	8.7	23	40	34	24	2
5a. Older married	5.9	19	41	48	10	1
5b. Older unmarried	6.0	18	42	50	6	1

Notes: Lightly shaded groups <50% in segment 1 (inactives); darker shaded groups > 30% in segments 3 and 4 (savings + 1 and actives).

Table 5C
Cluster membership across lifecycle phases for Asians.

Stage	Income (x000)	Educated (%)	Cluster 1 Inactives (%)	Cluster 2 Savers (%)	Cluster 3 Savings + 1 (%)	Cluster 4 Actives (%)
1a. Young single without children	13.4	73	49	44	7	0
1b. Young single with children	8.9	57	54	28	19	0
2. Young married without children	13.9	80	28	37	26	10
3. Young married with children	12.8	78	32	37	28	3
4a. Middle-aged single without children	10.3	49	30	47	23	0
4b. Middle-aged single with children	8.2	53	25	56	17	2
4c. Middle-aged married without children	10.5	42	44	34	18	4
4d. Middle-aged married with young and adolescent children	14.4	63	31	25	36	9
4e. Middle-aged married without dependent children	14.6	37	45	25	28	2
5a. Older married	9.9	32	25	51	23	2
5b. Older unmarried	10.2	21	49	38	13	0

Notes: Lightly shaded groups <50% in segment 1 (inactives); darker shaded groups >30% in segments 3 and 4 (savings + 1 and actives).

We also perceive a lifecycle effect in Table 5B though. Coloured young singles have relatively high incomes and high educational levels, but they are not among the most financially active groups. Perhaps they will develop their financial product portfolios later in their household lifecycles, as expected by the lifecycle hypothesis. This topic also is worthy of further investigation, though the lifecycle hypothesis currently cannot explain the financial product portfolios of Coloureds across different cohorts.

For the Asian group, in Table 5C, we find that the following lifestyle groups are relatively less likely to appear in the inactive segment but more likely to show up in the savings + 1 or active segments: (1) young married without children, (2) young married with children, (3) middle-aged married with young and adolescent children, and (4) middle-aged married without dependent children. Thus, this group is highly similar to the Coloured group, if somewhat more active in terms of product ownership, particularly by middle-aged marrieds without dependent children. The previously mentioned lifecycle effect for Coloureds also holds for Asians, such that Asian young singles have relatively high incomes and high educational levels but are not among the most financially active groups.

In Table 5D, we report the findings for Whites, which reveal stark differences with the three other ethnic groups. Whites own more financial products, than members of other ethnic groups, across all lifecycle stages. Moreover, the findings for the White group are somewhat consistent with the lifecycle hypothesis and findings in Western countries (Gunnarson & Wahlund, 1997; Paas et al., 2007; Soutar & Cornish-Ward, 1997). Younger groups own relatively few financial products, middle-aged groups own the most (most often in the relatively active segments), and older households tend to own more financial products than younger households but less than the middle-aged households. Beyond these trends, income levels are consistent with those found in Western countries across household lifecycle stages: The intermediate stages have the higher incomes, but the older and younger groups tend to have lower incomes. Also, educational levels are more similar across different household stages, with only the older groups exhibiting relatively lower levels of education. However, one finding is similar to those for the three other ethnic groups: Whereas the lifecycle hypothesis predicts younger households should own more debt-related products, this expectation was disconfirmed for Whites, as for the other ethnic groups.

5. Discussion

In this paper, we analyzed an extensive data set pertaining to the ownership of 16 financial products by members of four ethnic groups in South Africa: Africans, Coloureds, Asians, and Whites. We find that the level of financial activity is the main

Table 5D
Cluster membership across lifecycle phases for Whites.

Stage	Income (x000)	Educated (%)	Cluster 1 Inactives (%)	Cluster 2 Savers (%)	Cluster 3 Savings + 1 (%)	Cluster 4 Actives (%)
1a. Young single without children	15.1	82	18	55	24	4
1b. Young single with children	11.7	67	31	25	42	2
2. Young married without children	14.2	87	11	40	40	9
3. Young married with children	15.0	77	19	25	44	13
4a. Middle-aged single without children	11.0	77	11	33	47	9
4b. Middle-aged single with children	11.6	73	20	24	44	13
4c. Middle-aged married without children	14.7	73	11	26	52	11
4d. Middle-aged married with young and adolescent children	17.9	83	10	16	46	28
4e. Middle-aged married without dependent children	13.2	82	11	25	49	15
5a. Older married	11.1	68	11	29	54	6
5b. Older unmarried	8.5	62	10	39	47	3

Notes: Lightly shaded groups <50% in segment 1 (inactives); darker shaded group >30% in segments 3 and 4 (savings + 1 and actives); darkest shaded group >60% in segments 3 and 4.

differentiating factor between household financial product portfolios in South Africa. Different financial strategies do not seem to play a role as was found to be the case in a previously researched Western country, Sweden (Gunnarson & Wahlund, 1997). We also find that the lifecycle hypothesis-based expectation (Browning & Lusardi, 1996; Wärneryd, 1999) that younger households will have more debts and households in intermediate lifecycle stages own more assets does not hold for any of the four researched ethnic groups. However, White households in intermediate household stages own more financial products, compared with younger and older households, which is consistent with findings from studies in Western countries (Gunnarson & Wahlund, 1997; Paas et al., 2007; Soutar & Cornish-Ward, 1997). This tendency is not found amongst Africans, Coloureds and Asians. Amongst these ethnic groups younger, relatively wealthy and educated, households tend to own more financial products. In a previous study, Ando, Guiso, Terlizzese, and Dorsainville (1992) reported that young households in Japan and Italy saved more than expected and that consumption smoothing was not as strong as expected. However, in their sample, young households still saved less than households in intermediate lifecycle stages. Our finding is more pronounced, in the sense that young households own more financial products than households in intermediate stages among Africans, Coloureds, and Asians.

The finding that young African, Coloured, and Asian households with higher incomes and higher educational levels tend to own relatively many financial products is consistent with literature on innovation adoption (Arts et al., 2011; Gatignon & Robertson, 1985; Im et al., 2003; Steenkamp & Gielens, 2003), which expects such households to be most inclined to adopt new innovations. Given the economic and historical backgrounds of these three ethnic groups, financial products are innovations for them (Roos et al., 2005; Steenkamp & Burgess, 2002). The effects of recent government policies, such as affirmative action, to address inequalities of the past might also favorably discriminate younger non-Whites from their predecessors, in terms of their ability to own financial services products (Maisonnaive et al., 2009). However, young, single Coloureds and Asians, even with their relatively high incomes and educational levels, tend to own fewer products than intermediate lifecycle stage households from the same ethnic groups, which is consistent with the Western findings (Gunnarson & Wahlund, 1997; Paas et al., 2007; Soutar & Cornish-Ward, 1997). Thus, for young Coloureds and Asians, lifecycle effects may play a role. This relevance of the lifecycle hypothesis may imply that it will apply more aptly to these groups in the future. Young Coloured and Asian households of today will be the intermediate households in one or two decades. They may continue following lifecycle hypothesis predictions; research could test this prediction by following different South African cohorts over time. However, for the largest ethnic group in South Africa, Africans, we did not find any such lifecycle effect in our database. Furthermore, at the time our data were collected, between July 2007 and June 2008, the innovation adoption literature better explains ownership of financial products amongst Africans, Coloureds and Asian than the lifecycle hypothesis.

Our research thus has implications for studies of household financial product portfolios in non-Western countries, as well as for the lifecycle hypothesis. For non-Western countries, longitudinal research should assess the applicability of findings from the innovation adoption literature, together with the lifecycle hypothesis, for households' product portfolios. Overall, we caution that lifecycle hypothesis should not be taken for granted in non-Western countries. Further research is required to assess the extent to which local conditions affect its applicability.

Another implication is that we adjusted the Western lifecycle operationalization provided by Murphy and Staples (1979) to the South African context, by including categories of singles without children and single parents, as well as excluding the divorced categories. Singles and single parents are growing groups in Western countries (Michael, Fuchs, & Scott, 1980; Quintano & D'Agostino, 2006), so this adjustment may be relevant for both Western and non-Western countries. More generally, our study points out that Murphy and Staples's (1979) lifecycle operationalization and other lifecycle categorizations, as developed in Western countries, require adjustments in non-Western countries.

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References

- Ando, A., Guiso, L., Terlizzese, D., & Dorsainville, D. (1992). Saving amongst young households: Evidence from Japan and Italy. *Scandinavian Journal of Economics*, 94(2), 233–250.
- Arts, J. W. C., Frambach, R. T., & Bijmolt, T. H. A. (2011). Generalizations on consumer innovation adoption: A meta-analysis on drivers of intention and behavior. *International Journal of Research in Marketing*, 28(2), 134–144.
- Baek, E., & Hong, G.-S. (2004). Effects of life-cycle stages on consumer debts. *Journal of Family and Economic Issues*, 25(3), 359–385.
- Bijmolt, T. H. A., Paas, L. J., & Vermunt, J. K. (2004). Country and consumer segmentation: Multi-level latent class analysis of financial product ownership. *International Journal of Research in Marketing*, 21(4), 323–340.
- Black, N. J., Lockett, A., Winklhofer, H., & Ennew, C. (2001). The adoption of Internet financial services: A qualitative study. *International Journal of Retail & Distribution Management*, 29(8), 390–398.
- Browning, M., & Lusardi, A. (1996). Household savings: Micro theories and micro facts. *Journal of Economic Literature*, 34(4), 1797–1855.
- Burgess, S. M., & Steenkamp, J.-B. E. M. (2006). Marketing renaissance. Research in emerging markets advances marketing science and practice. *International Journal of Research in Marketing*, 23(4), 1–25.
- Casale, D., & Desmond, C. (2007). The economic well-being of the family: Household's access to resources in South Africa, 1995–2003. In A. Y. Amoateng & T. B. Heaton (Eds.), *Families and households in post-apartheid South Africa: Socio-demographic perspectives*. Cape Town: HSRC Press.

- Chakravarty, S., & Dubinsky, A. (2005). Individual investors' reactions to decimalization: Innovation diffusion in financial markets. *Journal of Economic Psychology*, 26(1), 89–103.
- Cross, C. (1987). Informal lending: Do-it-yourself credit for black rural areas. *Indicator South Africa*, 4(3), 711–725.
- Davies, S., Easaw, J., & Ghoshray, A. (2009). Mental accounting and remittances: A study of rural Malawian households. *Journal of Economic Psychology*, 30(3), 321–334.
- Deaton, A. (1989). Saving in developing countries: Theory and review. *Proceedings of the World Bank Annual Conference on Developmental Economics*, 61, 96.
- Dempster, A. P., Laird, N. M., & Rubin, D. B. (1977). Maximum likelihood estimation from incomplete data via the EM algorithm (with discussion). *Journal of the Royal Statistical Society, Series B*, 39(1), 1–38.
- Derrick, F. W., & Lehfeld, A. K. (1980). The family life cycle: An alternative approach. *Journal of Consumer Research*, 7(2), 214–217.
- Feinstein, C. H. (2005). *An economic history of South Africa: Conquest, discrimination and development*. New York: Cambridge University Press.
- Fernandez-Blanco, V., Orea, L., & Prieto-Rodriguez, J. (2009). Analyzing consumer heterogeneity and self reported tastes: An approach consistent with the consumer's decision making process. *Journal of Economic Psychology*, 30(4), 622–633.
- Finscope (2009). *Finscope SA 2009*. Johannesburg: FinMark Trust.
- Friedman, M. (1957). *A theory of the consumption function*. Princeton: Princeton University Press.
- Gatignon, H., & Robertson, T. S. (1985). A propositional inventory for new diffusion research. *Journal of Consumer Research*, 11(March), 849–867.
- Gersovitz, M. (1988). Saving and development. In T. N. Srinivasan (Ed.), *Handbook of development and economics* (Vol. 1). Amsterdam: Elsevier.
- Gunnarson, J., & Wahlund, R. (1997). Household financial strategies in Sweden: An exploratory study. *Journal of Economic Psychology*, 18(2–3), 211–233.
- Hoffmann, A. O. I., & Broekhuizen, T. H. L. (2010). Understanding investors' decisions to purchase innovative products: Drivers of adoption timing and range. *International Journal of Research in Marketing*, 27, 342–355.
- Hosegood, V., McGrath, N., & Moultrie, T. (2009). Dispensing with marriage: Marital and partnership trends in rural KwaZulu-Natal, South Africa, 2000–2006. *Demographic Research*, 20(13), 312–320.
- Im, S., Bayus, B. L., & Mason, C. H. (2003). An empirical study of innate consumer innovativeness, personal characteristics, and new-product adoption behavior. *Journal of the Academy of Marketing Science*, 31(1), 61–73.
- Kamakura, W. A., Ramaswami, S. N., & Srivastava, R. K. (1991). Applying latent trait analysis in the evaluation of prospects for cross-selling of financial services. *International Journal of Research in Marketing*, 8(4), 329–349.
- Lockett, A., & Littler, D. (1997). The adoption of direct banking services. *Journal of Marketing Management*, 13(8), 791–811.
- Maisonave, H., Decaluwé, B., & Chitiga, M. (2009). *Does South African affirmative action policy reduce poverty? A CGE analysis*. Centre Interuniversitaire sur le Risque, les Politiques Economiques et l'Emploi, Working paper 09-36.
- Michael, R. T., Fuchs, V. R., & Scott, S. R. (1980). Changes in the propensity to live alone: 1950–1976. *Demography*, 17(1), 39–56.
- Modigliani, F., & Brumberg, R. (1954). Utility analysis and the consumption function: An interpretation of the cross section data. In K. Kurihari (Ed.), *Post-Keynesian economics* (pp. 388–436). New Brunswick, NJ: Rutgers University Press.
- Murphy, P. E., & Staples, W. A. (1979). A modernized family lifecycle. *Journal of Consumer Research*, 6(2), 12–22.
- Musteen, M., Berker, V. C., & Baeten, V. L. (2006). CEO attributes associated with attitude toward change: The direct and moderating effects of CEO tenure. *Journal of Business Research*, 59, 604–612.
- Nga, M. -T. (2007). *An investigative analysis into the saving behavior of poor households in developing countries, with specific reference to South Africa*. Unpublished MSc thesis, Department of Economics, The University of the Western Cape.
- Oppewal, H., Paas, L. J., Crouch, G. I., & Huybers, T. (2010). Segmenting consumers on how they spend a tax rebate: An analysis of the Australian stimulus payment. *Journal of Economic Psychology*, 31(4), 510–519.
- Paas, L. J. (1998). Mokken scaling characteristic sets and acquisition patterns of durable- and financial-products. *Journal of Economic Psychology*, 19(3), 353–376.
- Paas, L. J., Bijmolt, T. H. A., & Vermunt, J. K. (2007). Acquisition patterns of financial products: A longitudinal investigation. *Journal of Economic Psychology*, 28(2), 229–241.
- Paas, L. J., & Molenaar, I. W. (2005). Analysis of acquisition patterns: A theoretical and empirical evaluation of alternative methods. *International Journal of Research in Marketing*, 22(1), 87–100.
- Polatoglu, V. N., & Ekin, E. (2001). An empirical investigation of the Turkish consumers' acceptance of Internet banking services. *International Journal of Bank Marketing*, 19(4), 156–165.
- Quintano, C., & D'Agostino, A. (2006). Studying inequality in income distribution of single-person households in four developed countries. *Review of Income and Wealth*, 52(4), 525–546.
- Rogers, E. M. (1995). *Diffusion of innovations*. New York: The Free Press.
- Roos, V., Chiroro, P., Van Coppenhagen, C., Smith, I., Van Heerden, E., Abdoola, R. E., et al (2005). Money adventures: Introducing economic concepts to preschool children in the South African context. *Journal of Economic Psychology*, 26(3), 243–254.
- SAARF (2008). *All media and products survey 2008B*. Johannesburg: South African Advertising Research Foundation.
- Soutar, G. N., & Cornish-Ward, S. (1997). Ownership patterns for durable goods and financial assets: A Rasch analysis. *Applied Economics*, 29(11), 903–911.
- South Africa (1998). *Employment equity act no. 55 of 1998*. Pretoria: Government of South Africa.
- Stafford, E. F., Kasulis, J. J., & Lusch, R. L. (1982). Consumer behaviour in accumulating household financial assets. *Journal of Business Research*, 10(4), 397–417.
- Stanley, T. O., Ford, J. K., & Richards, S. K. (1985). Segmentation of bank customers by age. *International Journal of Bank Marketing*, 3(3), 56–63.
- Statistics South Africa (2003). *Population census 1996: Community profile databases*. Pretoria: Statistics South Africa.
- Statistics South Africa (2007). *Community survey 2007: Methodology, processes, and highlights of key results*. Pretoria: Statistics South Africa.
- Steenkamp, J.-B. E. M. (2005). Moving out of the US silo: A call to arms for conducting cross-country marketing research. *Journal of Marketing*, 69(October), 6–8.
- Steenkamp, J.-B. E. M., & Burgess, S. M. (2002). Optimum stimulation level and exploratory consumer behavior in an emerging market. *International Journal of Research in Marketing*, 19(2), 131–150.
- Steenkamp, J.-B. E. M., & Gielens, K. (2003). Consumer and market drivers of the trial probability of new consumer packaged goods. *Journal of Consumer Research*, 30(December), 368–384.
- Tin, J. (2000). Life-cycle hypothesis, propensities to save, and demand for financial assets. *Journal of Economics and Finance*, 24(2), 110–121.
- Vermunt, J. K., & Magidson, J. (2007). *Technical guide for latent GOLD 4.5: Basic and advanced*. Belmont, MA: Statistical Innovations Inc..
- Wagner, J., & Hanna, S. (1983). The effectiveness of family life cycle variables in consumer expenditure research. *Journal of Consumer Research*, 10(3), 281–291.
- Wärneryd, K.-E. (1989). On the psychology of saving: An essay on economic behaviour. *Journal of Economic Psychology*, 10(4), 515–541.
- Wärneryd, K.-E. (1999). *The psychology of saving: A study of economic psychology*. Northampton, UK: Edward Elgar Publishing.
- Wedel, M., & Kamakura, W. A. (2000). *Market segmentation: Conceptual and methodological foundations* (2nd ed.). Amsterdam, The Netherlands: Kluwer.
- Xiao, J. J. (1996). Effects of family income and life-cycle stages on financial asset ownership. *Financial Counseling and Planning*, 7, 21–30.
- Ziehl, S. (2002). Divorce statistics – A case of wool being pulled over our eyes? *SA Journal of Demography*, 8(1), 201–202.