UNIVERSITY OF KWAZULU-NATAL

CHANGES IN HOUSEHOLD COMPOSITION SINCE THE END OF APARTHEID: AN ANALYSIS OF HOUSEHOLD COMPOSITION AND WELL-BEING

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DECLARATION

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Abstract

Changes in household composition in South Africa are examined for the period 1995 – 2006 using nationally representative household surveys. Trends show a significant fall in nuclear type households (households that contain immediate family members only) whilst a rise in extended type households (households that contain immediate family members plus 'other' relatives). These trends however mask more unique changes in specific household types. More specifically, amongst nuclear type households, there is a rise in 'single person' households alongside a fall in 'nuclear family' households. Within extended type households, there is a rise in non-standard 'skip generation' and 'complex but related' households alongside a fall in standard 'three generation' and 'multi generation' forms of household organisation. Furthermore household heads from different household types are shown to display considerable heterogeneity in terms of their demographic characteristics as well as their poverty levels. Poverty estimates are particularly sensitive to the choice of equivalence scale. Whilst extended type households are consistently poorer than nuclear type households across plausible equivalence scales, poverty rankings amongst specific household types change significantly when different equivalence scales are employed. Across time, the headcount ratio for nuclear type households is seen to fall whilst the headcount ratio for extended type households appears to rise.

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Chapter 1: Introduction

Households are the building blocks of society. Any analysis of the well-being of individuals cannot look at such individuals in isolation, but needs to consider the broader context of the state of the household in general. Indeed, within the South African context, research has shown that government social assistance in the form of the old age pension targeted specifically at the elderly, has important welfare effects for the remaining household members (c.f. Case&Deaton, 1998; Posel et al, 2006). It is this interaction between the state of the household and the state of the individual that requires a thorough understanding.

Households themselves however are not homogenous. Family structure determines unique patterns of living arrangements and thus differential access to resources for household members within different household types. These patterns of family organisation are by no means stagnant. Apartheid sought purposefully to rearrange household structure by limiting mobility and residence of non-Whites in order to promote cheap exploitable labour for use in the mining-based industrial system. The migratory system of labour which it sought to create still persists today (c.f. Amoateng et al, 2007). Furthermore, convergence theory, as set forth by Goode (1963), predicts that traditional societies which are based upon extended forms of family organisation (i.e. households that contain immediate family members plus 'other' relatives) will ultimately transition to nuclear patterns of family organisation (i.e. households that contain immediate family members only) as the process of modernisation takes place. The validity of convergence theory in South Africa is still very much a moot point (c.f. Amoateng, 1997; Ziehl, 2001; Amoateng et al, 2007; Wittenberg&Collinson, 2007). The question thus remains: 'to what extent and to where are South African households reshaping themselves in the post-Apartheid period? Furthermore, what is the relationship between economic well-being and household structure for these household types? '

This dissertation aims to investigate changes in household composition within South Africa since the fall of Apartheid with a specific focus upon the characteristics and economic well-being of different household types. Although work has been done on changes in household structure within South Africa, and similarly work has also been done on estimating poverty within South Africa, the relationship between household structure and economic status is largely under-researched. Hence this dissertation plans to make this link more explicit by not only investigating changes in household composition within South Africa but also examining changes in the well-being for each of these household types.

Chapter 2 is a literature review of trends in household composition both internationally and locally. The validity of Goode's convergence theory is examined at length, with specific attention given to South Africa. Chapter 3 investigates recent changes in household composition within South Africa for the period 1995 – 2006. Using nationally representative data from the October Household Survey as well as from the General Household Survey, household types are identified and trends evaluated by race. Chapter 4 explores the demographic characteristics of household types within both a univariate and multivariate context. Specific attention is drawn to the heterogeneity of household characteristics amongst different household types by employing the household head as a proxy for the status of the household more generally. Chapters 5 and 6 investigate the relationship between individual well-being and household composition. Chapter 5 is a literature review of measuring poverty in South Africa. Attention is given to the appropriate choice of equivalence scale with respect to correctly adjusting for child costs and scale economies. Chapter 6 explicitly examines the link between poverty and household composition by estimating headcount ratios and poverty gap ratios for each household type between 1995 and 2006. The robustness of relative poverty rankings between household types is evaluated according to the choice of equivalence scale. Chapter 7 concludes the analysis by highlighting the main findings of the chapters detailed above and weaving them together.

Chapter 2: A literature review of household structure and convergence

This chapter provides a review of the relevant literature concerning trends in the pattern of family and household organisation. This is initially discussed with reference to the international literature and subsequently discussed with reference to South Africa. The overall picture is one of tentativeness and uncertainty. Not only are theories of family convergence highly contested, but trends for South Africa are also unclear.

2.1 Family Convergence to the Nuclear Household

William Goode (1963) is noteworthy for his hypothesis concerning the impact of industrialisation and urbanisation upon the family system. In his book *World Revolution and Family Patterns,* Goode (1963) opens with the following claim:

> "For the first time in world history a common set of influences – the social forces of industrialisation and urbanisation – is affecting every known society... the alteration seems to be in the direction of some *conjugal* family pattern – that is, toward fewer kinship ties with distinct relatives and a greater emphasis on the 'nuclear' family unit of couple and children" (Goode, 1963:1).

Goode's assertion is that patterns of family organisation will become more and more nuclear in type as development and modernisation run their course. In other words family systems will evolve from extended or traditional structures (i.e. households that contain immediate family members plus 'other' relatives) into nuclear structures (i.e. households that contain immediate family members only).

Goode (1963) explains this phenomenon by detailing what he calls the theoretical "fit between the conjugal *(or nuclear)* family and the modern industrial system". In this regard, industrialisation is better served by the outcomes of the nuclear family compared to the extended family and hence this causes nuclear patterns of family organisation to triumph. Goode provides several arguments for this 'fit'.

Firstly, industrialisation requires an abundance of workers whose success is based solely upon their individual performance. Whilst the extended family system promotes class and livelihood through inheritance (particularly ownership of land), the nuclear family promotes competence and livelihood

through the labour market. Furthermore, the ideology of the nuclear family is highly egalitarian with an emphasis on equality between genders. Women are therefore released into the labour market, widening the pool of accessible labour. Nuclear families are also arguably more mobile than extended families given weaker family ties and therefore better able to relocate as industry requires. Hence overall, nuclear type households more readily provide the pool of workers required for industrialisation's progress.

Goode also argues that the nuclear family provides greater emotional support than the extended family, by limiting family demands to only immediate family members. Such greater emotional support is important given the constant demands of the industrial workplace. The industrial system further requires a pool of *skilled* labour. In this regard, the 'ideology of the nuclear family' does not maintain a lineage through dispersal of inheritance. There is no specific attention given to one son as the inheritor of property or wealth and therefore all children (both male and female) are invested in equally. Instead of inheritance of property or wealth, the nuclear family focuses upon an inheritance of human capital. Added to this, the expectation of the child's independence at marriage helps create a period of longer educational investment. Although Goode acknowledges that in practice even nuclear type families within the United States do not invest as heavily in their daughters compared to their sons, this difference is much smaller compared to other family systems. Thus overall, the nuclear family helps provide a pool of educated workers, irrespective of gender.

Goode (1963) thus presents a plausible theoretical foundation for the compatibility of industrialisation and the nuclear form of family organisation. Goode does caution however, that despite the collinear relationship between modernisation and the emergence of the nuclear family, such convergence is not a simple function of industrialisation. The exact 'cause and effect' of this relationship is difficult to identify given the multiplicity of factors involved in industrial modernisation. Hence this 'fit' between the nuclear family and modern industry is by no means watertight.

In this regard, Goode (1963) acknowledges some disharmonies between industrialisation and the nuclear family. For one, it is arguable that women living in nuclear families, despite facing increased demands from the workplace, have not equally been released of their traditional child-rearing responsibilities. This is further exacerbated by the fact that women residing in nuclear families as opposed to those in extended families have lost the group of supportive and knowledgeable kin with which to share their child-rearing responsibilities. Women in nuclear families have also not been

emancipated from their traditional household chores. Although modern technology has provided more efficient means with which to undertake domestic chores, standards of cleanliness have simultaneously increased, and thus demands upon women have arguably remained constant. Where husbands are seen to take a bigger share of both child-rearing and domestic responsibilities, this merely distracts from their commitment to the workplace. Despite such disharmonies, Goode (1963) nonetheless presents a helpful theoretical basis for the prevalence and success of the nuclear family system in modern industrial society as opposed to the more 'traditional' extended-kinship family system.

2.2 General Criticisms of Convergence

Goode's (1963) theory of family convergence is not without opposition. Within the developed world context, the debate centres around the true structure of the family in the past. Given the common assertion that the extended family was the predominant form of family organisation in the past, scholars in favour of convergence theory cite this as evidence that convergence has taken place (due to the fact that the overwhelming majority of developed world societies are currently nuclear in household structure). However the claim that the extended family comprised the majority of households in the past may not be defensible. In this regard Laslett (1969:200), in an investigation of household size and structure in England over three centuries, reports that:

> "There is no sign of the large, extended co-residential family group of the traditional peasant world giving way to the small, nuclear, conjugal household of modern industrial society. In England in fact, as has been suggested elsewhere, the large joint or extended family seems never to have existed as a domestic group at any point in time covered by known numerical records."

In an attempt to make sense of such differences between commonly accepted history and new empirical realities, Levy (1965) argues that household size and structure have remained relatively constant throughout history despite changes in societal ideals of family structure. This means that whilst reports of extended-family systems from the past (as was the case in England) may seem to indicate that an extended family system was the norm, in reality, physical constraints made this family structure possible for only the elite minority.

Burch (1967) tests Levy's hypothesis by using data from the United Nations Demographic Yearbook for the period 1945 – 1963 for a large number and range of countries (although only three countries from Africa are included). He reports that average households size varies far less than what is commonly believed. Furthermore, where greater variation in household size is apparent, this is

derived from transitional societies (i.e. those undergoing demographic changes from low fertility to high fertility and high mortality to low mortality) rather than from changes in family structure. Furthermore, in the long run such 'transitional societies' eventually lower their fertility levels and hence also their household size. Thus overall, Burch's (1967) empirical work adds considerable support for Levy's hypothesis.

McDonald (1992) is particularly outspoken against proponents of convergence theory. Firstly, McDonald (1992:19) notes that the vast majority of empirical evidence, both for and against convergence theory, relies heavily upon survey data which classifies family units solely upon co-residence i.e. dwelling under the same roof. However family units should not be determined by examining co-residence alone, but more importantly, by further examining the level of obligation and co-operation that exists between members of different households. Convergence theory therefore cannot be comprehensively proved or disproved by appeals to survey data which examine co-residence without any consideration of co-operation. Secondly, given the universality of Goode's theory, McDonald (1992:20) points out that a handful of exceptions are sufficient to disprove convergence theory. Thus despite examples in favour of convergence, McDonald (1992) highlights case studies where the extended-family has remained predominant despite economic and social progress. Concluding his analysis, McDonald (1992) severely criticises convergence theory labelling it a product of 'Western chauvinism' and 'cultural superiority' that pervaded the 1950's and 1960's.

2.3 Convergence Theory: Evidence from the Developing World

Bongaarts (2001) is noteworthy for his contribution towards testing the validity of convergence theory, specifically in the developing world. He examines a diverse sample of some 43 developing countries from Asia, Latin America, North Africa and Sub-Saharan Africa, all of which participated in the Demographic and Health Surveys Programme, in order to test the validity of convergence theory. Given a lack of comprehensive time-series data on household size and structure within developing countries needed to test comprehensively for the existence of household convergence, Bongaarts (2001) instead investigates other related hypotheses:

> "Specifically, if convergence were taking place one would expect households to be smaller and less complex in urban than in rural areas and in more-educated than in less-educated groups. In addition one would expect a positive correlation between a country's level of development and the proportion of household members who belong to the nuclear family of the head."

Bongaarts (2001) finds a mixed bag of results. As convergence theory predicts, urban households are on average smaller than rural households and similarly more-educated households are smaller than less-educated households. However, these differences seem to be the result of lower fertility rates rather than household structure. Wealthier countries (as measured by Gross Domestic Product per Capita) also contained smaller households on average than poorer countries but again this result was primarily driven by a smaller number of children per household rather than household structure. Although the number of household members who are nuclear (head, spouse, children) similarly rose from poorer to richer countries, seemingly in favour of convergence, this result was not statistically significant. Bongaarts (2001) concludes that if convergence is taking place in the developing world, it is doing so slowly.

2.4 Summary of International Literature on Convergence

Overall, convergence theory as proposed by Goode (1963) is highly contested in the international literature. Whilst it would seem that categorical statements about convergence can be easily dismissed, a more nuanced view of convergence holds more ground. At the least, the macro-processes of industrialisation, urbanisation and proletarianization, cannot be ignored as significant agents for change on existing micro-level family structures. Although it is debatable whether or not these family changes will *always* lead to a nuclear family system, it is still likely that the forces of industrialisation, urbanisation and proletarianisation will have a significant impact upon family structure.

2.5.1 Convergence theory in South Africa: Evidence up to the end of Apartheid

Evidence for or against the theory of family convergence in South Africa for the period up to the end of Apartheid is somewhat limited. Given that a large sector of society was completely marginalised, accurate and comprehensive statistical data for non-white race groups during this period are few and far between. Nonetheless, Apartheid had a profound affect upon family organisation (and no doubt continues to). Not only did the migrant labour system push African adult males out of their homes and into the urban areas for temporary periods of time, legislation such as the Group Areas Act and Pass Laws prohibited the free flow of labour into urban areas. Household structure was thus no doubt deeply affected during this period of South African history.

Marwick (1978) examines household composition of an African township, some thirty kilometres outside of Johannesburg. From a sample of just under five hundred households he concludes that

"patterns of domestic organisation move in the direction of those normally found in modern industrial societies (*i.e. towards nuclear family patterns)*" (Marwick, 1978: 52).[1] More specifically, Marwick finds that 27% of all household types in his sample are extended. This, he concludes, is considerably lower when compared to an earlier survey undertaken by Hammond-Tooke (of a rural village in Bhaca) which found that 41% of all household types were extended. Marwick therefore concludes that household composition in South Africa must be converging to a nuclear type. Marwick's (1978) findings however, are at best suggestive for South Africa as a whole, given that his sample is restricted to a small sub-section of South Africa, and that his comparisons are between two entirely different samples.

Beittel (1992) conducts a thorough analysis of black and white households on the Witwatersrand, from the discovery of gold in mid-1880 up until 1985. His analysis is particularly helpful in identifying possible pressures which may have been responsible for the transformation of household size and structure in South Africa. Using data from the Bureau of Market Research for the period 1962 – 1985, Beittel (1992) finds two distinct trends for African households– namely, a rise in the proportion of female-headed households as well as a growth in the number of members in addition to the nuclear family. This, Beittel (1992) claims, is derived from the gap between estimated household income and hypothetical minimum household expenditure. In other words, due to the shortfall between the amount of money attained by an African wage earner in a typical nuclear family of five, and that needed for a household's minimum monthly requirements, families had to adapt by taking on an additional rent paying lodgers, or else taking on additional income-pooling wage earners. This explanation is consistent with Keenan (1986), who found that African household's in Soweto during the 1980's responded to rising unemployment by reducing their dependency ratios. This was achieved by either increasing the number of employed members per household through women joining the labour force or other wage-earning members joining the household; or by reducing the number of non-contributory household members by sending children and the elderly 'home' to stay in rural areas. Thus, both Beittel (1992) and Keenan (1986) show that households may respond to economic need in ways which may be contrary to convergence theory.

Simkins (1986) also provides a useful analysis of household composition in South Africa during Apartheid. Unlike the aforementioned authors who based their analysis on small communities, Simkins (1986) cites data from the nationally representative 1980 Current Population Survey. Comparing differences in household structure of African households across metropolitan, urban and

[1] Words italicised and in brackets are my own addition

rural areas, Simkins (1986: 37) finds that the proportion of households that are nuclear in structure varies from between 45% to 56% of all households, and that the proportion of households that are extended in structure varies from between 32% to 42% of all households. Thus the predominant form of household organisation for African households appears to be nuclear.

Simkins further identifies four important determines of household structure in South Africa– namely, the forces of tradition, class, housing policy and influx control. These forces all simultaneously push and pull upon family structure resulting in instability and complexity. Simkins (1986: 41) concludes his analysis with the following comment:

> "Perhaps just over half of South African households are nuclear in structure; most of the rest are extended or multiple. If there is a trend towards the nuclear household, it is a weak one. More complex forms will be distributed in varying measure and to a very substantial degree throughout South African society for as far ahead as one can see."

Therefore Simkins (1986) ultimately opposes any strong adherence to convergence theory in South Africa, instead opting for a more nuanced view of the complex forces acting upon the South African family.

Thus overall, the literature on household composition in South Africa up to the end of Apartheid seems to suggest that the majority of South African households were of a nuclear form of household composition during Apartheid. This implies that some measure of convergence towards a nuclear family type has already taken place, provided that the majority form of household organisation in the past (at least for Africans) is assumed to be extended in type. However as Simkins (1986) points out, there are other important influences on South African household structure which complicate the analysis of convergence. Indeed, Beittel (1992) and Keenan (1986) find that household composition may respond to changes in the socio-economic environment in ways which are sometimes contrary to convergence theory.

2.5.2 Convergence theory in South Africa: Evidence post-Apartheid

Transition out of Apartheid has been significant for every sphere of South African society, and family composition is no exception. Amoateng et al (2007) list three reasons why studying family composition is interesting in the post-Apartheid period: Firstly, the enfranchisement of all South Africans and the subsequent role-out of healthcare, education and housing, is likely to significantly change individual welfare and therefore living arrangements. Indeed, research has found that extension and equalisation of the South African Old Age Pension for all race groups has significantly

impacted upon household composition (c.f. Posel et al 2006; Ardington et al, 2007). Secondly, given the exponential spread of HIV/AIDS, changing levels of fertility and mortality are also predicted to have a significant impact on household composition (c.f. Akintola, 2004; Hunter, 2005). Lastly, the availability of new data sets which account for all race groups within all of South Africa (including the former TBVC states) provide new opportunities to examine changes in household composition. Hence, household composition within South Africa is predicted to undergo significant change in the post-Apartheid.

Ziehl (2001) undertakes an analysis of family structure in South Africa drawing primarily upon data from the Census 1996. Ziehl (2001) points out that identifying family structure requires an understanding of the lifecycle of the family. In other words looking only for nuclear family households (i.e. a head, spouse and children) neglects other forms of organisation of the nuclear household at different stages of its lifecycle e.g. couple only households (before the couple has children) and single person households (when a child comes of age and leaves the home of their birth). Similarly, the extended family takes on different forms of household organisation during its lifecycle – although these are harder to classify given the looser nature of extended living. Problematically, if the oldest generation of a three generation household dies, this can result in a nuclear family household being formed. It then becomes debatable as to whether such a nuclear family household should be classified as 'extended' (particularly if this period is temporary) or 'nuclear' (as its current structure would suggest). Thus, to make clearer comparisons across time for different household types, Ziehl (2001) examines changes in non-overlapping household types. Using data from the Census 1996, Ziehl finds that only 7.14% of African households are couple only households as opposed to 22.99% of White households. Similarly, examining couple only households between urban and rural areas reveals a greater proportion of couple only households in urban areas for both Africans and Whites. Overall, Ziehl's findings support the idea that South African households have converged to a nuclear family structure, given the assumption that household structure was predominately extended in the past due to traditional African cultural norms.

However Ziehl (2001) is critical of the reliability the Census 1996 data for drawing conclusions about family structure. Firstly, the concept of 'household head' on which data on family relationships are collected in the Census 1996 (as well as all other national surveys) is problematic given different interpretations of who the head of the household is:

> "This head could the person who own the dwelling; earns the highest income; pays most or all of the rent; has been an occupant of the dwelling the longest." (Ziehl, 2001)

Although determining the household head has little significance for counting total household size or total household income, when comparing characteristics that are specific to the household head such as gender or race, consistently identifying the household head becomes an issue. For example, Ziehl (2001) points out that examining the proportion of households that are female-headed across time is problematic given that a supposed increase in female-headed households could be a function of an increase in women who classify themselves as the household head, rather than an actual increase in women with no spouse. However this concern relies upon the assumption that people do classify themselves differently across time. If a household head is chosen consistently across time (albeit differently for different households) overall trends in changes in the characteristics of household heads would remain significant.

Secondly, Ziehl (2001) notes that the categories that relate to the 'relationship to household head' for the Census 1996 are insufficient. For one, there is no specific category for 'foster child' as well as no specific category for 'parent in-law'. Both of these are important categories for properly classifying households of the extended type. As such, an analysis of household data that has been collected by referring respondents to their 'relationship to the household head' is insufficient. Ziehl (2001) notes that some 250 000 people in the Census 1996 have implausible information with regards to their relationship to the household head. Ziehl (2001) concludes that although there are certainly differences in family patterns between Whites and Africans when examining data from the Census 1996, one should be more circumspect when attempting to make more specific judgements on issues such as family convergence when using such data. Thankfully, more recent datasets such as the Labour Force Survey and General Household Survey do contain more detailed instructions for identification of household members including explicit mention of 'stepchild/adopted child' as well as 'in-laws'.

Zulu and Sibanda (2005) examine changes in household composition for South Africa using Census data from 1991 and 1996. They draw attention to differences in household structure between race groups. In this regard, Africans were found to be more likely to live in single-parent households and extended households than Whites, Coloureds or Indians. Zulu and Sibanda (2005) further note that extended forms of household structure amongst Africans are most likely a result of the Apartheid system which placed mobility restrictions on Africans, separating children, parents and spouses and hence disjointing family structure. In terms of household convergence to a nuclear type, Zulu and Sibanda (2005) find that the evidence is unclear. While Whites registered a substantial 21% increase

in the percentage of nuclear family households (households consisting of a couple and children), the proportion of nuclear family households remained relatively constant for other race groups. All race groups however (African households in particular) did appear to experience substantial increases in single person households.

Amoateng (1997) examines household structure of an African and Coloured community residing in the Cape Flats in April 1996 using his own data consisting of a sample proportion of 10% of all households for each community respectively. Whilst the household structures of the African and Coloured communities are not significantly different from each other, African households nonetheless tend to be significantly smaller in size. This is somewhat surprising given that African household size has traditionally been found to be larger than the household sizes of other race groups. This anomaly is thought to be explained by the higher proportion of migrants in the African community compared to that of the Coloured community. Given that common practice for migrants is to leave their spouses and children at 'home' in rural areas, this would account for a lower than normal average household size in this particular African community. This is supported by the presence of many more single-person households in the African community than compared to the Coloured community. In both these communities however, nuclear household types are the clear majority accounting for 66.38% of all households in the Coloured community and 62.42% of households in the African community. Amoateng (1997) thus concludes that the presence of a clear majority of nuclear households amongst both communities is evidence in favour of convergence theory in South Africa. However this conclusion seems to be somewhat premature given that Amoateng (1997) provides no justification as to why the two urban communities in question might be representative for South Africa as a whole.

Using data from the 1996 Census, Amoateng et al (2007) agree with Amoateng (1997) that some measure of convergence has taken place given the high proportion of nuclear households. In this regard, Amoateng et al (2007) estimate that almost half of all household types are nuclear in structure as opposed to nearly a third of all household types which are extended. However when comparing changes in household composition between the 1996 Census and 2001 Census, Amoateng et al (2007) find that the pattern of convergence is in fact away from nuclear type households, and rather towards extended type households. More specifically, they find that there is a greater proportion of extended households in 2001 (35.83%) compared to 1996 (31.97%), alongside a smaller proportion of nuclear households in 2001 (46.48%) compared to 1996 (39.86%). Furthermore, this increase in the proportion of extended households holds true for all race groups.

Despite these documented movements towards greater numbers of extended type households during the period 1996 to 2001 for all races, Amoateng et al (2007) find that there is a positive correlation between nuclear household structure and education as well as nuclear household structure and urbanisation as predicted by convergence theory. In line with the predictions of convergence theory, the educated and urbanised are more likely to live in nuclear type households.

Wittenberg and Collinson (2007) provide a noteworthy study of changes in household composition in rural South Africa using longitudinal data. They compare longitudinal data from the Agincourt Demographic Surveillance System (DSS) for the period 1996 – 2003 to cross-sectional data from national datasets (namely the 1995 & 1999 October Household Surveys as well as the 2003 General Household Survey) for the period 1995 – 2003. Whilst the Agincourt DSS covers an isolated 70,000 person community in rural South Africa, the national datasets are representative of the whole of South Africa. For comparative purposes between these two datasets, Wittenberg and Collinson consider only rural households and hence disregard urban households within the national datasets.

Wittenberg and Collinson (2007) find little evidence in support of convergence theory. Indeed, as was the case for Amoateng et al (2007), they find that both in the Agincourt DSS and the National datasets, there is a sharp drop in the proportion of nuclear households whilst there is a marked increase in the proportion of households of the extended variety. They further make use of the longitudinal data from the Agincourt DSS in order to create a 'transition matrix' such that changes in household structure for the same set of households can be traced across time. Wittenberg and Collinson (2007) report that there is considerable movement between household types over time, with nuclear family households and three-generational households remaining the most stable (over 80% of these households were classified as belonging to the same household type between 1996 and 2003). Moreover, movements between household types are generally plausible i.e. couple households were most likely to change into nuclear households whilst three-generation extended household were most likely to change into skip-generation households. There is also evidence of households taking on additional relatives and children. This is purported to be in response to the HIV/AIDS epidemic. However some of these changes are atypical of Western patterns of family formation i.e. couple households taking in relatives and hence becoming complex. Using values from the transition matrix to project changes forward, Wittenberg and Collinson (2007) predict that the pattern of household change will continue to favour a move away from nuclear households and towards more extended household types. Hence, not only do Wittenberg and Collinson (2007) find

no support for convergence in rural South Africa, but they predict that the opposite is likely to occur in the future.

Overall, patterns of household structure for the post-Apartheid period largely agree with patterns identified during the Apartheid period– namely, that across race groups the majority of households are nuclear in composition. If one assumes that the majority of households were extended in household structure at some point in the past (this seems credible at least for African households) this provides evidence in favour of convergence theory. However, recent changes in household composition seem to contradict this finding. Indeed evidence presented by Amoateng et al (2007) and Wittenberg and Collinson (2007) suggest that households are in fact moving away from nuclear forms of household composition.

2.5.2 Single person households in South Africa

One trend worth highlighting in the literature is the rise in single person households in South Africa. Single person households form an important stage in the lifecycle of a nuclear family, both in the beginning stages (when a child leaves home to form a new household) and in the end stages (when a widow or widower is the only family members left in the household). Hence a rise in the proportion of single person households may provide support for convergence theory. However Amoateng et al (2007) caution that drawing such conclusions about family convergence may be premature without a deeper analysis of these single person households. For example, under Apartheid many Africans lived alone or with relatives due to housing constraints and Apartheid laws, rather than because of a desire to conform to a nuclear type family pattern. Thus increases in single person households may not necessarily be driven by forces of household convergence when examining data from South Africa.

Zulu and Sibanda (2005) report substantial increases in single person households in South Africa between 1991 and 1996 using Census data for both these years. According to race, this is driven by an almost threefold (177%) increase in single person households amongst Africans and an approximate 50% increase in single person households amongst Coloureds and Indians. Using Census data between 1996 and 2001, Amoateng et al (2007) report that the proportion of single person households increased between 1996 and 2001– from 16.29% of all households in 1996 to 21.05% of all households in 2001.

Wittenberg and Collinson (2007) also report that the proportion of single person households increased over the period 1995 – 2003 using data from the October Household Surveys and General Household Survey. They find that the proportion of single person households rises dramatically from 10.8% in 1995 to 20.3% in 2003. They also note that such increases are recorded in other national datasets such as in the Labour Force Surveys. However using data from the Agincourt DSS, Wittenberg and Collinson (2007) find that the proportion of single person households actually decreases from a low 5.7% in 1996 to an even lower 5.1% in 2003.

Wittenberg and Collinson (2007) account for this discrepancy by discrediting the national datasets. Given changes in sampling frames, post-stratification weights and survey design for the national datasets, Wittenberg and Collinson (2007:136) claim that "...the explosion in single-person households captured in the national data sets may be more apparent than real". Firstly, they point out that changes in the way that 'live-in' domestic workers are classified (as separate single person households) can bring about arbitrary changes in the proportion of single person households. This was demonstrated by Ziehl (2001) who found that in the Census 1991 'live-in' domestic workers were classified as members of their employers household whilst in the Census 1996 'live-in' domestic workers were classified as separate single person households making the supposed rise in single person households between this period invalid. Although this is a valid criticism of the aforementioned Census data, the OHS 1995, OHS 1999 and GHS 2003 (as investigated by Wittenberg and Collinson (2007)) all consistently classify domestic workers as separate households.

Secondly, Wittenberg and Collinson (2007) note that under-sampling of migrant hostels in the OHS 1995 (each person within these hostels would have been classified as a single person household) may be responsible for the spurious rise in the proportion of single person households within the national datasets. However, the correct classification of migrant workers is a much more pertinent issue for urban rather than rural areas (given that migrants come from rural areas into urban areas looking for work), whilst Wittenberg and Collinson's (2007) analysis is restricted to rural areas only. Furthermore, a substantial rise in the proportion of single person households still occurred between the OHS 1999 and the GHS 2003 where under-sampling of migrant hostels was not an issue. Thus, although Wittenberg and Collinson attempt to explain away the rise in the proportion of single person households within the national datasets, these explanations seem insufficient.

2.5.3. Understanding Household Change in post-Apartheid South Africa

Trends in fertility are important element in explaining changes in household composition. In this regard, South Africa is reported to have experienced consistent declines in fertility over the past four decades, thus directly lowering average household size (c.f.Zulu&Sibanda, 2005; Moultrie&Timaeus, 2003; Palamuleni et al, 2007). Fertility trends are further interwoven with trends in marital formation and dissolution. In this regard, nuptiality in South Africa shows low rates of marriage, late age at first marriage, as well as high rates of divorce and remarriage (c.f. Palamuleni et al, 2007). Although patterns of 'low and late' marriage decrease total fertility, Kalule-Sabiti et al (2007) point out that childbearing is still popular amongst the unmarried in South Africa. Thus, as shown by Zulu and Sibanda (2005), the proportion of young children living with un-wed mothers is very high, specifically amongst Africans and Coloureds in South Africa. This means that first birth often precedes first marriage, causing a predominance of single parent families (Kalule-Sabiti et al, 2007). Furthermore, where an absence of marriage (or co-habitation) becomes the norm, three generation families arise– namely, where unmarried mothers live with their daughters as well as their unmarried daughters' children.

The rampant spread of HIV/AIDS in South Africa is another important factor in explaining changes in household composition. Firstly, HIV-infection has a direct impact on household size by lowering fertility levels in women infected with HIV and AIDS (c.f. United Nations, 2002). Secondly, HIV/AIDS may result in the restructuring of household as households are compelled to adopt additional bed-ridden relatives or orphaned children. Indeed, one of the sources for skip generation households (where children are being cared for by their grandparents in absence of their mother or father) is HIV/AIDS mortality of parents.

Political changes following the end of Apartheid are also likely to have a major impact upon household structure in South Africa. In contention with convergence theory, Amoateng et al (2007) posit that African empowerment through better access to education, employment and credit, following the end of Apartheid, will enable Africans to better 'afford' more complex living arrangements. However, this line of reasoning seems to contradict earlier evidence presented by Amoateng et al (2007) which showed that extended type households were most common amongst household heads who possessed no formal education (the economically disempowered) and least common amongst those household heads with higher than Matric education (the economically

empowered).[2] Indeed household structure in South Africa has been reported to respond to economic need (c.f. Tienda&Angel, 1982; Keenan 1986; Beittel, 1992). In this regard, extended type households are adopted when additional income-generating members are incorporated into nuclear households in times of economic hardship. Nuclear type households can therefore be viewed as a luxury good that is possibly abandoned when households face severe economic constraints.

2.6 Conclusion: An Overall Picture of Convergence Theory in South Africa

Similar to evidence from the international literature, it would seem that convergence theory in South Africa is highly contested. On the one hand, the high proportion of households that are nuclear in structure within South Africa seem to suggest that some amount of convergence has taken place (given that extended type households were the traditional form of African household organisation in the past). This is further supported by the predictions of convergence theory whereby the urbanised and educated (both correlates of modernisation) are more likely to live in nuclear type households.

On the other hand, patterns of family organisation in post-Apartheid South Africa suggest that extended type households are in no way diminishing. In fact it would seem that there is resurgence in the proportion of extended family households within South Africa. Trends in single person households specifically are similarly debated in the literature. Thus if convergence is taking place in South Africa, it is not a simple function of modernisation, but rather of a much weaker and more nuanced variety. Indeed, societal pressures from changes in fertility, the spread of HIV/AIDS as well as changes in economic conditions are all predicted to impact upon household composition in South Africa.

[2] See Chamberlain and Van der Berg (2002) for a formal discussion on earnings and education in South Africa.

Chapter 3: Mapping changes in household composition in South Africa

This chapter investigates changes in household composition in South Africa from 1995 – 2006 using data from the October Household Survey (OHS) as well as the General Household Survey (GHS). Attention is first given to the way in which the data were collected as well as the compatibility of the surveys across time. The data are then analysed with respect to trends in household composition in South Africa from 1995 – 2006 as well as by race. Changes in household structure within South Africa remain complex reflecting the multiplicity of forces affecting household composition. Whilst there is a significant rise in the proportion of single person households, there is also a significant fall in the proportion of nuclear family households. This is alongside a rise in the proportion of some more non-standard forms of household composition, such as skip generation households and complex but related households.

3.1 Data Sources

In order to map changes in household composition in South Africa since the fall of Apartheid, two nationally representative surveys are drawn upon– namely, the October Household Survey (OHS) and the General Household Survey (GHS).

The OHS is an annual survey that sampled some 30,000 households during the period 1993 – 1999. However not all years sampled in the OHS are equally desirable in terms of drawing comparisons across time. For one, the OHS 1993 does not include the former TBVC (Transkei, Bophuthatswana, Ciskei and Venda) states and is therefore not strictly comparable with later years (which did include the TBVC states). Secondly, the OHS 1993 and OHS 1994 use an inferior sampling methodology compared to the remaining years due to the fact that Statistics South Africa increased the number of Enumerator Areas from 1,000 (i.e. 30 households per enumerator area) to 3,000 (i.e.10 households per enumerator area) in 1995 in order to reduce standard errors and thereby improve population estimates (Casale, 2003). Finally, the OHS 1996 and OHS 1998 are drawn from a smaller sample of 16,000 to 20,000 households due to financial and time pressures upon Statistics South Africa at that time (Casale, 2003). Therefore, for the best comparisons across time, this paper excludes the OHS 1993, OHS 1994, OHS 1996 and OHS 1998 and chooses to utilise the OHS for the remaining years only, namely, the OHS 1995, OHS 1997 and OHS 1999.

In 2000, the October Household Survey was replaced with the biannual Labour Force Survey (LFS). Unfortunately, in terms of measuring household composition, the LFS contains no question on the relationship of each household member to the household head and hence household structure cannot be determined in the LFS. Nevertheless in 2002, the General Household Survey (GHS) was introduced in addition to the LFS in order to collect more general information on South African households. The GHS does include a question on the relationship of each household member to the household head and thus can be used to estimate household structure. In this regard, data on household composition for the present analysis are drawn from the GHS 2002, 2004 and 2006.

Thus overall, data are compiled from six comparable surveys covering the period 1995 – 2006, all of which were administered by Statistics South Africa (South Africa's national statistics agency). For the earlier period, the OHS 1995, OHS 1997, and OHS 1999 are used and for the latter period, the GHS 2002, GHS 2004 and GHS 2006, are used.

However, given that sampling errors and variations across time can lead to spurious trends, it is necessary to discuss first any known biases within the data. In this regard, Wittenberg and Collinson (2007) note that the OHS 1995 under sampled migrant worker hostels. Such migrant workers would have been classified as single person households leading to an underrepresentation of single person households in the OHS 1995 and hence an automatic bias in the data towards detecting an increase in single person households when the OHS 1995 is used as the base year of comparison. As is shown below, the data do show a significant increase in the proportion of single person households over the period 1995 – 2006. Nonetheless this result is robust to the choice of base year. Given that known and unknown errors do occur in surveys, it is comforting to note that trends in household composition can be identified across numerous surveys to avoid any identification of spurious trends across time.

3.2 Relationship to Household Head

It has already been mentioned that a key criterion for data collection with regards to household composition is identifying different relationships within households. The OHS 1999, GHS 2002, GHS 2004, GHS 2006 all ask for the relationship of each household member to the household head in the identical manner. The surveys ask each household member the following question:

What is ……'s relationship to the head of the household? (3.1)

I.e. to the person in column 1

1 = *Mark the head/acting head*

2 = HUSBAND/WIFE/PARTNER

3 = SON/DAUGHTER/STEPCHILD/ADOPTED CHILD

4 = BROTHER/SISTER

5 = FATHER/MOTHER

6 = GRANDPARENT/GREAT GRANDPARENT

7 = GRANDCHILD/GREAT GRANDCHILD

8 = OTHER RELATIVE (E.G. IN-LAWS OR AUNT/UNCLE)

9 = NON-RELATED PERSONS

Two surveys which differ slightly in this regard are the OHS 1995 and OHS 1997. The OHS 1995 and OHS 1997 ask a very similar question to 3.1 above except that they omits the option 'great grandparent' and 'great grandchild' from choice 6 and 7 above. Thus one would expect both the OHS 1995 and OHS 1997 to classify some great grandparents and great grandchildren as option 8, 'other relatives' instead of options 6 or 7 as displayed for the rest of the surveys. This minor deviation would impact upon the identification of certain multi generation households.[1] However, not only are multi generation families a very small proportion of all household types (less than 0.5% of all households in any of the years in question) but identifying great grandparents and great grandchildren is necessary as an identifying criterion for only 5% of multi generation households.[2] The impact upon the results is thus likely to be negligible.

The OHS 1995 further differs from the other surveys used in this analysis in that it omits the additional option of 'or stepchild, or adopted child' from option 3 in 3.1 above. A priori, it is unclear as to where such a person should be placed; either in option 8 (as other relative) or perhaps option 9 (as son or daughter) in 3.1 above. In practice however, cultural norms perhaps have the greatest say as to how such a family member would be characterised. In this regard most cultures are not adept at recognising technical distinctions between family members. Whereas the term 'son' or 'daughter' may have a strictly biological interpretation (i.e. the biological son or daughter *only*), it is more likely that the term 'son' or 'daughter' would be interpreted more broadly and hence also include step-child or adopted child implicitly in this definition. The fact that the OHS 1995 fails to include explicit options for 'stepchild' and 'adopted child' is therefore unlikely to have any significant impact upon the results. Overall, despite the fact that there are slight discrepancies between the way in which data on household structure is collected in the OHS 1995 and OHS 1997 compared to the OHS 1999, GHS 2002, GHS 2004 and GHS 2006, this should have little effect upon the results.

[1] Multi generation households are defined as a head, parents, children, and grandchildren *or* a head, parents, grandparents and children. See section 3.3 below.

[2] This is based upon the OHS 1999, GHS 2002, GHS 2004 and GHS 2006 all of which do contain an option for great grandparent under the question relating to each household member's relationship to the household head.

3.3 Defining Family Types

Using a similar typology to Wittenberg and Collinson (2007), household types are identified according to the following forms of family organisation:

'Nuclear' type households:[3]

1) Single person household- defined as a household consisting of only one person.
2) Couple household- defined as a head plus spouse.
3) Nuclear family household- defined as a head, spouse with children.
4) Single parent household- defined as a head (with no spouse), with children.

The above forms of household organisation all form part of the lifecycle of a typical nuclear type family (c.f. Ziehl, 2001). At the beginning of the lifecycle of a nuclear family, a single person household is formed when an individual first leaves their parents home to start a new household. Following marriage by this individual, a couple household is then created. If the couple has any children, the household becomes a nuclear family household. However when the children grow up and eventually leave home to start their own single person households, the household reverts back to a couple household again. Finally a single person household will end the lifecycle for nuclear type households when one of the partners in the couple household dies. There are however certain variations to this standard pattern of nuclear family organisation. For example, single parent households (as well as single person households) may arise due to separation or divorce and are hence included in the above categorisation of nuclear forms of household organisation.

'Extended' type households:[4]

1) Three generation household- defined as a head, children, and grandchildren *or* head, parents and children *or* head, parents and grandparents.
2) Skip generation household- defined as a head and grandchildren/great-grandchildren *or* head and grandparents/great-grandparents.

[3] All household heads in nuclear household types are limited to one spouse only.

[4] While 'Nuclear' household types are strictly rigid and can have only the stipulated structure, 'extended' household types need only fulfil the base criterion (provided that there is nobody unrelated within the household). In other words, a three generation household need only have a head, children and grandchildren. If there are other related family members included in this household its status remains as three generation and does not change to complex but related. Multiple spouses are therefore also made allowance for. Keeping these definitions loose has no overall impact on the number of extended type households, however it does significantly reduce the number of households which fall into the residual category of 'complex but related' for extended household types.

3) Multi generation household- defined as a head, parents, children, and grandchildren *or* head, parents, grandparents and children.
4) Complex but related household- defined as a household which fits none of the above categories but in which everyone is related.

Whilst nuclear type households as defined above have a definite structure and lifecycle, extended type households are more difficult to categorise broadly. Nonetheless the general structure of extended type households involves more than simply the immediate family members (as is the case for nuclear type households). In this regard, three generation and multi generation households are those household types traditionally associated with extended type living. Skip generation households and complex but related households are more non-traditional variants of extended type living.

'Other' type households:

1) Child headed household- defined as a household consisting of only children (all members under 16 years old).
2) Siblings only household- defined as a household with only siblings.
3) Complex unrelated household- defined as a household where at least one member is unrelated.

None of the above 'other' household types can be categorised as either extended or nuclear. These households are however somewhat secondary in importance to nuclear and extended type households given that they comprise fewer than 5.5% of all household types in any of the years in question.

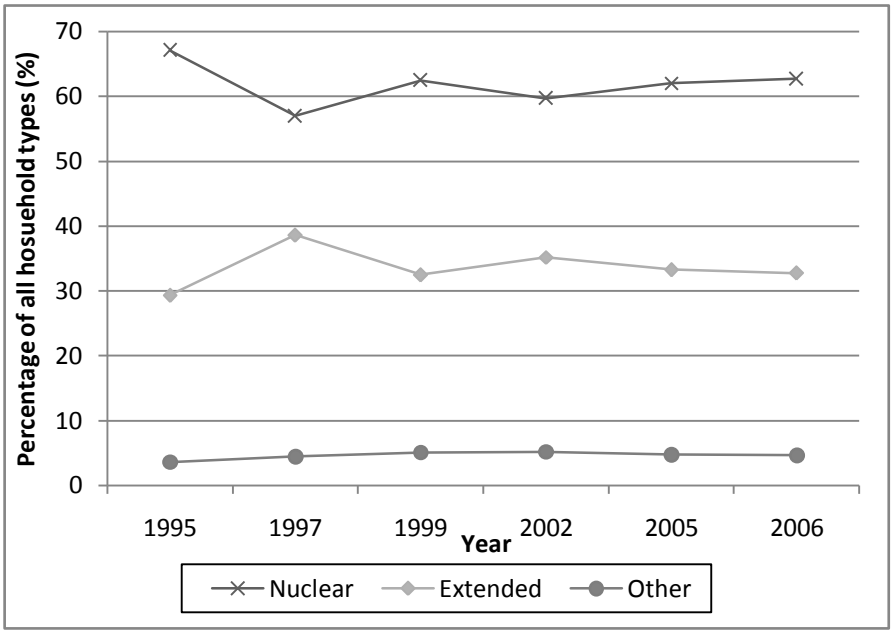
The three broad household type categories of 'nuclear', 'extended' and 'other' provide an effective manner in which general patterns of household organisation can be evaluated, specifically with regard to identifying patterns of convergence to a nuclear type. Nonetheless it is imperative to analyse changes in specific household forms alongside these broad categorisations, given that these broad classifications aggregate changes and hence present an oversimplified picture of changes in household composition.

3.4 Descriptive Statistics: Trends in Household Composition for 1995 – 2006

3.4.1 Changes in Broad Household Types

Figure 3.1 displays overall changes in household composition in South Africa for the period 1995 – 2006 using the three broad household type categories defined above. The figure clearly shows that the broad household composition category of 'nuclear' makes up the majority of all household types in South Africa throughout the period. In 2006 more than 62.68% of all households were nuclear in type as opposed to 32.7% of households which were extended in type. If one assumes that extended type households were the majority household type at some point in the distant past (this seems plausible given that extended type households are the traditional form of African living arrangement) this suggests that the forces of modernisation as discussed by Goode (1963) have already succeeded in transforming the majority of South African households into a nuclear type household structure.

Figure 3.1: Changes in household composition for broad household categories, 1995 – 2006



Source: Own estimates using OHS 1995, OHS 1997, OHS 1999, GHS 2002, GHS 2004, GHS 2006
Notes: See Appendix 'Table 1' for figures and statistical significance
The data are weighted

Nonetheless, despite such assumptions about convergence with respect to the distant past, the current trend in household composition for the period 1995 – 2006 in fact appears to be away from nuclear type households and towards an increase in the proportion of extended type households. Whereas the percentage of nuclear type households fell from 67.1% of all household types in 1995 to 62.7% of all household types in 2006, the percentage of extended type households rose from

29.3% of all household types in 1995 to 32.7% of all household types in 2006. These changes are all significant at the 95% level of confidence (Exact numbers and statistical significance for figure 3.1 are reported in table 1 of the Appendix). However as noted above, the base year for comparison, namely 1995, is problematic given that migrant hostels were under-sampled and hence single person households are underestimated in this year. Nonetheless, given that single person households fall under the broad household type category of 'nuclear', the year 1995 under-estimates the proportion of nuclear type households and hence only affects the degree of fall in the proportion of nuclear type households (and not the direction of the trend). Notwithstanding concerns with 1995 as the base year of comparison, the general conclusion remains unchanged.

The year 1997 also appears to be problematic given the untenable fall in nuclear type households to a period low of 56.97% of all household types in 1997 and the dramatic rise in extended type households to a period high of 38.59% of all household types in 1997. Although there is no formal reason as to why the year 1997 appears to be an outlier (at least for now), it seems unlikely that such a sizeable drop and rise of nuclear and extended type households respectively reflects true fluctuations in household composition. This highlights the value of estimating changes in household composition over a reasonable period of time using numerous surveys, as is the case for the present analysis.

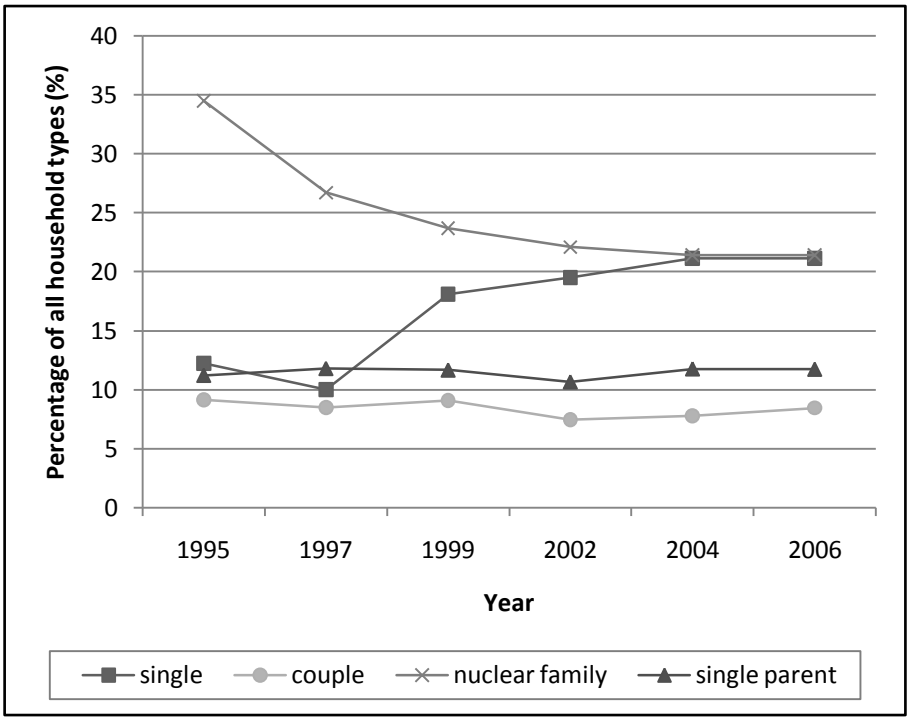
Overall, the majority of South African households are found to be of a nuclear type household composition for the period 1995 – 2006. However despite this majority, the trend in household composition is in fact away from nuclear type households and towards a rise in the proportion of extended type households. This is notwithstanding concerns with the data in 1995 and 1997.

3.4.2 Changes in Specific Household Types

Slight changes in broad household types mask more substantial changes in specific household forms of organisation underneath. Figure 3.2 displays the percentage of households which consist of specific household types under the broad household type category of nuclear. In this regard, the percentage of single parent households and couple households remain stable throughout the period at around 8.5% and 11.5% of all household types respectively. Nuclear family households however fall significantly from 34.5% of all household types in 1995 to 21.4% of all household types in 2006 at the 95% level of confidence. Furthermore, this trend is consistent for the whole period under consideration.

Whilst the percentage of nuclear family households falls from 34.49% in 1995 to 21.38% in 2006, the proportion of single person households rises significantly from 12.3% in 1995 to 21.1% in 2006. Although the percentage of single person households is arguably higher than the recorded 12.3% in 1995 (given the under-sampling of migrant hostels discussed earlier), the overall increase in the percentage of single person households between 1995 and 2006 is similarly demonstrated throughout the remaining years 1997 - 2006. Hence the increase in single person households evident for the period is robust to the choice of base year. Thus overall, whilst the broad household type category of nuclear showed a decline for the period as a whole, this masks very unique movements in specific household types underneath, namely a fall in the proportion of nuclear family households and a rise in the proportion of single person households.

Figure 3.2: Changes in household composition for nuclear household types, 1995 – 2006



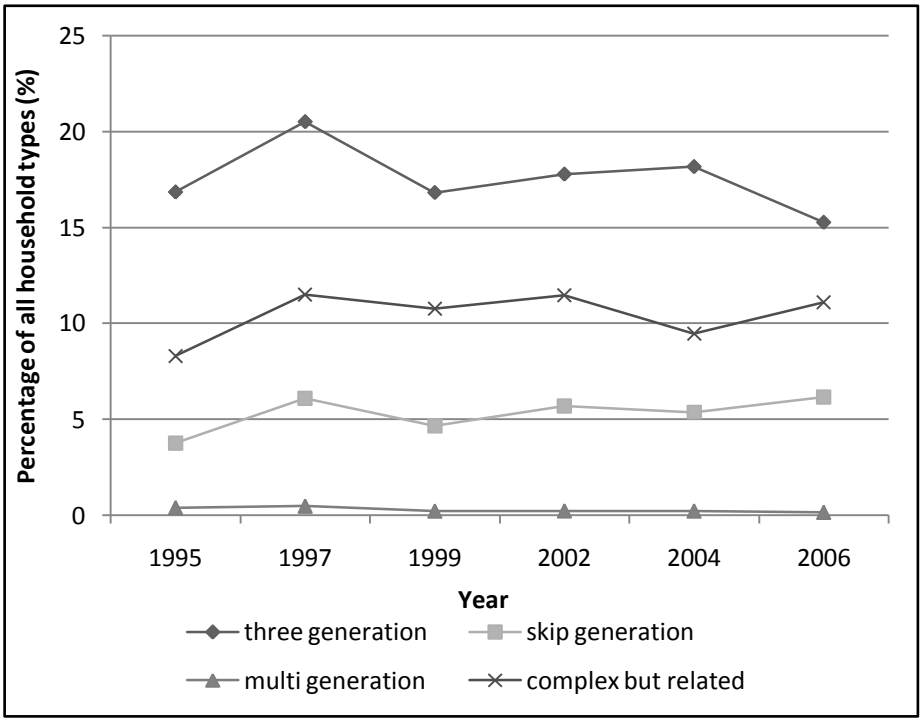
Source: Own estimates using OHS 1995, OHS 1997, OHS 1999, GHS 2002, GHS 2004, GHS 2006
Notes: See Appendix 'Table 2' for exact numbers and statistical significance; percentages sum to 100 for each year when combined with the remaining households types (shown in figures 3.3 & 3.4); the data are weighted

Turning to households which fall under the broad household category of extended, changes are less dramatic as can be seen from figure 3.3. As has already been mentioned, the respective peaks for all extended household types in the year 1997 seem questionable for such a short period of time. Nonetheless, ignoring the year 1997, certain trends are evident. More specifically there is a statistically significant rise in skip generation households from 3.7% of all household types in 1995 to

6.2% of all household types in 2006. Complex but related households also increase significantly from 8.3% of all household types in 1995 to 11.1% of all household types in 2006.

The trend for three generation households is less clear. Although the percentage of three generation households amongst all household types declines for the period as a whole, it initially rises from 16.9% of all household types in 1995 to 18.2% of all household types in 2004, and finally falls to 15.28% of all household types in 2006. These changes are statistically significant at the 95% level of confidence. Lastly, multi generation households are shown to experience a small by significant decline, from 0.4% of all household types in 1995 to 0.17% of all household types in 2006. Their low proportion of all household types however, makes this decrease largely insignificant for extended type households in general.

Figure 3.3: Changes in household composition for extended household types, 1995 – 2006



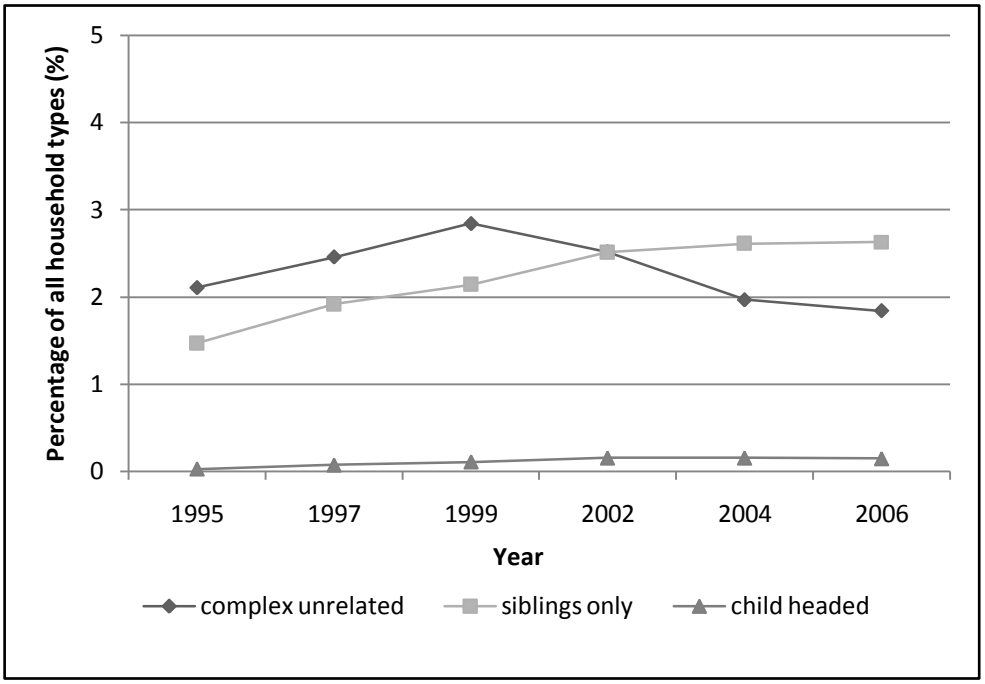
Source: Own estimates using OHS 1995, OHS 1997, OHS 1999, GHS 2002, GHS 2004, GHS 2006
Notes: See Appendix 'Table 3' for exact numbers and statistical significance; percentages sum to 100 for each year when combined with the remaining household types (shown in figures 3.2 & 3.4); the data are weighted

The overall picture of extended type households is that there is a fall in more traditional forms of extended type households (such as three generation and multi generation households) and a rise in more non-traditional forms of extended type household (such as skip generation and complex but related households). This trend may be indicative of the progression of the HIV/AIDS epidemic in South Africa. In this regard, AIDS ailment and mortality in households (most often of the middle aged

household members c.f. Bradshaw and Dorrington, 2005), necessitates household re-formation in order to care for sick as well as the orphaned children, resulting in more complex forms of living arrangement.

Figure 3.4 shows changes in household composition for households which are neither nuclear nor extended. Such 'other' households consist of a very small slice of all household types overall, collectively comprising no more than 5.2% of total households in any year. Disconcertingly, the proportion of child headed households climbs over the period, from 0.026% of all household types in 1995 to 0.144% of all household types in 2006. Although the sample size of child headed households is very small and therefore difficult to draw conclusions from, the percentage of child headed households is statistically different from zero at the 95% level of confidence and the recorded increase is also statistically significant.

Figure 3.4: Changes in household composition for other household types, 1995 – 2006



Source: Own estimates using OHS 1995, OHS 1997, OHS 1999, GHS 2002, GHS 2004, GHS 2006
Notes: See Appendix 'Table 4' for exact numbers and statistical significance; percentages sum to 100 for each year when combined with the remaining household types (shown in figures 3.1 & 3.2); the data are weighted

Overall, small changes in broad household type categories mask much more dramatic changes for specific household types within each broad household type category. This is particularly true of nuclear type households which experience a dramatic increase in single person households alongside a considerable fall in nuclear family households. Extended type households see a rise in non-traditional forms of extended household organisation such as skip generation households and

complex but related households, whilst a fall in traditional forms of household structure such as three generation and multi generation households. Hence trends in household composition of specific household types for the period 1995 – 2006, show that households are becoming more complex and less traditional both for nuclear and extended household types.

3.4.3 Taking a deeper look: Changes in household composition by race

Table 3.1 below shows the portion of households falling under each broad household category according to race for the years 1995 and 2006. Nuclear type households are the predominant form of household structure for all race groups in all years. Furthermore, there is a particularly high concentration of nuclear type households amongst Whites and Indians. Amongst Africans and Coloureds, there is a much higher percentage of extended type households compared to other race groups. The trend in household composition for race groups across time shows a fall in the percentage of nuclear type households between 1995 and 2006 (except for Indian households where the 1995 and 2006 estimates were statistically indistinguishable from each other at the 95% level of confidence).

Table 3.1: Broad household types by race, 1995 and 2006

	African		Coloured		White		Indian	
	1995	2006	1995	2006	1995	2006	1995	2006
Nuclear	61.46	58.41**	64.91	60.77*	90.83	87.84**	73.50	77.03
Extended	34.85	36.69**	30.54	33.65	6.24	9.44**	24.26	21.37
Other	3.69	4.90**	4.55	5.60	2.93	2.73	2.24	1.60
Total	100	100	100	100	100	100	100	100

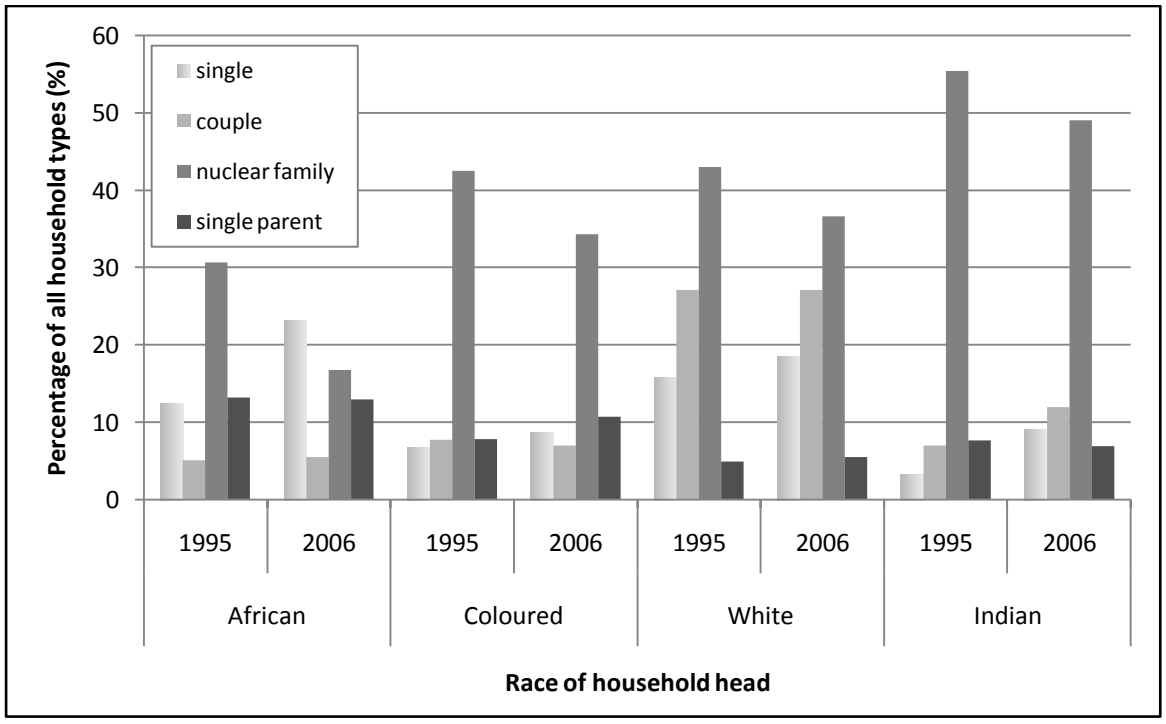
Source: Own estimates using OHS 1995, GHS 2006
Notes: ** statistically different from estimate in 1995 at 5% level of significance
* statistically different from estimate in 1995 at 10% level of significance
The data are weighted

Alongside a fall in nuclear type households is a statistically significant rise in extended type households (for Africans and Whites). In this regard the increase in the percentage of extended type households for Whites changed by more than 50%, from 6.24% of all White households in 1995 to 9.44% of households in 2006, whereas the increase in the percentage of extended type households for Africans was much lower, changing by 5%, from 34.85% of all African households in 1995 to 36.69% of all households in 2006. Whites therefore experienced the largest increase in extended type households for the period (although this is also partly due to the fact that this change is coming from a lower base). Given that Whites have the highest percentage of nuclear type households

amongst all race groups; this suggests that such sizable increases in extended type households for Whites is a seemingly recent phenomenon.

Figure 3.5 (and corresponding table 3.2) displays changes in household composition for households falling under the broad household category of nuclear according to race between the years 1995 and 2006. African households mirror trends for the population as a whole. In this regard, there is a substantial and significant rise in the percentage of single person households between 1995 and 2006 from 12.43% to 23.15% of all African households. Given specific concerns with the OHS 1995 regarding the under-sampling of single person households, it is comforting to note that this same increase is also detected when using the OHS 1997 or the OHS 1999 as the base year.

Figure 3.5: Nuclear household types by race, 1995 and 2006



Source: Own estimates using OHS 1995, GHS 2006
Notes: See table 3.2 below for exact numbers and statistical significance; percentages sum to 100 for each year when combined with the remaining household types; the data are weighted

Interestingly, amongst non-African race groups only Indians experience a statistically significant increase in the percentage of single person households over the period. Given that Indians households constitute less than 2.5% of the total households in the population in any year, this means that the increase in single person households for the population as a whole (discussed earlier) is being driven primarily by Africans. One potential source of single person households (amongst Africans in particular) is migrant workers. Hence this trend perhaps suggests that the

migratory system of labour, enforced by mobility controls during Apartheid, is not receding following the end of Apartheid.

African households further experience a significant fall in the percentage of nuclear family households, from 30.69% of all African households in 1995 to 16.79% of all African households in 2006. This decline represents a large 45% fall in the percentage of African nuclear family households. Thus whilst the rise in single person households over the period would increase the proportion of African households who fall under the broad household type category of nuclear, this increase is outweighed by the large decline in nuclear family households. Non-African race groups similarly see a significant fall in the percentage of nuclear family households at the 95% level of confidence (with the exception of Indians). However these declines are roughly only half of those for African nuclear family households.

Table 3.2: Changes in the percentages of specific household types by race, 1995 and 2006[5]

		African		Coloured		White		Indian	
		1995	2006	1995	2006	1995	2006	1995	2006
Nuclear	single	12.43	23.15*	6.77	8.69	15.79	18.59	3.36	9.13*
	couple	5.09	5.50	7.75	6.99	27.11	27.11	7.05	11.98
	nuclear family	30.69	16.79*	42.50	34.30*	42.95	36.58*	55.40	48.97
	single parent	13.25	12.97	7.89	10.78*	4.98	5.56	7.69	6.95
Extended	three generation	20.13	17.43*	18.65	16.21	2.71	2.80	13.75	7.75*
	skip generation	4.69	7.20*	2.45	5.32*	0.93	0.98	0.72	1.59
	multi generation	0.50	0.19*	0.41	0.09*	0.02	0.02	0.00	0.37*
	complex but related	9.52	11.86*	9.04	12.04*	2.58	5.64*	9.79	11.66
Other	siblings only	1.80	3.19*	0.79	0.52	0.52	0.93	0.87	0.09
	complex unrelated	1.86	1.54	3.76	5.07	2.41	1.73	1.38	1.51

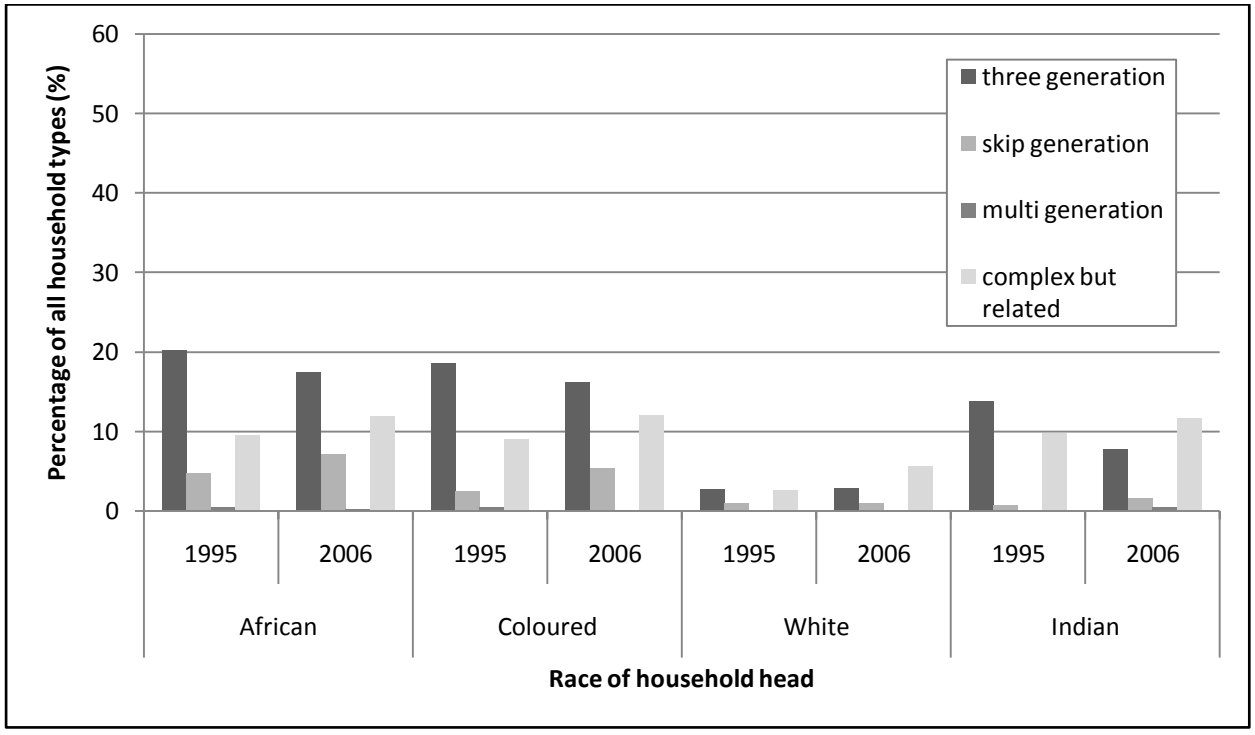
Source: Own estimates using OHS 1995, GHS 2006
Notes: * statistically different from estimate in 1995 at 5% level of significance
The data are weighted

Changes in household composition for households falling under the broad household category of extended according to race between the years 1995 and 2006 are detailed in figure 3.6 (with corresponding statistics in table 3.2). In general, changes seem to be less dramatic than those for nuclear type households however some noteworthy trends can be identified. Firstly, for Africans and Indians there is a fall in the percentage of three generation households at the 95% level of confidence, from 20.13% and 13.75% of African and Indian households respectively in 1995 to

[5] Child-headed households are excluded due to the fact that their sample size is too small to allow for a meaningful examination by race.

17.43% and 7.75% of African and Indian households respectively in 2006. Secondly, there is a significant fall in the proportion of multi generation households for Africans as well as for Coloureds between 1995 and 2006. These changes represent a decline in the proportion of standard forms of extended type households. Non-standard forms of extended type households however showed significant increases over the period. More specifically, there was a significant increase in the proportion of skip generation households for both Africans and Coloureds, as well as a significant increase in the proportion of complex but related households for Africans and Coloureds (as well as Whites).

Figure 3.6: Extended household types by race, 1995 and 2006



Source: Own estimates using OHS 1995, GHS 2006
Notes: See table 3.2 above for exact numbers and statistical significance; percentages sum to 100 for each year when combined with the remaining household types; the data are weighted

Overall, changes in household composition according to race between 1995 and 2006 reveal some interesting trends. For Africans, there is a huge rise in the proportion of single person households. However, this occurs alongside an even greater fall in the proportion of nuclear family households. Thus overall, the proportion of nuclear type households for Africans falls only slightly, masking much more specific changes in household composition underneath. Although non-Africans also see a fall in the proportion of nuclear family households, this decline is not as sizeable as compared to African households. Furthermore, non-Africans do not experience a statistically significant rise in single person households (with the exception of Indians, however they make up the smallest proportion of

non-African race groups and thus this increase is less significant). Hence, the rise in the proportion of single person households shown for the population as a whole seems to be driven primarily by Africans, suggesting that the migratory system of labour is not receding in the post-Apartheid period.

Changes in extended type households for all race groups are less dramatic than changes for nuclear type households. In this regard, African households experience a fall in the proportion of standard forms of extended family composition such as three generation and multi generation households, alongside a rise in the non-traditional and more complex forms of extended household structure such as skip generation households and complex but related households. For non-Africans, increases in extended type households are driven mainly by Coloureds who experience increases in skip generation and complex but related households. Whites also experience a significant increase in extended type households but this increase is driven exclusively by a rise in the proportion of White complex but related households.

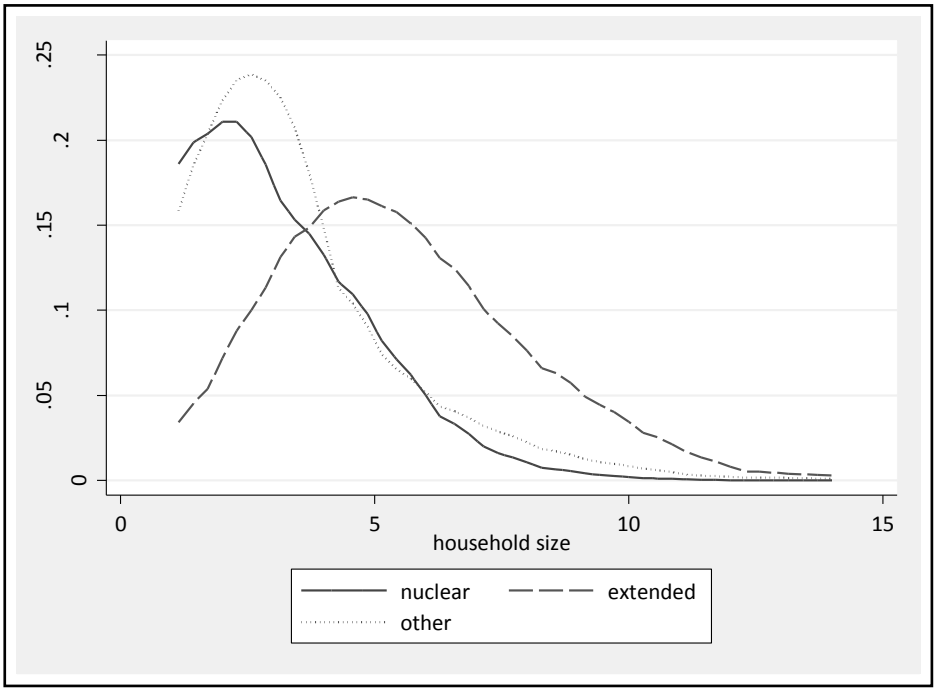
3.5 Household size and household composition

By definition household size and household composition are closely related. Within nuclear type households, single person households always have a household size of one, couple households always have a household size of two whilst nuclear family households have a minimum household size of three and single parent households have a minimum household size of two. Within extended type households, three generation households have a minimum household size of three, multi generation households have a minimum household size of four, skip generation households have a minimum household size of two and complex but related households have a minimum household size of two. It is therefore not surprising that household composition and household size are correlated.

Figure 3.7 displays the relationship between household size and household composition for broad household type categories in 2006 using an Epanechnikov kernel estimation. The figure clearly shows that extended type households have a household size distribution that lies to the right of those for both nuclear and other type households. Median household size for extended type households is 5 persons with a standard deviation of 2.42, compared to a median household size of 2 persons and a standard deviation of 1.73 for nuclear type households. Median household size for other type households is 3 persons with a standard deviation of 2. Hence extended type households contain more members as well as greater variance in household membership than nuclear type

households. This has significant implications for measuring the level of well-being in households of different types due to the potential for economies of scale in household consumption for larger households (discussed in Chapters 5 and 6).

Figure 3.7: Epanechnikov kernel estimation - Household size and broad household type



Source: Own estimates using GHS 2006
Notes: The data are weighted

Table 3.3 displays the relationship between mean household size and broad household composition across time (for the years 1995, 1999, 2002 and 2006). The table shows that mean household size has been declining steadily between 1995 and 2006 for all broad household types. Such declines are in line with recorded reductions in the population fertility rate as reported in the current literature (c.f.Zulu&Sibanda, 2005; Moultrie&Timaeus, 2003; Palamuleni et al, 2007). Examining changes in household size by specific household types in table 3.4 show the same trend. All specific household types saw a decline in their average number of members over the period, except for multi generation and child headed households which showed no statistically significant change between 1995 and 2006 at the 95% level of confidence (by definition, single person households and couple only households also remained constant over the period). Given that the population increased in size between 1995 and 2006, this implies that many new households were formed during the period.

Table 3.3: Broad household type and household size

	1995		1999		2002		2006	
	Mean	Std Error	Mean	Std Error	Mean	Std Error	Mean	Std Error
Nuclear	3.5191	0.0159	2.9683	0.0165	2.8049	0.0180	2.7028	0.0192
Extended	6.3676	0.0305	6.0736	0.0333	5.9910	0.0343	5.5188	0.0329
Other	4.0881	0.0843	3.8656	0.0695	3.6093	0.0785	3.3463	0.0696
Total	4.3746	0.0166	4.0224	0.0184	3.9667	0.0204	3.6534	0.0199

Source: Own estimates using OHS 1995, OHS 1999, GHS 2002, GHS 2006
Notes: The data are weighted

Table 3.4: Household type and household size

		1995		1999		2002		2006	
		Mean	Std Error	Mean	Std Error	Mean	Std Error	Mean	Std Error
Nuclear	single	1.0	n/a	1.0	n/a	1.0	n/a	1.0	n/a
	couple	2.0	n/a	2.0	n/a	2.0	n/a	2.0	n/a
	nuclear family	4.686	0.017	4.487	0.020	4.325	0.023	4.269	0.024
	single parent	3.920	0.032	3.688	0.032	3.521	0.035	3.422	0.033
Extended	three generation	7.083	0.038	7.076	0.047	7.022	0.048	6.515	0.045
	skip generation	5.025	0.076	4.710	0.074	4.859	0.071	4.474	0.060
	multi generation	8.050	0.248	8.845	0.435	7.907	0.432	8.387	0.437
	complex but related	5.439	0.054	5.036	0.046	4.911	0.048	4.683	0.049
Other	siblings only	2.868	0.074	2.907	0.057	2.717	0.055	2.623	0.050
	complex unrelated	4.963	0.122	4.634	0.108	4.572	0.151	4.470	0.138
	child headed	2.151	0.394	2.621	0.295	2.413	0.199	2.226	0.274

Source: Own estimates using OHS 1995, OHS 1999, GHS 2002, GHS 2006
Notes: The data are weighted

3.6 Conclusion

In contention with convergence theory, changes in household composition in South Africa over the period 1995 – 2006 show a decline in the proportion of nuclear type households and a rise in the proportion of extended type households (although nuclear type households remain the predominant form of household structure). Closer examination of specific household types within broad household categories however, reveal much heterogeneity between household types. Amongst nuclear type households there is a substantial rise in the proportion of single person households. However this substantial increase in the proportion of single person households is matched by an even greater fall in the proportion of nuclear family households. Amongst extended type households, non-standard forms of household composition (such as skip generation and complex but related households) appear to be rising whilst standard forms of extended type households (such as three generation and multi generation households) appear to be falling. By race,

changes in household composition for the population as a whole mirror changes in household composition for Africans specifically. Notably, increases in the proportions of single person households are only significant for Africans and Indians, whilst decreases in the proportions of nuclear family households are evident for all race groups (with the exception of Indians). Increases in skip generation households are evident for Africans and Coloureds, whilst Africans, Coloureds and Whites experience significant increases in complex but related households.

Heterogeneity amongst household types is also apparent in differences in household size. Extended type households have larger households as well as displaying greater variance in household size than nuclear type households. However the trend in household size is consistent across all household types– namely, average household size over the period declines significantly for all household types (except for multi generation and child headed households which show no significant change). Overall, household composition in South Africa for the period 1995 – 2006 is seen to undergo substantial changes. However these changes are not uniform within broad household types, nor are they toward nuclear forms of household composition (as convergence theory supposes), but rather show a rise in more non-standard forms of household composition. Furthermore, households reveal considerable heterogeneity when examined across races.

Chapter 4: A univariate and multivariate investigation of household composition and household demographics

Chapter 3 examined trends in household composition within South Africa for the period 1995 – 2006. This chapter seeks to explore differences in the demographic makeup of households across household types. Firstly, a univariate analysis of the key demographic features of household heads from different household types is given. More specifically, the relationship between household composition and race, age, gender, labour force attachment, household income and geographic location is discussed. Secondly, a multivariate analysis of the demographic characteristics across household types is given. This is undertaken in two stages– firstly, at the broad household type level, a probit is estimated which captures the probability of being a head from an extended type household as opposed to a nuclear type household. Secondly, at the specific household type level, a multinomial probit is estimated which captures the probability of being a head from among specific household types.

4.1 Descriptive Statistics of Household Types: A Univariate Analysis

An analysis of the trends in household composition between 1995 and 2006 (presented in Chapter 3) revealed that general movements in broad household type categories mask more diverse changes for specific household types within these broad household types. Households of different types revealed heterogeneity both across race groups as well as in terms of their household size. Such distinctness between household types deserves further exploration. In this regard, a univariate analysis is undertaken to detail the relationship between household structure and certain key demographics for the period 1995 – 2006.

4.1.1 Household Headship as a Proxy for the Status of the Household in General

Given that households have no gender, age, race or income (unless income is aggregated), a suitable representative of the household is needed in order to make demographic comparisons possible between households. The household head is often employed as this representative for the household in general. However it must first be established that the household head serves as a suitable proxy in this regard.

Ziehl (2001) points out that identification of the household head by the respondent is essentially a subjective process (discussed in Chapter 2). For example, the household head could be recognised as the owner of the dwelling, the highest income earner, or simply the oldest male. Thus there may be certain inconsistencies when comparing household heads between households, given that household heads may have been identified using different criteria.

Table 4.1: Rankings of monthly income from household heads, 2006

Rank	Obs	Percent (%)	Cumulative %
1	20,929	74.74	74.74
2	3,561	12.72	87.46
3	1,539	5.50	92.96
4	747	2.67	95.63
5	330	1.18	96.81
6	125	0.45	97.26
7	46	0.16	97.42
8	14	0.05	97.47
9	6	0.02	97.49
10	1	0.00	97.49
11	4	0.01	97.5
12	2	0.01	97.51
13	0	0.00	97.51
missing	698	2.49	100.00
Total	28,002	100.00	

Source: Own estimates using GHS 2006
The data are un-weighted

Table 4.1 examines the relationship between the income of the household head as compared to the incomes of other members (where total income is calculated as the sum of monthly earned income from employment as well as monthly unearned income from social grants). Rankings in the table represent the order of income earners within the household from highest to lowest. From the rankings in the table it is apparent that approximately 75% of household heads possess the highest monthly income within their respective households (i.e. the top ranking). Furthermore, 87.46% of household heads are within the top two incomes of all individuals within their household and 92.96% of household heads are within the top three incomes of all individuals within their household. This suggests that household heads are mostly identified as being the top income earner (or at least one of the highest income earners in the household) in the household. Furthermore, Table 4.2 displays the percentage of household heads who are the eldest in their respective households. In this regard, 91.71% of household heads are the eldest member in their household.

Table 4.2 Household headship and age, 2006

Household head is eldest?	Obs	Percent (%)
Yes	25,682	91.71
No	2,320	8.29
Total	28,002	100.00

Source: Own estimates using GHS 2006
The data are un-weighted

Therefore overall, despite concerns raised by Ziehl (2001), closer examination of the household head variable from the General Household Survey 2006 suggests that identification of the household head seems broadly consistent between households. In this regard the vast majority of household heads are identified as the highest income earners as well as the eldest household member. The household head is therefore drawn upon as a proxy for the status of the household more generally in the descriptive statistics that follow.

4.1.2 Household Structure: Age and Gender

Figure 4.1 below shows an Epanechnikov kernel function for the age of the household head by broad household type in 2006. The three broad household type categories show distinctly different distributions for the age of the household head. Namely, household heads from extended type households are oldest, followed by nuclear type households and lastly by other type households. The distribution for extended type households is also more widely spread than for nuclear and other type households.

Table 4.3 examines the distribution of the age of household heads across specific household types between 1995 and 2006. Looking at nuclear type households in particular, single person household heads appear to be the youngest whereas heads from couple households appear to be the oldest. The trend across time reveals that nuclear type households generally experience a slight decrease in their median age of household head (with the exception of nuclear family households which increase their median age of household head by one year).

Figure 4.1: Epanechnikov kernel function– Age and household headship by broad household type

Source: Own estimates using GHS 2006
Notes: The data are weighted

In comparison to nuclear type households, all extended type households have substantially older household heads (with the exception of complex but related households who have a median age for household heads of 37 years in 2006). Skip generation households contain the oldest household heads of all household types with a median age of 66 in 2006 (whilst child headed households have the youngest heads). This is unsurprising given that skip generation households are characterised by the elderly caring for their grandchildren. The trend across time for extended type households is a slight increase in the median age of the household head (with the exception of complex but related households which decreased by one year). Given a median age of close to 60 years for the majority of extended type households, it is likely that a large proportion of extended type households have access to the old age pension as a stable form of income.

Overall, figure 4.1 and table 4.3 show that the age distribution of household heads is distinct across broad household types (where extended type household heads are older than nuclear type household heads) as well as within broad household types (where single person household heads are younger than heads in other nuclear type households and complex but related household heads are younger than heads in other extended type households). This helps illustrate the heterogeneity between households of different compositions.

Table 4.3: Median age and standard deviation of household head by household type, 1995 and 2006

		1995		2006	
Age of household head		median	std dev	median	std dev
Nuclear	single	38	16.67	34	15.48
	couple	49	16.94	45	16.30
	nuclear family	41	11.04	42	10.76
	single parent	43	12.60	42	12.63
Extended	three generation	57	12.90	58	12.29
	skip generation	63	15.61	66	12.38
	multi generation	51	11.09	53	11.25
	complex but related	38	12.88	37	13.24
Other	siblings only	30	13.16	27	10.82
	complex unrelated	41	14.96	41	15.50
	child headed	15	0.30	15	1.89

Source: Own estimates using OHS1995, GHS 2006
Notes: The data are weighted

Table 4.4 displays the relationship between household structure and gender for 1995 and 2006. Amongst nuclear type households, the percentage of male-headed households is significantly greater than amongst extended type households; namely, 76.7% of nuclear type households compared to 53.12% of extended type households were male-headed in 1995. Furthermore, the proportion of male-headed households is falling over the period for both nuclear and extended type households, indicating a rise in female-headed households in general (other type households do not experience a statistically significant change in the proportion of male-headed households at the 95% level of confidence).

Within these broad household type categories is considerable variation in the percentage of male-headed households between specific household types. This is particularly true for nuclear type households where over 90% of nuclear family households and couple households are male-headed in 2006 while as little 13% of single parent households are male-headed in 2006. Single person households experienced a statistically significant increase in the proportion of male-headed households between 1995 and 2006, whereas couple households experienced a statistically significant decrease in the proportion of male-headed households. Whilst nuclear households tend to be located at the two extremes of the distribution in terms of the proportion of male and female-headed households, extended type households are located around the half way point. Amongst extended type households in 1995, skip generation households are the only household type to have a majority of female-headed households of 54.33%. However by 2006, statistically significant increases in the proportion of female-headed households by three generation, skip generation and

complex but related households, mean that three generation and skip generation households both have a majority of household heads who are female in 2006 (this is followed closely by complex but related households who have 46.17% of households with female heads in 2006).

Table 4.4: Gender of the household head by household type, 1995 and 2006

% of households which are male- and female-headed by year	1995			2006		
	Male	Female	Std Error	Male	Female	Std Error
Nuclear Type	76.7	23.3	0.3362	72.61*	27.39*	0.4891
single	68.11	31.89	0.8943	73.54*	26.46*	0.8671
couple	95.91	4.094	0.425	92.52*	7.477*	0.8708
nuclear family	96	3.997	0.2207	96.54	3.463	0.344
single parent	11.14	88.86	0.6004	12.97	87.03	0.8548
Extended Type	53.12	46.88	0.5882	42.72*	57.28*	0.7013
three generation	50.07	49.93	0.7696	38.81*	61.19*	0.99
skip generation	45.67	54.33	1.613	32.18*	67.82*	1.371
multi generation	66.07	33.93	4.724	50.61	49.39	7.627
complex but related	62.04	37.96	1.098	53.83*	46.17*	1.26
Other Type	66.41	33.59	1.613	68.90	31.10	1.795
siblings only	60.61	39.39	2.659	73.16*	26.84*	2.133
complex unrelated	70.84	29.16	1.999	63.55	36.45	3.166
child headed	35.15	64.85	21.93	59.43	40.57	8.966
Total	69.42	30.58	0.2975	62.66*	37.34*	0.4165

Source: Own estimates using OHS1995, GHS 2006
Notes: The data are weighted; the row percentages for each year and by household type sum to 100%
*statistically significantly different from 1995 estimate at the 95% level of confidence

The fact that the above extended type households (as well as single parent households amongst nuclear type households) contain such a high proportion of female-headed households is line with the nuptiality trend in South Africa of low marriage rates as well as late marriages independent of child-bearing, specifically amongst African households (c.f. Kalule-Sabiti et al, 2007). In this regard, it is common-place for households to consist of unmarried mothers, unmarried daughters and their daughters' children. Furthermore, such high proportions of female-headed households are also caused by the long-lasting effects of the Apartheid migratory labour system which forced men away from their families and hence increased the proportion of (de facto) female-headed households. It is also interesting to note that this proportion is generally increasing.

4.1.3 Household Structure and Labour Force Attachment

Table 4.5 shows the labour force attachment of household heads from different household compositions in 1995 and 2006. In this regard a household head can be classified as economically

inactive, employed or unemployed (using the expanded definition of unemployment). Extended type households have more than double the percentage of household heads who are economically inactive compared to nuclear type households in 1995. This difference is perhaps due to the fact that close on half of extended type household heads are close to the age of 60 years (see above) and therefore are also close to retirement age. Furthermore, the differential between the percentage of household heads who are economically inactive in extended versus nuclear type households increases even further in 2006. More specifically, the percentage of household heads who are in the labour force amongst nuclear type households increases between 1995 and 2006, whilst the percentage of household heads in the labour force amongst extended type households decreases between 1995 and 2006.

Table 4.5: Labour force attachment by household type, 1995 and 2006

% distribution of household heads by labour force attachment	1995			2006		
	Inactive	**Employed**	**Unemployed**	**Inactive**	**Employed**	**Unemployed**
Nuclear	20.88 (0.317)	71.66 (0.357)	7.465 (0.211)	18.89* (0.431)	66.95* (0.539)	14.15* (0.402)
single	22.73 (0.780)	72.9 (0.840)	4.374 (0.395)	19.52* (0.786)	67.05* (0.984)	13.43* (0.775)
couple	31.28 (0.974)	64.76 (1.019)	3.964 (0.460)	25.4* (1.446)	67.54 (1.535)	7.06* (0.742)
nuclear family	12.1 (0.351)	81.33 (0.427)	6.563 (0.277)	10.41** (0.562)	77.97* (0.789)	11.62* (0.608)
single parent	37.37 (0.922)	46.18 (0.955)	16.46 (0.709)	28.57* (1.035)	46.26 (1.180)	25.18* (1.013)
Extended	46.79 (0.587)	43.81 (0.591)	9.403 (0.358)	49.35 (0.706)*	37.29* (0.706)	13.36* (0.457)
three generation	54.11 (0.771)	38.37 (0.756)	7.513 (0.428)	59.63* (0.998)	30.43* (0.936)	9.936** (0.592)
skip generation	67.34 (1.573)	26.77 (1.496)	5.888 (0.820)	76.01* (1.467)	18.58* (1.408)	5.404 (0.664)
multi generation	38.41 (4.991)	46.7 (5.148)	14.89 (3.467)	32.42 (6.913)	45.9 (7.666)	21.68 (6.404)
complex but related	23.08 (0.937)	62.36 (1.101)	14.56 (0.811)	20.72 (0.923)	56.93* (1.224)	22.35* (0.983)
Other	28.04 (1.546)	62.82 (1.680)	9.144 (0.966)	27.16 (1.658)	53.81* (2.029)	19.03* (1.547)
siblings only	32.23 (2.559)	53.19 (2.781)	14.58 (1.891)	22.28* (1.898)	52.57 (2.670)	25.15* (2.316)
complex unrelated	24.32 (1.885)	70.22 (2.021)	5.455 (0.958)	28.83 (2.874)	59.39 (3.195)	11.78* (1.828)
child headed	100.00 (n/a)	0.00 (n/a)	0.00 (n/a)	94.65 (3.099)	5.351 (3.099)	0.00 (n/a)
Total	28.73 (0.288)	63.18 (0.312)	8.094 (0.180)	29.23 (0.383)	56.65* (0.435)	14.12* (0.302)

Source: Own estimates using OHS1995, GHS 2006

Notes: *statistically significantly different from 1995 estimate at the 95% level of confidence

**statistically significantly different from 1995 estimate at the 90% level of confidence; standard errors in parentheses; the row percentages for each year and by household type sum to 100%; the data are weighted

There is a general rise and fall in the proportion of household heads who are unemployed and employed respectively amongst all broad household types. In terms of the unemployment rate specifically,[1] the rate of unemployment rises from 9.43% in 1995 to 17.45% in 2006 for heads in

[1] The unemployment rate is calculated as: (searching and non-searching unemployed)/(employed + searching and non-searching unemployed) * 100

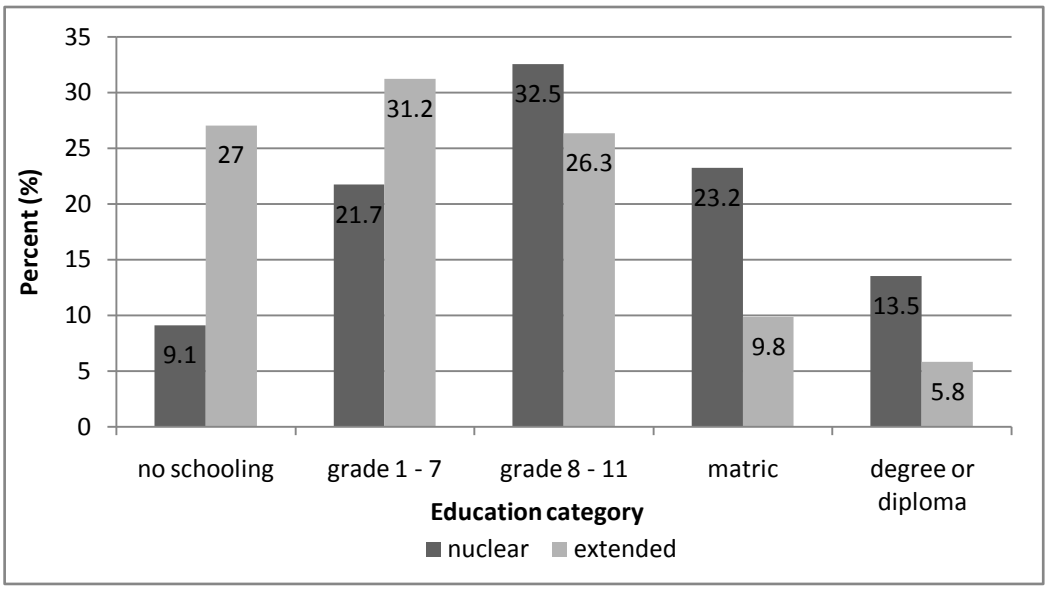
nuclear type households (an increase of 85%) and from 17.67% in 1995 to 26.38% in 2006 for heads in extended type households (an increase of 49%).

Examining specific household types within broad household type categories shows that the proportion of household heads who are unemployed increases significantly for all household types between 1995 and 2006 at the 95% level of confidence– with the exception of skip generation and multi generation households, which did not experience a statistically significant change at the 95% level of confidence as well as three generation households which only experienced a statistically significant increase at the 90% level of confidence. However, where nuclear type households experienced this increase along with an increase in their labour force participation rate– implying higher unemployment in the face of an increased proportion of individuals competing for jobs; extended type households experienced this increase alongside a decrease in their labour force participation rate– implying higher unemployment in the face of a lower proportion of individuals competing for jobs.

4.1.4 Household Structure and Education

Given that extended type household heads have a higher unemployment rate than nuclear type household heads and that the unemployment rate for nuclear and extended type household heads rose between 1995 and 2006, it may prove insightful to examine education levels of household heads from different household types and how these have changed over the period. Figure 4.2 below shows the relationship between household structure and the education level of the household head in 2006. Household heads in nuclear type households have significantly higher levels of education than household heads in extended type households. This may help explain the fact that extended type households have a higher rate of unemployment than nuclear type households in 2006 given the relationship between education and employment (c.f. Boehm, 2000). Higher education levels are also a correlate of modernisation. In this regard, the fact that nuclear type household heads are more educated than extended type household heads is in agreement with the predictions of convergence theory.

Figure 4.2: Education level of household head by broad household type, 2006



Source: Own estimates using GHS 2006
Notes: See table 4.7 for numbers and standard errors
The data are weighted

Table 4.6 examines the relationship between the education level of the household head and household structure for each specific household type in 2006. The table shows that there are considerable differences in the educational levels of household heads within broad household type categories. Most noteworthy are: single parent household heads (and to a lesser extent single person household heads), which are significantly less educated than the remaining nuclear type household heads; complex but related household heads, which are significantly more educated than the remaining extended type household heads; and complex unrelated household heads which are significantly more educated than the remaining 'other' type household heads.

Changes in educational levels of broad household types between 1995 and 2006 are shown in table 4.7. The table depicts a significant decline in the proportion of household heads with no schooling for both nuclear and extended type households. This is accompanied by a significant rise in the proportion of nuclear and extended type household heads with a matric education. Furthermore, nuclear type household heads experience a fall in the proportion of household heads with primary school education significant at the 95% level of confidence, and a slight increase in the proportion of household heads with secondary school education (but less than matric), significant at the 90% level of confidence.

Table 4.6: Education level of household head by household type, 2006

	% distribution of household heads by education	**No schooling**	**Grade 1 - 7**	**Grade 8 - 11**	**Matric**	**Degree or diploma**
Nuclear	single	9.40 (0.507)	22.60 (0.818)	33.96 (1.045)	22.96 (0.934)	10.89 (0.682)
	couple	7.26 (0.667)	14.58 (1.026)	29.03 (1.460)	27.87 (1.54)	20.89 (1.543)
	nuclear family	6.24 (0.371)	20.61 (0.787)	31.50 (0.933)	25.94 (0.941)	14.81 (0.790)
	single parent	14.72 (0.757)	26.52 (0.97)	33.25 (1.121)	14.79 (0.894)	10.00 (0.829)
Extended	three generation	33.94 (0.956)	36.51 (0.974)	21.06 (0.872)	4.61 (0.438)	2.71 (0.356)
	skip generation	42.07 (1.448)	33.50 (1.369)	17.49 (1.547)	3.86 (0.660)	2.29 (0.501)
	multi generation	30.51 (6.741)	45.52 (7.534)	10.79 (5.580)	5.23 (2.655)	7.95 (5.776)
	complex but related	8.24 (0.583)	21.77 (0.988)	37.88 (1.235)	20.04 (1.029)	11.77 (0.984)
Other	siblings only	3.86 (0.882)	15.58 (1.920)	47.79 (2.682)	26.36 (2.588)	6.32 (1.306)
	complex unrelated	13.13 (2.922)	17.49 (2.168)	27.95 (2.847)	23.37 (2.572)	17.39 (3.053)
	child headed	2.21 (2.199)	68.71 (8.467)	29.08 (8.346)	0.00	0.00

Source: Own estimates using GHS 2006
Notes: Standard errors in parentheses; the row percentages by household type sum to 100%
The data are weighted

A comparison of specific household types between 1995 and 2006 (see Appendix, Table 7) shows that amongst nuclear type households, single parent households experience a particularly large decrease in the proportion of household heads possessing no schooling, from 24.71% in 1995 to 14.83% in 2006, followed by a large increase in the proportion of household heads with a matric education, from 7.3% in 1995 to 14.9% in 2006. This trend is mirrored by the remaining nuclear household types with the exception of couple only households which did not experience a statistically significant change between 1995 and 2006 at the 95% level of confidence. Amongst extended type households, changes in educational levels of heads are driven exclusively by changes in complex but related households which experienced a decline in the proportion of household heads with no schooling and primary schooling, and a rise in the proportion of household heads with a matric education. There are no statistically significant changes in any of the educational categories between 1995 and 2006 for three generation, skip generation and multi generation households. Hence overall, whilst it appears that the majority of nuclear type households are becoming more educated across time, the majority of extended type households have not changed their educational levels significantly between 1995 and 2006.

Table 4.7: Education level of household head by broad household type, 1995 and 2006

	% distribution of household heads by education	**Nuclear**	**Extended**	**Other**	**Total**
1995	no schooling	13.60 (0.268)	29.18 (0.529)	9.13 (0.935)	17.99 (0.244)
	grade 1 - 7	25.50 (0.351)	31.89 (0.545)	24.39 (1.494)	27.33 (0.290)
	grade 8 - 11	30.85 (0.383)	26.24 (0.537)	32.42 (1.674)	29.56 (0.308)
	matric	17.09 (0.315)	7.02 (0.319)	21.27 (1.532)	14.30 (0.240)
	degree or diploma	12.97 (0.274)	5.66 (0.289)	12.80 (1.199)	10.83 (0.208)
	Total	100	100	100	100
2006	no schooling	9.08* (0.275)	26.95* (0.592)	7.53 (0.275)	14.84* (0.275)
	grade 1 - 7	21.69* (0.451)	31.24 (0.636)	18.06* (1.460)	24.64* (0.360)
	grade 8 - 11	32.51** (0.559)	26.25 (0.660)	39.42** (1.971)	30.78 (0.421)
	matric	23.24* (0.528)	9.79* (0.440)	24.42 (1.819)	18.90* (0.377)
	degree or diploma	13.48 (0.446)	5.78 (0.401)	10.57 (1.481)	10.83 (0.318)
	Total	100	100	100	100

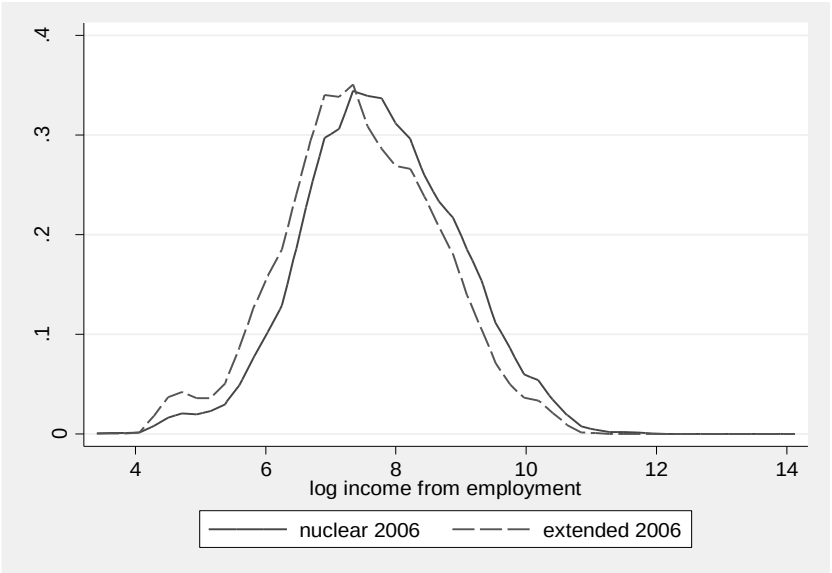
Source: Own estimates using OHS 1995, GHS 2006

Notes: *statistically significantly different from 1995 estimate at the 95% level of confidence; **statistically significantly different from 1995 estimate at the 90% level of confidence; standard errors in parenthesis; data are weighted

4.1.5 Household Structure and Income of the Household Head

Education is a key determinant of earnings (c.f. Chamberlain & Van der Berg, 2002) therefore differences in educational attainment across heads would be expected to translate into differences in earned income. It must be noted however that incomes from *employment* excludes those household heads who are either unemployed or not in the workforce. The comparison that follows is therefore specifically of earnings for employed household heads across household types.

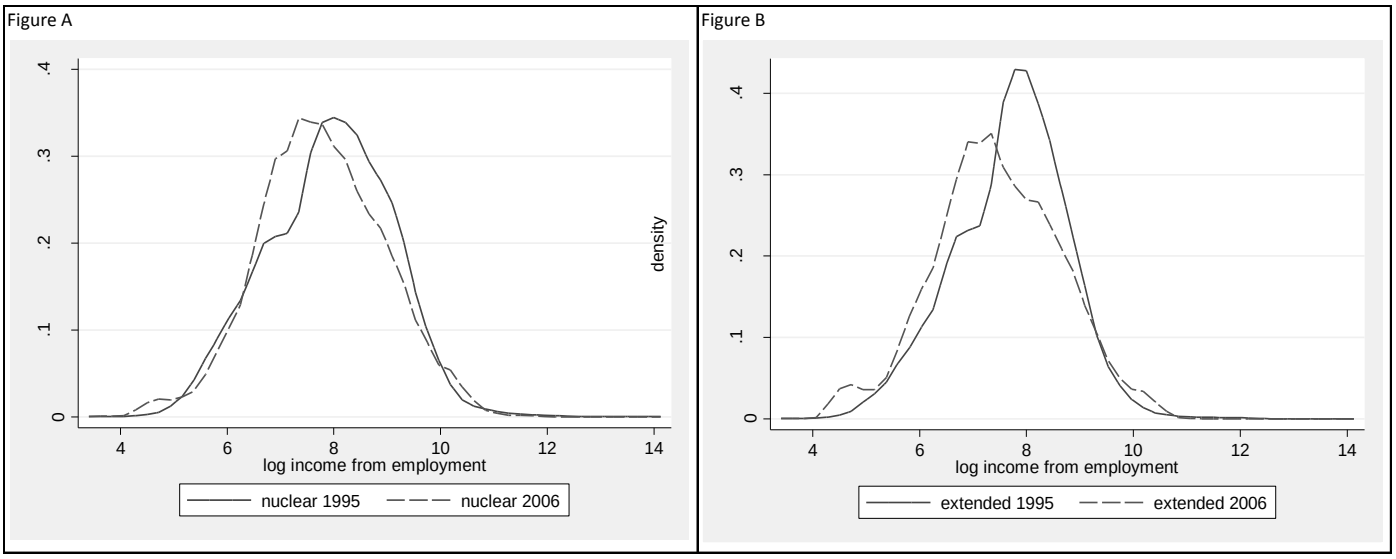
Figure 4.3: Epanechnikov kernel estimation- Employed head's income by broad household type,2006



Source: Own estimates using GHS 2006; Notes: The data are weighted

Figure 4.3 shows the relationship between the natural log of monthly earned income from employment for household heads by broad household type in 2006 using an Epanechnikov kernel density function. The distribution of log earned income for nuclear type households indeed lies to the right of the distribution for extended type households. Median monthly log income for employed household heads from nuclear type households is 7.68 (R 2,174 per month in constant 2006 prices) whereas median monthly log income for employed household heads from extended type households is 7.44 (R 1,696 per month in constant 2006 prices). One can therefore conclude that employed household heads from nuclear type households do earn higher incomes than employed household heads from extended type households. This provides some measure of support for convergence theory– at least in terms of the predictions of convergence theory. Namely, that households with higher income from employment (a correlate of modernisation) are also more likely to be nuclear in household structure.

Figure 4.4: Epanechnikov kernel function– Employed household head's monthly income and broad household structure between 1995 and 2006



Source: Own estimates using GHS 2006
Notes: The data are weighted; constant 2006 prices

Figure 4.4 again uses an Epanechnikov kernel function to depict how employed household heads' incomes are changing over time (in constant 2006 prices).[2] Figure A shows that income levels for nuclear type heads are higher in 1995 compared to 2006. The same is true of extended type household heads as shown in figure B. More specifically, median monthly income for nuclear type household heads falls from R 2,886 in 1995 to R 2,174 in 2006 (a decline of approximately 25%) whilst median monthly income for extended type household heads falls from R 2,405 in 1995 to R

[2] Inflation between 1995 and 2006 is adjusted for using the Consumer Price Index (KBP7032J) as available from the South African Reserve Bank.

1,696 in 2006 (a decline of approximately 30%). Hence the income differential between employed household heads from nuclear and extended type households widens fractionally between 1995 and 2006. Overall, both nuclear and extended type households are worse off in terms of their household heads' income between 1995 and 2006.

Table 4.8: Mean and median monthly income for employed household heads by household type, 1995 and 2006

Employed household heads earnings from employment	1995					2006				
	Mean		Median		Std dev	Mean		Median		Std dev
	ln	Rands	ln	Rands	ln	ln	Rands	ln	Rands	ln
Nuclear	7.918	2747	7.968	2886	1.161	7.765	2356	7.684	2174	1.160
single	7.538	1877	7.533	1868	1.007	7.490	1789	7.496	1800	1.014
couple	8.131	3399	8.299	4022	1.230	8.034	3085	8.006	3000	1.159
nuclear family	8.073	3207	8.138	3422	1.153	8.081	3231	8.021	3044	1.125
single parent	7.517	1840	7.618	2035	1.112	7.284	1458	7.173	1304	1.278
Extended	7.701	2210	7.785	2405	1.033	7.454	1726	7.436	1696	1.174
three generation	7.625	2049	7.705	2220	1.044	7.283	1455	7.244	1400	1.179
skip generation	7.708	2226	7.705	2220	1.124	7.140	1262	6.991	1087	1.149
multi generation	7.761	2346	8.008	3006	0.998	7.582	1962	7.173	1304	1.423
complex but related	7.791	2418	7.859	2590	0.995	7.627	2052	7.601	2000	1.141
Other	7.891	2673	7.961	2867	0.979	7.508	1822	7.496	1800	1.004
siblings only	7.658	2118	7.772	2373	0.964	7.365	1579	7.461	1739	0.955
complex unrelated	8.017	3034	8.081	3232	0.964	7.712	2234	7.601	2000	1.027
Total	7.873	2625	7.928	2775	1.133	7.687	2180	7.601	2000	1.164

Source: Own estimates using OHS 1995, GHS 2006
Notes: The row percentages for each year and by household type sum to 100%
The data are un-weighted; constant 2006 prices

Table 4.8 displays mean and median monthly income for employed household heads across all household types between 1995 and 2006 (in constant 2006 prices). Looking at the distribution of monthly income in 2006, couple household heads and nuclear family household heads have the highest median monthly income from employment of any household type, both exceeding R 3000 per month. This contrasts with single person household heads and contrasts even more starkly with single parent household heads which have much lower median monthly incomes from employment of R 1800 and R 1304 respectively. Amongst extended type household heads, skip generation household heads have the lowest median monthly income from employment of R 1087 per month, whilst complex but related household heads have a much higher median monthly income from employment of R 2000 per month. Similarly, amongst other type household heads, complex

unrelated household heads have a relatively higher median income from employment of R 2000 per month compared with siblings only household heads.

Comparing median monthly income from employment of employed household heads across time shows that heads from all household types experience a fall in their median income between 1995 and 2006 (in constant 2006 prices). This is particularly true of heads from single parent, three generation and complex unrelated households which experience an approximately 35% decrease in their median income whilst skip generation and multi generation household heads experience an even bigger decrease of over 50% in their median monthly income. Heads from single person households and nuclear family households show much lower rates of decline in their median monthly income from employment– namely, a fall of 3% for heads in single person households and a fall of 11% for nuclear family household heads. Hence once again, closer examination of specific household types reveals considerable heterogeneity amongst household heads from different household types between 1995 and 2006.

4.1.6 Household Structure and Geographic Location

Examining the relationship between household structure and urbanisation requires adopting 2004 as an extra year of comparison. This is because in 2006, Statistics South Africa changed the sampling frame from a random sample of households taken across urban and rural areas to a random sample of households taken across metropolitan and non-metropolitan areas. Hence table 4.9 presents the distribution of households residing in urban or rural areas by broad household type in 1995 and 2004 as well as the distribution of households residing in metropolitan areas by broad household type in 2006. The table clearly reveals that nuclear type households are more likely to live in urban areas (whilst extended type households are more likely to reside in rural areas). Among nuclear type households, the percentage of households living in urban areas increases significantly between 1995 and 2004, whilst there is no significant change for extended type households. Furthermore, examining the distribution of households living in metropolitan areas in 2006 shows that a large percentage of extended type households living in urban areas do not appear to be living in the metropolis. Provided that urbanisation is acknowledged as a correlate of modernisation, the above relationship between urbanisation and household structure provides support for the predictions of convergence theory.

Table 4.9: Geographical location by broad household type, 1995, 2004 and 2006

% of households by location	1995		2004		2006	
	Urban	Rural	Urban	Rural	Metro	Non-Metro
Nuclear	59.75 (0.390)	40.25 (0.390)	65.77* (0.491)	34.23* (0.491)	44.72* (0.617)	55.28* (0.617)
Extended	46.58 (0.593)	53.42 (0.593)	46.02 (0.638)	53.98 (0.638)	27.47* (0.761)	72.53* (0.761)
Other	64.15 (1.655)	35.85 (1.655)	64.43 (1.772)	35.57 (1.772)	58.69* (2.180)	41.31* (2.180)
Total	56.04 (0.323)	43.96 (0.323	59.14* (0.392)	40.86* (0.392)	61.08* (0.481)	38.92* (0.481)

Source: Own estimates using GHS 2004, GHS 2006
Notes: * significantly different from 1995 estimate at the 95% level of confidence
The row percentages for each year and by household type sum to 100%
Standard errors in parenthesis; the data are weighted

Table 4.10 displays the percentage of households living in 'urban or rural' or 'metropolitan or non-metropolitan' areas across each specific household type for 1995, 2004 and 2006. Couple households are the most urbanised with over 70% of couple households residing in urban areas in 1995 and 2004. This is followed by nuclear family households which see a marked increase in the proportion of households residing in urban areas, from 61.5% in 1995 to 72.42% in 2004. Notably, only nuclear family households and single parent households experience a statistically significant increase in the proportion of households residing in urban areas between 1995 and 2004.

Single person households display an interesting pattern when compared across urban and metropolitan areas. Whilst the proportion of single person households which live in urban areas is four percentage points below the average for nuclear type households in 2004, the proportion of single person households which live in metropolitan areas is one percentage point above the average for nuclear type households in 2006. This suggests that there is a strong concentration of single person households specifically in the metropolis. This may partly reflect the fact that metropolitan areas in particular attract a large percentage of migrants in search of work, and hence this results in a comparatively larger concentration of single person households. Complex unrelated households as well as complex related households also have a particularly high percentage of households living in urban and metropolitan areas. This may be due to the fact that housing constraints in urban and metropolitan areas force families to adopt more complex forms of living arrangements.

Table 4.10: Geographic location and specific household type, 1995, 2004 and 2006

% of households by location		1995		2004		2006	
		Urban	Rural	Urban	Rural	Metro	Non-metro
Nuclear	single	59.87 (0.955)	40.13 (0.955)	61.57 (0.883)	38.43 (0.883)	45.67* (1.111)	54.33*(1.111)
	couple	72.21 (0.924)	27.79 (0.924)	75.70 (1.159)	24.30 (1.159)	52.83* (1.631)	47.17*(1.631)
	nuclear family	61.50 (0.531)	38.50 (0.531)	72.42* (0.789)	27.58*(0.789)	46.97* (1.045)	53.03*(1.045)
	single parent	44.10 (0.944)	55.9 (0.944)	54.69* (1.17)	45.31* (1.17)	33.04* (1.275)	66.96*(1.275)
Extended	three generation	43.59 (0.770)	56.41 (0.770)	43.74 (0.858)	56.26 (0.858)	22.46* (1.035)	77.54*(1.305)
	skip generation	36.91 (1.580)	63.09 (1.580)	31.37 (1.409)	68.63 (1.409)	20.74* (1.67)	79.26* (1.67)
	multi generation	40.62 (5.153)	59.38 (5.153)	48.63 (7.435)	51.37 (7.435)	11.42* (7.316)	88.58*(7.316)
	complex but related	57.82 (2.728)	42.18 (2.728)	58.61 (1.181)	41.39 (1.181)	38.33* (1.377)	61.67*(1.377)
Other	siblings only	57.29 (1.118)	42.71 (1.118)	61.18 (2.452)	38.82 (2.452)	40.02* (2.932)	59.98*(2.932)
	complex unrelated	69.23 (2.029)	30.77 (2.029)	72.39 (2.481)	27.61 (2.481)	45.89* (3.432)	54.11*(3.432)
	child headed	10.04 (10.11)	89.96 (10.11)	17.52 (6.934)	82.48 (6.934)	6.623 (6.288)	93.38 (6.288)
	Total	56.04 (0.323)	43.96 (0.323)	59.14 (0.392)	40.86*(0.392)	38.92* (0.481)	61.08*(0.481)

Source: Own estimates using 1995 OHS, GHS 2004, GHS 2006

Notes: *significantly different from 1995 estimate at the 95% level of confidence
The row percentages for each year and by household type sum to 100%; standard errors in parenthesis
The data are weighted

Although there is a definite pattern across broad household type categories (namely that nuclear type households are more likely to reside in urban or metropolitan areas than extended type households) there is a fair degree of heterogeneity within these broad household types. More specifically, single person and single parent households are less likely to live in urban or metropolitan areas compared to couple and nuclear family households, whilst complex but related households are more likely to live in urban or metropolitan areas than three generation, multi generation and skip generation households.

4.1.7 Conclusion: Descriptive Statistics of Household Types- A Univariate Analysis

At the broad level of comparison, household heads from nuclear type, extended type and other type households display unique differences in terms of their general demographic makeup. In this regard, nuclear type household heads are generally younger, more likely to be a part of the workforce and less likely to be unemployed than extended type household heads. Furthermore, the characteristics of nuclear type households are consistent with the predictions of convergence theory– namely, that household heads from nuclear type households are more modernised as shown by their level of education, income from employment and degree of urbanisation compared to household heads from extended type households. Therefore, whilst the period 1995 – 2006 does not reveal any

measure of convergence to a nuclear household type in South Africa (see Chapter 3), the characteristics of heads in nuclear type household are broadly consistent with the predictions of convergence theory.

Comparisons within broad household types however fail to depict the heterogeneity between specific household types. For example, single parent household heads stand out amongst household heads from nuclear type households as more female-headed, economically inactive and less educated. Similarly, complex but related household heads stand out amongst heads from extended type households as comparatively younger in years, more educated, more urbanised and more likely to be a part of the workforce. Thus overall, whilst broad household categories are instructive concerning the general state of household, examination of specific household types enhances this analysis considerably.

4.2 Multivariate Analysis of Household Composition

In this section, the analysis is further extended by comparing the characteristics of household heads across household types in a multivariate context. This is accomplished by first examining the probability of a household head residing in a nuclear type household as opposed to an extended type household using a probit model. Secondly, given the heterogeneity of specific households types within these broad household type categories (as detailed above), the probability of a household head residing in a specific household type is examined using a multinomial probit model.

4.2.1 Constructing a Probit of Heads Residing between Broad Household Types

Using a restricted sample of household heads from nuclear and extended type households, a probit model is constructed using data from the General Household Survey 2006. The probit model estimates the probability of a household head residing in an extended type household as opposed to a nuclear type household. The model takes the following form (c.f. Greene, 2000; Kennedy, 2003):

$$\Pr(y_i = 1|X_i) = \Phi(\delta, X_i) \qquad (4.1)$$

where Y_i is a binary categorical variable which takes a value of one if the household head is from an extended type household or zero if the household is not (i.e. in a nuclear household) for individual i; X_i is a vector of observed characteristics; δ is a vector of parameters and Φ is the standard cumulative normal distribution.

Observed characteristics include gender (male or female), race (African, Coloured, Indian or White), and a quadratic for the age of the household head. Education is measured in terms of discrete categories (no schooling, grade 1 – 7, grade 8 – 11, matric , diploma or degree) and marital status is measured in categories for either 'married or living together', 'never married', 'divorced or separated' or 'widowed'. The employment status of the household head is measured in terms of three variables, namely 'employed' (have undertaken work in the last seven days) or 'unemployed' (searching and non-searching) or 'economically inactive'. Lastly, geographical location is captured by province (Western Cape, Eastern Cape, Northern Cape, Free State, KwaZulu-Natal, North West, Gauteng, Mpumalanga and Northern Province) as well as metropolitan or non-metropolitan area. Omitted categories from the above variables are as follows: male, White, no schooling, never married, employed, Gauteng and non-metropolitan.

4.2.2 The Results: Probit of Heads Residing between Broad Household Types

Table 4.11 below displays the results for a population weighted probit estimation on the probability of a household head, residing in an extended type household as opposed to a nuclear type household. As can be seen, the majority of coefficients are statistically different from zero at the 95% level of confidence, except for 'Matric' and 'Northern Cape' which are only significant at the 90% level of confidence, and 'Married or living together', 'Metropolitan' and 'Western Cape' which are not statistically significant at any conventional level of confidence (however 'Metropolitan' is very close to being significant at the 90% level of confidence). The results construct a useful profile of the probability of being a head from an extended type household in comparison to a head from a nuclear type household.

From the results below, it would seem that extended type household heads are likely to face more constraints in access to economic resources than nuclear type household heads. Firstly, in comparison to heads in nuclear type households, heads in extended type households are more likely to be female than male. Given gender discrimination in the labour market, this suggests that extended type households are more likely to be disempowered in the labour market and hence face wage penalties than nuclear type households. Secondly, household heads from extended type households are more likely to be African, Coloured or Indian, than White compared with household heads from nuclear type households. Given that Africans (and to a lesser extent Coloureds and Indians) face lower wage rates in the labour market due to a legacy of racial discrimination, extended type households are more likely to face lower wages. Furthermore, the coefficients on all the education categories are negative, meaning that higher education levels are negatively

Table 4.11: Probit estimation on probability of a head residing in an extended or nuclear household

Dependant variable = 1 if household composition is extended and 0 if household composition is nuclear		
	Co-efficient	Std error
Age	0.0344*	0.0033
Age squared	-0.0001*	0.0000
Female	0.4455*	0.0208
African	0.9529*	0.0433
Coloured	0.9430*	0.0493
Indian	0.7008*	0.0760
Unemployed	0.2260*	0.0259
Economically Inactive	0.3546*	0.0233
Grade 1-7	-0.0810*	0.0245
Grade 8-11	-0.0757*	0.0271
Matric	-0.0955**	0.0346
Diploma or degree	-0.1998*	0.0418
Married or living together	0.0312	0.0240
Divorced or separated	-0.0883*	0.0431
Widowed	0.1267*	0.0300
Metropolitan	-0.0448	0.0283
Eastern Cape	0.1988*	0.0372
Western Cape	0.0628	0.0447
Northern Cape	0.0957**	0.0498
Freestate	0.1064*	0.0435
KwaZulu-Natal	0.1112*	0.0348
North West	0.1700*	0.0417
Mpumalanga	0.2234*	0.0444
Northern province	0.1706*	0.0413
Constant	-3.0232*	0.1049
Percent correctly predicted	73.40%	
N	26597	

Source: Own estimates using GHS 2006

Notes: The data are weighted; * significantly different from zero at the 95% level of confidence ** significantly different from zero at the 90% level of confidence; sample is restricted to heads from nuclear and extended type households; omitted categories: male, White, employed, no schooling, never married, non-metropolitan,Gauteng

associated with household heads from extended type households. Such lower levels of education for extended type household imply lower levels of economic empowerment and hence less access to resources in general compared to nuclear type households.

Looking at employment in the labour market directly, the results show that amongst household heads, there is a higher probability that heads will be unemployed (expanded definition) in extended type households compared with heads from nuclear type households. Furthermore, extended type households are also more likely to be out of the labour force (not economically active). Both these scenarios suggest that extended type households may be more reliant upon unearned income sources than earned income compared with nuclear type households.[3]

In terms of geographic location, household heads from extended type households are more likely to live in non-metropolitan areas than household heads from nuclear type households (although this result was only significant at the 88% level of confidence). Furthermore, in terms of provincial location household heads from extended type households are more likely to stay in all seven provinces (Western Cape, Eastern Cape, Northern Cape, Free State, KwaZulu-Natal, North West, Mpumalanga and Northern Province) compared to Gauteng (although Western Cape was statistically insignificant at the 95% level of confidence). This again suggests that among heads, those living in poorer areas have a higher probability of being heads of extended type households.

4.2.3 Conclusion: Probit of Heads Residing between Broad Household Types

From the probit estimation above it is clear that household heads from different household types exhibit distinctly different demographic characteristics as was suggested by the descriptive statistics examined earlier. Furthermore, it would seem that household heads from extended type households are more likely to possess demographic characteristics which would reduce their access to economic resources. Provided that the economic status of the household head acts as a good proxy for the economic status of the household more generally, this then implies that extended type households are more likely to be poorer than nuclear type households. The relationship between poverty and household structure is further explored in Chapter 6.

[3] Including a dummy variable for whether or not a household head is receiving a social grant was not possible given the fact that social welfare is highly correlated with employment. However an identical probit estimation which replaced 'employment status' with 'possession of a social grant' was undertaken and this revealed that extended type household heads were indeed more likely to be receiving a social grant than nuclear type household heads (this result was significant at the 99% level of confidence).

4.3.1 Constructing a Multinomial Probit of Heads Residing amongst Specific Household Types

Whilst it is interesting to identify the relationship between the demographic characteristics of household heads from different broad household type categories, attention must also be given to the uniqueness of household types within these broad household type categories. Conducting a similar multivariate analysis of the key characteristics of household heads from specific household types however requires a different econometric approach. This is because, whilst a comparison of household heads from extended or nuclear type households forms a dichotomous dependent variable, a comparison of household heads from amongst specific household types forms a polychotomous dependent variable which cannot be evaluated using a probit model. Evaluating a dependent variable with more than two unordered alternatives however can be undertaken using a multinomial logit or multinomial probit model.

Whilst a multinomial logit is the more commonly used approach (c.f. Kennedy, 2003), it imposes the limiting restriction that the alternatives are independent of one another known as the independence of irrelevant alternatives (IIA) assumption. From a sample of household heads only, a multinomial logit on the probability of being a household head from amongst specific household types was estimated; however it was found that the null hypothesis of independence between alternatives was rejected using a Hausman specification test.[4] Although common practice is to simply ignore the IIA assumption, Greene (2000) points out that this may lead to misleading results. An underutilised alternative is to undertake a multinomial probit which relaxes the IIA assumption. The main obstacle to this approach is the computational burden of the multinomial probit which becomes extremely cumbersome for more than a small number of alternatives (c.f. Greene, 2000; Kennedy, 2003).

However this obstacle is partially surmounted by constructing two multinomial probits to investigate differences between household heads within nuclear type households and within extended type households. This is also in line with the apparent heterogeneity within broad household type categories demonstrated in section 4.1 above. The first multinomial probit is estimated using a restricted sample of nuclear type household heads (single person, couple, nuclear family and single parent household heads only) and the second multinomial probit is estimated using a restricted sample of extended type household heads (three generation, skip generation, multi generation, and complex but related household heads only). By examining the probability of household heads

[4] The Hausman specification test rejected the independence between single person and nuclear family households or single parent households. Furthermore the Hausman specification test could not be estimated between single person and couple households given a violation of the asymptotic assumptions of the test.

residing within specific household types for both of these groups, the heterogeneity of household types within broad household type categories can be explicitly tested. This approach is also much more computationally feasible, given the fewer number of alternatives for each model.[5] Although the relationship between household headship and demographic characteristics across these two broad groups is excluded, this relationship has already been examined in the probit estimation of nuclear and extended type households above.

Using a restricted sample of household heads only, a multinomial probit on the probability of a household head residing in a specific household type (from amongst four unordered choices of household type within each broad household type category) is constructed, using the following form (c.f. Greene, 1993; Kennedy 2003):

$$\text{Prob}(Y_i=\text{j}) = \frac{e^{\beta_j' x_i}}{\sum_{j=0}^{3} e^{\beta_j' x_i}}, \quad \text{j} = 0,1,...,3. \qquad (4.2)$$

where *y* is a polychotomous variable which takes on *j* set of alternatives, and *x* is a vector of observed characteristics for individual *i* (varying across individuals but held constant across alternatives).The model is indeterminate in the above form until normalised by setting $\beta_0 = 0$. Coefficients for alternatives are therefore estimated in relation to the base category of choice. The base category used for the multinomial probit of heads from nuclear type households is nuclear family households, and the base category used in the multinomial probit of heads from extended type households is three generation households. The observed characteristics (*x*) used in both models are identical to those used in the probit model in section 4.1.1 above. Observed characteristics account for the gender, age, race, marital status, labour force attachment, education and geographical position of the household head (except for nuclear type households which do not account for the marital status of the household head).[6] Geographic location is restricted to a comparison between metropolitan and non-metropolitan areas without accounting for province. Although including province in the analysis adds additional insight to the understanding of specific

[5] Restricting the sample to household heads only, a multinomial probit was attempted on the probability of being a household head from amongst all eleven alternatives. However, given the high number of alternatives in the dependent variable, the model was computationally unfeasible and failed to run.

[6] This is because household heads in couple and nuclear family households are always, by definition, classified as married or living together.

household types and geographic location, it substantially increases the computational burden of the multinomial probit (given that eight additional variables are added) and is therefore impractical.

4.3.2 Results: Multinomial Probit of Heads Residing amongst Nuclear Type Households

The results of the population weighted multinomial probit on the probability of heads residing between specific nuclear type households are displayed in table 4.12. From a joint test on whether all coefficients are jointly equal to zero, the null hypothesis is rejected at the 99% level of confidence. Hence, household heads from single person households, couple households, single parent households and nuclear family households are significantly different from each other. This emphasises the heterogeneity among household types even within the broad household category of nuclear. More specifically, joint tests on whether coefficients are different across household type categories reveal that age, gender, race, labour force attachment, and location each significantly distinguish between heads amongst nuclear type households at the 95% level of confidence. The only notable exception is the educational categories, which are not significantly different from zero when tested jointly across household type categories.

Among heads from nuclear type households, those who are young, female, African, with matric education and employment, are more likely to head single-person households than nuclear family households. Single person household heads therefore fit the description of younger female African migrants, with equally high rates of labour force participation and similarly high proportions of households within metropolitan areas compared to nuclear family households. In terms of headship of couple households, those who are younger, female, White, and employed are more likely to head couple households than nuclear family households. Couple household heads show the most similarity to heads from nuclear family households.

Taking a closer look at single parent households, the results show that single parent household heads are more likely young, female, African or Coloured, unemployed or economically inactive, without a Matric education, and living in a non-metropolitan area compared with nuclear family household heads. Heads from single parent households therefore display the most heterogeneity in their demographic characteristics compared to nuclear family household heads. Furthermore, given that single parent household heads have a higher probability of being economically inactive, unemployed and less educated (at least in terms of Matric) compared to nuclear family household heads, this renders single parent households more vulnerable to economic hardship (at least

through a lack of access to earned income). Single parent households are therefore likely to be more reliant upon unearned income sources such as remission income and state welfare assistance.

Table 4.12: Multinomial probit estimation on heads residing between specific nuclear type households

Base category = Nuclear family	**Nuclear household types**							
	Single person		Couple		Single parent		Joint Test	
	Coefficient	Std error	Coefficient	Std error	Coefficient	Std error	Chi-squared statistic	p-value
Age	-0.225*	0.007	-0.134*	0.008	-0.047*	0.009	1220.20	0.000
Age squared	0.002*	0.000	0.002*	0.000	0.001*	0.000	11.57	0.009
Female	1.857*	0.050	0.627*	0.062	3.578*	0.054	5231.61	0.000
African	0.671*	0.061	-0.494*	0.061	1.193*	0.092	468.88	0.000
Coloured	-0.405*	0.075	-0.844*	0.074	0.418*	0.107	200.38	0.000
Indian	-0.795*	0.137	-0.866*	0.120	-0.138	0.192	69.12	0.000
Unemployed	-0.334*	0.053	-0.130*	0.062	0.289*	0.062	138.12	0.000
Econ. inactive	0.067	0.054	0.019	0.060	0.446*	0.063	66.48	0.000
Grade 1-7	0.041	0.058	0.015	0.066	-0.100	0.069	5.60	0.133
Grade 8-11	-0.053	0.060	-0.023	0.067	-0.057	0.072	0.95	0.814
Matric	-0.133*	0.068	-0.106	0.077	-0.179*	0.086	5.55	0.136
Degree or diploma	0.018	0.078	-0.045	0.087	-0.060	0.098	1.13	0.770
Metropolitan	-0.051	0.045	0.063	0.048	-0.140*	0.058	11.57	0.009
Constant	4.482*	0.193	2.526*	0.216	-1.742*	0.261	1099.29	0.000
N	16584							

Source: Own estimates using GHS 2006

Notes: The data are un-weighted; * significantly different from zero at the 95% level of confidence; ** significantly different from zero at the 90% level of confidence; nuclear family household heads are the base category; the joint test examines whether coefficients are different across categories. Omitted categories: male, White, employed, non-metropolitan, no schooling.

Overall, the above multinomial probit on the probability of a household head residing between specific nuclear type households, does indeed demonstrate the heterogeneity of different household types within the broad household type category of nuclear. Indeed, a joint test on whether all coefficients are jointly equal to zero, is rejected at the 99% level of confidence. Furthermore, the probability of a head residing within a single person, couple, or single parent household compared to a nuclear family household differs significantly across age, gender, race, labour force attachment and locational demographics. Single parent households appear to be particularly vulnerable to economic hardship given their demographic profile.

4.3.3 Results: Multinomial Probit of Heads Residing amongst Extended Type Households

Table 4.13 displays the results for the population weighted multinomial probit on the probability of heads residing between specific extended type households. Firstly, a joint test on whether all the coefficients are jointly zero across specific extended household types is strongly rejected at the 99% level of confidence. Thus, three generation, multi generation, skip generation and complex but related households are significantly different from each other in terms of their demographic characteristics. In this regard, joint tests on whether coefficients are different across household type categories show that age, gender, race, labour force attachment, marital status educational attainment and geographic location each significantly distinguish between heads amongst different extended type households (except for 'unemployment', which has no statistical significance in distinguishing between extended type household heads).

Table 4.13: Multinomial probit estimation on heads residing between specific extended type households

Base category = Three generation	**Extended household types**							
	Skip generation		Multi generation		Complex but related		Joint Test	
	Coefficient	Std error	Coefficient	Std error	Coefficient	Std error	Chi-squared statistic	p-value
Age	-0.028*	0.012	-0.011	0.040	-0.230*	0.010	529.96	0.000
Age squared	0.000*	0.000	0.000	0.000	0.002*	0.000	305.74	0.000
Female	-0.124*	0.059	-0.026	0.151	-0.521*	0.058	82.95	0.000
African	-0.112	0.176	-0.258	0.485	-0.739*	0.146	28.57	0.000
Coloured	-0.246	0.185	-0.291	0.508	-0.774*	0.156	25.44	0.000
Indian	-0.395	0.281	0.142	0.639	-0.523*	0.221	6.37	0.095
Unemployed	0.070	0.088	0.094	0.176	0.054	0.072	1.00	0.802
Econ. inactive	0.199*	0.061	-0.305*	0.151	-0.084*	0.059	23.72	0.000
Grade 1-7	-0.037	0.050	0.105	0.136	0.150*	0.059	9.55	0.023
Grade 8-11	0.028	0.066	-0.280	0.203	0.355*	0.068	33.28	0.000
Matric	0.283*	0.116	0.155	0.277	0.564*	0.099	32.41	0.000
Degree or diploma	0.221	0.145	0.374	0.304	0.970*	0.120	69.32	0.000
Metropolitan	-0.107	0.077	-0.489**	0.287	0.198*	0.070	17.97	0.000
Married/living tog.	-0.611*	0.073	-0.205	0.181	-0.638*	0.067	116.79	0.000
Divorced/separated	-0.295*	0.109	0.107	0.240	-0.537*	0.109	27.69	0.000
Widowed	-0.406*	0.069	-0.329**	0.191	-0.617*	0.072	82.61	0.000
Constant	-0.154	0.415	-1.291	1.265	8.281*	0.342	708.23	0.000
N	10014							

Source: Own estimates using GHS 2006

Notes: The data are un-weighted; * significantly different from zero at the 95% level of confidence; ** significantly different from zero at the 90% level of confidence; three generation household heads are the base category; the joint test examines whether coefficients are different across categories. Omitted categories: male, White, employed, non-metropolitan, no schooling, never married.

Amongst household heads from extended type households, those who are younger, male, never married and economically inactive but possessing a Matric are more likely to be heads from skip generation households compared to three generation households. Given that skip generation household heads may need to care for their grandchildren, it seems plausible that heads who are economically inactive are more likely to be from skip generation households. However the fact that skip generation household heads are also younger and male seems somewhat surprising given the descriptive statistics presented in the univariate analysis earlier which showed that the majority of skip generation household heads were older African women. However, given that skip generation household heads are being compared to three generation household heads whom are themselves relatively older, African and female, this merely suggests that skip generation household heads are likely to be younger and more male-headed *in comparison* to three generation household heads.

Multi generation household heads appear to be least different from three generation household heads in terms of their demographic characteristics. Only widowhood significantly differentiates between heads from three generation and multi generation households at the 95% level of confidence. Such similarity between these two household types seems plausible given that the household structure of multi generation and three generation households differs in terms of only one additional generation of household members. Indeed, multi generation households may transition to three generation households upon the death of their eldest generation (provided that the youngest generation does not subsequently produce any children). These results are also partly due to the smaller sample size of multi generation household heads which results in very large standard errors.

Complex but related household heads however show considerable heterogeneity in their demographic characteristic compared to three generation household heads. In this regard, those who are younger, male, White, economically active, more educated, never married and living in metropolitan areas are more likely heads from complex but related households compared to three generation households. This result matches well with evidence from the univariate analysis, where complex but related household heads had more comparable demographic characteristics to nuclear type households than to extended type households.

Overall, the results point to marked heterogeneity amongst extended type households in terms of their demographic characteristics. In this regard a test on whether all the coefficients are jointly zero across all extended household type categories is strongly rejected at the 99% level of confidence.

Complex but related household heads in particular display the most heterogeneity amongst extended household types.

4.4 Conclusion

In conclusion, closer examination of the demographic characteristics of household types shows marked differences between households both at the broad household type level and at the specific household type level. Both a univariate analysis of household heads from amongst broad household types as well as a multivariate analysis of the probability of heads residing in nuclear versus extended type households shows that heads who are older, female, non-White, unemployed or economically inactive and less educated are more likely to head extended type households than nuclear type households. This also suggests that extended type household heads have less access to economic resources than nuclear type household heads– at least in terms of earned incomes. Interestingly, whilst Chapter 3 found no evidence of convergence to a nuclear household type for the period 1995 – 2006, the above demographic profiles of heads from extended and nuclear type households align with the predictions of convergence theory.

Despite such general differences at the broad household type level, specific household types within these broad categorisations further display considerable heterogeneity. Again, both a univariate and multivariate analysis of specific household types demonstrates these differences. For example, amongst nuclear type households, single parent household heads are more likely female, African, unemployed or economically inactive and living in non-metropolitan areas compared to nuclear family type household heads. Similarly, amongst extended type households, complex but related household heads are more likely younger, male, White, more educated, economically active and living in metropolitan areas in comparison to three generation household heads. Hence, despite general differences between nuclear and extended type household heads evident at the broad household level, closer examination of specific household types also reveals considerable heterogeneity amongst specific household types within these broad household type categories.

Chapter 5: A literature review of measuring household well-being with respect to household composition

Thus far, a detailed picture of changes in South African household composition has been painted. However what is missing from the discussion thus far is the relationship between household structure and well-being. This chapter provides a brief literature review on methods of estimating poverty with respect to household composition. Income-based measures of poverty are discussed as well as the appropriate unit of analysis. Particular attention is given to the issue of correctly adjusting for economies of scale in household consumption as well as adjusting for the cost of a child compared to an adult by using the appropriate equivalence scale.

5.1 Defining Poverty

Poverty is a universal evil. However to ascertain whether or not a household or individual is classified as 'poor' is not universally agreed upon. This comes partly from the difficulties that statisticians have in measuring relevant variables within society, but also partly from differences in definition.

Poverty can be defined as the inability to attain a minimal standard of living. Woolard and Leibbrandt (2001) list five dimensions of poverty: namely 'poverty proper' being the lack of adequate income; 'physical poverty' due to illness, under-nutrition or disability; 'social poverty' due to location, isolation or illiteracy; 'vulnerability' to major crisis; and 'powerlessness' within political, economic and social structures. Thus poverty can be considered as more than a material lack of income but incorporates all aspects of human well-being. Hence, an accurate estimate of poverty requires a holistic approach to identifying wellbeing.

5.2 Income-Based Measures of Poverty: Poverty Lines and Poverty Measures

In practice however, the most common method of estimating poverty is to establish an income or expenditure threshold called a 'poverty line', falling below which, a household or individual (depending on the unit of analysis) is deemed to be 'poor'. There are numerous difficulties with such a process. Firstly, a poverty line assumes that a person is in or out of poverty solely on the basis of a single indicator. Such a single measure of poverty used in isolation, thus fails to incorporate the

many aspects of poverty. Secondly, a poverty line assumes that there is some magical threshold below which the adverse affects of being poor suddenly take effect. Clearly, the deprivation involved in earning less than a dollar a day (a common measure of an international poverty line) is similar if not effectively the same as earning a dollar and a dime a day. Nonetheless a person in the latter case is considered non-poor. Therefore one must acknowledge that drawing a poverty line at some exact point involves some measure of arbitrariness. Drawing a poverty line ultimately means choosing an exact point for something that is in reality fuzzy. Ravallion (1992) suggests that more than one poverty line is used to best minimise this implicit arbitrariness.

The poverty lines adopted for this present analysis are those estimated by Hoogeveen and Osler (2005) for South Africa. Using a cost-of-basic-needs approach they estimate a per capita poverty line of R322 per capita per month (in constant 2000 prices). Hoogeveen and Osler (2005) also employ the international poverty line of $2 a day which is equivalent to R174 per capita per month (in constant 2000 prices). These poverty lines are converted into constant 2006 prices for the current analysis, yielding a poverty line of R447 per capita per month and R242 per capita per month (constant 2006 prices).[1]

Poverty lines however are only a tool towards generating estimates of poverty. Poverty estimates can be generated using two common measures of poverty– namely, the poverty headcount ratio and the poverty gap ratio. The first of these (the most common estimate of poverty), the headcount ratio, displays the proportion of the population which fall below the poverty line– it quite literally 'counts' the number of 'heads' in poverty (c.f. United Nations, 2005):

$$\text{Headcount Ratio} = \frac{\text{P}}{\text{N}} \qquad (5.1)$$

where *P* is the number of poor individuals and *N* is the total population size. In isolation however, the headcount ratio can be somewhat misleading. This is because the headcount does not capture the depth (or intensity) of poverty meaning that no change in the headcount is registered when the poor become even poorer. Furthermore the headcount ratio may tempt policy makers to focus on households who are closest to the poverty line (rather than those most severely affected by poverty), given that moving these households out of poverty will have the biggest impact on the headcount ratio using the least amount of resources.

[1] This is done using the South Reserve Bank's core inflation index (P0141.1)

A second poverty measure, which can be used alongside the poverty headcount ratio to account for the depth of poverty is the poverty gap ratio. In this regard, the poverty gap ratio displays the average shortfall of the poor from the poverty line (c.f. United Nations, 2005):

$$\text{Poverty Gap Ratio} = \frac{\text{S}}{\text{N} \times \text{pl}} \qquad (5.2)$$

where *S* is the total sum of money needed to pull all the poor to the poverty line (the shortfall), *N* is the total population and *pl* is the poverty line. Used in isolation however, the poverty gap ratio can also be misleading. For example, if more households move into poverty (who are relatively close to the poverty line) whilst the original households remain equally poor, the poverty gap ratio will improve despite the fact that the severity of poverty has not changed for the original households. For the present analysis, the poverty headcount ratio and poverty gap ratio are therefore given together to provide a more accurate picture of poverty.

5.3 Unit of Analysis: Income pooling and Equivalence Scales

Household surveys typically collect data at the household-level (although much individual-level data is also collected). Estimates of poverty however typically use the individual as the primary unit of analysis. This requires some method of deciding how resources are shared within the household before poverty estimates can be generated at the individual level. However even where sufficient individual-level information on income from all sources is collected, this still does not deal with the fact that individual level information may exclude some household members who do not receive any income (such as children or those providing care labour for the elderly or children) but for whom some degree of income pooling or income sharing takes place within the household.

A common approach is to simply assume that households maximise a single utility function– otherwise known as the unitary household model (c.f. Maitra&Ray, 2000). However such a process implicitly ignores differences in intra-household allocation. It assumes that each individual equally shares household resources (income pooling)– an assumption that is challengeable particularly in developing countries where patterns of power fall markedly across age and gendered lines. Indeed Maitra and Ray (2000) show that men and women in South Africa are less likely to pool their transfer income than other forms of income. Similarly Quisumbing and Maluccio (2000) report differences in educational investments of boys versus girls for South Africa, dependant on the husband and wife's level of education. Furthermore, Quisumbing and Maluccio (2000) find that the more resources

brought into the marriage by the wife, the greater the proportion of the budget spent on education. In practice however, it is difficult to ascertain to what degree income-pooling is taking place within households. Thus poverty estimates still rely primarily on the practical (albeit misleading) assumption that households share total resources equally.

In this regard, a per capita estimate of poverty simply divides total household income by the total number of household members. This approach however ignores differences in resource requirements between households of different type. A more widespread practice in the current literature is to adjust for the relatively lower resource requirements of households containing more children (given the lower 'cost' of a child compared to an adult– see section 5.3.2) as well as households containing more household members (given economies of scale in consumption for larger households due to public goods– see section 5.3.1). This approach yields per adult equivalent estimates of poverty (as opposed to per capita estimates of poverty) and is undertaken using an equivalence scale of the following form:

$$ea_i = \frac{E_i}{(A+\alpha K)_i^{\theta}} \qquad (5.3)$$

where *ea* is the expenditure per adult equivalent for household *i*, *E* is total household consumption, *A* is the number of adults, *K* is the number of children, α is the child cost weighting, and ϑ is the economies of scale parameter. Hence if the economies of scale parameter is $\theta = 1.0$, this means that there are no economies of scale in household consumption, whereas if the economies of scale parameter is $\theta = 0$, this means that economies of scale are at a maximum (all goods are public). If the child cost weighting is $\alpha=1.0$, this means that children have the same weighting as adults in terms of their consumption requirements, whereas if the child cost weighting is $\alpha=0$, this means that children have no consumption cost to the household. Hence a per capita estimate of poverty implicitly chooses an economies of scale parameter of $\theta=1.0$ and a child cost weighting of $\alpha=1.0$.

An important detail to be borne in mind is that equivalence scales should be applied to the welfare indicator *and* to the poverty line. Given that poverty lines themselves are calculated on the basis of consumption patterns of an average household size, households of this size already account for economies scale and child costs in consumption. Equivalence scales are therefore employed to affect the distribution of poverty across households of different size and composition, not the level of estimated poverty. The United Nations Handbook on Poverty (2005) recommends that where the

poverty line has been adopted from an outside source (as is the case for this analysis), adjustments are made to the poverty line by finding a household of average size and composition whose per capita consumption is equal to the poverty line and then setting the poverty line equal to their per-effective-adult-equivalent expenditure after the introduction of the equivalence scale. However it must first be ascertained as to what weighting should be adopted to appropriately account for economies of scale and child costs.

5.3.1 Economies of Scale

In this regard, Deaton (1997) discusses various methods for estimating the size of scale economies within households. As already mentioned, economies of scale account for consumption savings in larger households due to the fact that larger households can share their public goods. For example, given that a couple household and a single person household need only buy one television set in order to achieve the same level of entertainment for the household, the cost of entertainment in the couple household is effectively half of that for the single person household because the couple household can equally divide the cost of the television set. Examples of public goods are cooking and cleaning appliances, entertainment appliances, and living space (up to a certain point).

In order to identify the size of the economies of scale parameter, the Engel (1857) method uses the assumption that the budget share devoted to food expenditure correctly identifies the welfare level of the household. Thus, according to this assumption, two households of different sizes but with the same budget share devoted towards food are, by definition, equally well off. The smaller the budget share devoted towards food, the better-off the household. By comparing total household expenditure of different households with the same budget share devoted towards food but different sizes, one can ultimately infer the size of the scale economies (c.f. Deaton&Paxton, 1998; Woolard&Leibbrandt, 2001). Using the Engel approach, Deaton (1997) estimates the economies of scale parameter (θ) to range between 0.87 and 0.72 using data from India and Pakistan respectively. Lanjouw and Ravallion (1995) find a somewhat higher estimate for θ of 0.6 using data from Pakistan. Furthermore, they find that this value of θ is large enough such that the correlation between poverty and household size in Pakistan disappears. This emphases the fact that making implicit assumptions about economies of scale (namely that $\theta = 1.0$ in per capita estimates of poverty) has a substantial impact upon estimates of poverty.

There are however some concerns regarding the validity of the Engel approach to estimate household economies of scale. Deaton and Paxson (1998) argue that although the Engel approach seems plausible it is in fact misleading. Although it is true to expect that an increase in household resources would be accompanied by a fall in the food share and a rise in household welfare, it is false to assume that an increase in household size holding per capita expenditure constant would decrease the budget share devoted towards food. In this regard, increases in household size holding per capita expenditure constant, should result in increases in the budget share devoted towards food. Deaton and Paxson (1998: 903) conclude that "the estimates of economies of scale that are derived by Engel's method have no theoretical underpinning and are identified by an assertion that makes no sense".

Deaton and Paxson (1998) propose an alternative model of identifying economies of scale to Engels approach. They expect that the presence of public goods in larger households should release more resources into larger households compared to smaller households with the same per capita expenditure. If private goods cannot be easily substituted for cheaper public goods, the overall effect will be to increase consumption levels of these private goods. In other words, given that the 'price' of public goods decreases as household size increases, and if the income effect dominates the substitution effect, then one would expect increases in the level of consumption expenditure on private goods. Provided that food fulfils such a criterion of a good with no close substitutes (which certainly seem plausible) estimates of household scale economies can be calculated by estimating the reduction of per capita expenditure that would be needed to restore per capita consumption of food to levels prior to the increase in household size.

However, despite a more theoretically sound model for economies of scale, the data show quite the opposite. Holding per capita expenditure constant, the budget share devoted towards food falls with household size, meaning that larger households experience negative economies of scale. This result was shown to be true for a range of developed countries (Taiwan, Britain, France, and the Unites States) as well as developing countries (Pakistan, Thailand and South Africa). Deaton and Paxson (1998) do however provide numerous potential explanations as to why their results differ from expectations. Such explanations include that food expenditure may be significantly underestimated for larger households or that larger households are better at minimising food wastage (c.f Deaton & Paxson, 1998: 921-923).

5.3.2 Child costs

Similar to economies of scale, child costs need to be accounted for in order to undertake more accurate estimates of poverty. In this regard, per capita poverty estimates that simply divide total household expenditure by the number of people in the household implicitly assign children the same consumption requirements as adults. From both a food cost perspective (i.e. estimating minimum calorie requirements for different individuals) and a non-food cost perspective, there are good reasons to believe that children require less expenditure than adults to achieve the same level of welfare (United Nations, 2005). An equivalence scale should thus be used to weight children such that their lower consumption requirements are accounted for in poverty estimates (c.f. Deaton, 1997; Deaton and Muellbauer, 1986).

The two most common methods for estimating child costs are Engel's (1857) method and Rothbarth's method (c.f. Deaton, 1997). Engel's proposition (as was discussed under section 4.2.1 'economies of scale' above) was that the proportion of the budget devoted towards food correctly identifies a household's welfare. The smaller the budget share devoted towards food, the wealthier the household. Child costs can then be calculated by comparing two households with different compositions (for example, one consisting of two adults, and one consisting of an adult and a child) but with the same budget share devoted towards food. The difference in total household expenditure between these two households thereby represents the cost of a child. Applying Engel's method to data from India, Deaton (1997) estimates child costs to be 48% of an adult for children aged 0-4, 56% of an adult for children aged 5-9, 60% of an adult for children aged 10-14. Deaton (1997) finds slightly higher results using data from Pakistan, with child costs at 56% of an adult for children aged 0-4, 72% of an adult for children aged 5-9, 76% of an adult for children aged 10-14. Even higher child costs are estimated by Deaton and Muellbauer (1986) using data from Sri Lanka.

However the figures above each implicitly include an economies of scale effect, given that child costs are calculated in relation to an increase in household size. In order to purge these figures from scale effects, Deaton (1997) similarly extends the Engel procedure to estimate the cost of adding an additional adult aged 15 – 54 to a couple-household. The cost of an additional adult joining a household is found to be 68% of an existing adult within the household using data from India, and 84% for an additional adult joining a household using data from Pakistan. By dividing the original figures through by these economies of scale adjusted figures, child costs become much higher. More

specifically Deaton (1997) finds that the cost of a child reaches 70% of an adult for a child aged 0-4 and 80% of an adult for a child aged 10-14 using data from India.

Engel's method with regards to estimating child costs however has been severely criticised by Nicholson (1976). Nicholson's argument runs as follows: Consider a couple household that have recently had a young child added to its membership. If this household were to be fully reimbursed for the cost of this child, one would expect the pattern of expenditure for the parents to remain unchanged. However, the expenditure demands of the young child would be concentrated towards food expenditure. Hence, despite the fact that the couple household is as well off as before the addition of the child (by definition they have been fully reimbursed), their budget share devoted towards food would have increased. Engel's primary identifying assumption therefore overestimates the cost of a child.

Rothbarth's (1943) approach to estimating child costs examines household expenditure on adult goods. Whilst Engel proposed that the proportion of the budget devoted towards food identifies household welfare, Rothbarth proposed that the proportion of expenditure on adult goods identifies adult welfare. By comparing two households of different composition (for example, one consisting of two adults, and one consisting of an adult and a child) but with the same expenditure on adult goods, one could estimate the difference in total expenditure and therefore the cost of a child. In this regard, Deaton (1997) estimates the cost of a child by examining household expenditures on tobacco, alcohol as well as other potential adult goods within India and Pakistan. The data from India using tobacco as the adult good suggests that child costs are less than half an adult, whilst the data from Pakistan using men and women's footwear as the adult good suggests that a child costs more than two thirds of an adult. Deaton and Muellbauer (1986) using data from Sri Lanka estimate child costs to be around a third of an adult. Overall, the Rothbarth approach yields child costs that are generally lower than the Engel approach.

However Rothbarth's approach has been criticised by Barten (1964). Barten argues that when a child is added to a household, goods consumed purely by adults become cheaper than goods consumed by adults and children. This can be illustrated by considering an adult who is accompanied by a child. If the adult were to buy a good consumed by both adults and children (such as an ice-cream) the effective cost of the good is double, given that two such goods must be bought. However if the adult were to buy a good that is purely an adult good (such as tobacco), the cost remains the same. Overall it is clear to see that the adult would substitute towards more adult goods given that their

price has effectively become cheaper in the presence of a child. If such an effect proves to be substantial, Rothbarth's approach would then under-estimate the cost of a child.

White and Masset (2003: 110) provide a helpful overview of various attempts at estimating child costs (from eight different sources covering fifteen different countries). Using the Engel approach, the average cost of a child is estimated at 45% of an adult. Using the Rothbarth approach, the average cost of a child is estimated at 32% of an adult. Deaton (1997) concludes his analysis of child costs, by advocating for the Rothbarth approach. Although there are problems with both methods, Deaton (1997) argues that the problems of the Rothbarth approach are less severe than the Engel approach. He suggests that a helpful guideline for the cost of a child is 0.4 for young children aged 0-4, and 0.5 for children aged 5-14.

5.4. Equivalence Scales for South Africa

Typically the size of equivalence scales in South Africa have followed the lead of May et al (1995) who set $\theta = 0.9$ and $\alpha = 0.5$. However these values were only given as suggestions by Angus Deaton in a lecture in South Africa in 1994 (Woolard&Leibbrandt, 2001). Woolard and Leibbrandt (2001) conduct a noteworthy study on the impact of equivalence scales on estimates of poverty in South Africa. Estimating plausible values for θ ($\theta = 0.9, 0.75, 0.6$) and α ($\alpha = 1, 0.75, 0.5$), they conduct a sensitivity analysis of poverty estimates for selected groups (such as Africans, Coloureds, Rural residents, Urban residents and female-headed households) varying the equivalence scale. Overall, they find poverty levels for these groups to be relatively consistent across equivalence scales and thus conclude that the choice of equivalence scale is not of fundamental importance when estimating poverty.

Woolard and Leibbrandt's (2001) conclusion however must be cautioned, given other international research on the robustness of poverty profiles to the choice of equivalence scales. In this regard, Lanjouw and Ravallion (1995) show that the relationship between poverty and household size is dependant on choice of equivalence scales. Using data from Pakistan they show that correlation between household size and poverty disappears when a plausible economies of scale parameter is adopted. Lanjouw et al (1998) further show that the poverty profiles for selected groups of individuals (households with the elderly, households with children, and female-headed households as well as households of different size) change significantly when varying the equivalence scale using

data of countries from the former Soviet Union. The same result is independently shown by De Vos and Zaidi (1997) also using data from the former Soviet Union.

White and Masset (2003) draw attention to the fact that it is not only the relationship between household size and poverty that is over-emphasised by not including an economies of scale parameter, but any other poverty correlate which is itself correlated with household size. If certain household types are more correlated with household size than others, they will be biased towards finding higher levels of poverty provided that economies of scale have not been appropriately adjusted for. Similarly, if child costs are simply ignored, any variable which is correlated with a larger number of children will be predisposed towards finding higher levels of poverty. Given that extended type households are bigger than nuclear type households (shown in Chapter 3) and also contain more children (investigated in Chapter 6), it seems plausible that equivalence scales will have a significant impact on estimates of poverty for these different groups despite Woolard and Leibbrandt's (2001) indifference.

5.5 Conclusion

Identifying poverty requires a holistic approach to household wellbeing. In practice however, estimates of poverty centre around income-based estimates of poverty. These rely upon choosing a poverty line such that individuals can be characterised in relation poverty. In this regard, the poverty lines used in this dissertation are taken from Hoogeveen and Osler (2005)– namely a R447 poverty line using a cost-of-basic-needs approach and a R242 poverty lines (international $2 a day poverty line) both in constant 2006 prices. The poverty headcount ratio and poverty gap ratio are further chosen as two appropriate measures of poverty. Lastly, particular attention is paid towards adjusting for child costs and economies of scale. In this regard, per capita estimates of poverty may distort the poverty profile for certain groups given the implicit assumption that there are no economies of scale in consumption for larger households as well as an equal cost of children compared to adults. Importantly, if extended type households are found to be both larger than nuclear type households (as shown in Chapter 3) and to contain more children (as is shown in Chapter 6), then per capita estimates of poverty will be automatically biased towards finding higher levels of poverty in extended type households in relation to nuclear type households.

Chapter 6: Household composition and household well-being in South Africa

The period 1995 – 2006 in South Africa is characterised by a general movement away from nuclear forms of household organisation and towards extended forms of household organisation. Given the demographic profile of extended type household heads (discussed in Chapter 4), this suggests that such extended type households are more likely to be poor compared with their nuclear type counterparts. This chapter explicitly tests the relationship between household structure and household well-being. Both poverty headcount ratios and poverty gap ratios are calculated for households of different compositions. In particular, attention is given to the treatment of economies of scale and child costs and how these weightings can have a marked influence on the relative poverty estimates between different household types.

6.1 Data Issues

The strength (although not the direction) of the relationship between household structure and well-being can be directly estimated by examining aggregate household income in order to generate income-based measures of poverty. The following section attempts to calculate per capita poverty estimates for households of different types using data from the General Household Survey (GHS) 2006. In this regard, two per capita poverty lines are utilised as adopted by Hoogeveen and Osler (2005) (see Chapter 5)– namely, a higher R442 per month poverty line in constant 2006 prices (calculated specifically for South African households) and a lower poverty line of R242 per month in constant 2006 prices ($2 a day international poverty line). However before estimates of poverty can be generated, certain concerns regarding biases within the data must first be addressed.

6.1.1 Income Sources in the General Household Survey 2006

Per capita household income is calculated by dividing aggregate household income by the total number of individuals residing within the household. In the current analysis, total household income is derived from both earned income from employment as well as unearned income from social grants.[1] Table 6.1 below reports the main income sources for households broken down into broad

[1] Although the GHS 2006 does not directly collect information on income from social grants, this amount can be indirectly estimated. In this regard the GHS 2006 asks each household member which social grants they are currently receiving. By imputing the 2006 Rand value for each of these social grants (as released by the Department of Welfare), total income from social grants can be derived.

household type categories.[2] 'Salaries and wages' are the most important source of income for all broad household types, with 66.42% of nuclear type households, 43.19% of extended type households and 59.98% of other type households reporting 'salaries and wages' as their main source of income. This is followed by 'pensions/grants' as the second most important source of income. For extended type households in particular, social grants provide the primary source of income for 42.26% of these households. This result is unsurprising, given that household heads from extended type households are considerably older than household heads from nuclear and other type households (see Chapter 4, section of 4.1.2) and thus a large proportion of extended type households qualify for the state old age pension.

Table 6.1: Household's main source of income by broad household type, 2006

	Nuclear (%)	Extended (%)	Other (%)	Total (%)
Salaries/Wages	66.42	43.19	59.98	58.52
Remittances	10.34	10.11	22.17	10.81
Pensions/Grants	15.64	42.26	10.14	24.11
Selling farm products	1.45	1.04	0.84	1.29
Other non-farm income	3.52	2.25	2.62	3.06
No income	2.62	1.15	4.25	2.22
Total	100	100	100	100
Sample size	16 551	9 989	1 278	27 818

Source: Own estimates using GHS 2006
Percentages may not add to 100 exactly due to rounding
The data are weighted

Attention must be drawn however, to the percentage of households which report 'remittances' as their main source of income. This is important to note due to the fact that the GHS does not provide any information on migrant remittance income and hence the resulting poverty estimates are to some extent inflated. However, given that both nuclear and extended type households report the same percentage of households with remittances as their main source of income (10%), the relative rankings between these two groups may not be notably affected by this omission.

Of further concern however, is the fact that certain specific household types have an unusually high reliance upon remittance income as their main source of household income. Under the broad household category of nuclear, 15% of single person households and 20% of single parent households report remittance income as their main source of household income. Hence both single person and single parent households will underestimate aggregate income and poverty estimates

[2] This information is derived from Question 4.68 of the GHS 2006 which asks "What is the main source of income for this household?"

may be biased upwards relative to the remaining household types. The broad household category of 'other' also has a particular reliance upon household remittances as their main source of income, particularly siblings only households and child headed households.[3] However, such 'other' household types are of less concern given that they comprise only 4.6% of all household types. Despite the admitted undesirability of omitting remittance income from the calculation of total household income to be used in estimates of poverty, this result was unavoidable given the GHS's failure to collect information on the value of remittance income.

The Labour Force Survey (LFS) does however collect information on remittance income. Although no information on relationship to the household head is collected in the LFS, single person households may be identified by examining household size. Mean income from migrant remittances for single person households which report receiving remittance income in the LFS 2003 is estimated at R 222 per month in constant 2006 prices. If this value is assigned to single person households who have remittances as their main source of income in the GHS 2006, the poverty headcount ratio for single person households lowers fractionally from 0.2883 before the imputation (with a standard error of 0.013), to 0.2865 after the imputation (with a standard error 0.013). Thus it would seem that such unavoidable omission of remittance incomes has only a small impact upon poverty results (at least for single person households).

6.1.2 Zero Incomes

Table 6.2 displays the proportion of households with a reported household income of zero according to household type.[4] In terms of estimating poverty, a household that reports zero total income means that all individuals within this household fall below the poverty line. In this regard, 13.92% of nuclear households compared with 6.25% extended households report receiving a total household income of zero. Households from the broad household type category of 'other', have as many as 25.27% of households reporting zero total household income. Unfortunately, the extent to which such zero incomes are real rather than simply reporting errors (or perhaps an alternate mechanism of non-response) is difficult to ascertain.

[3] Child headed households are a very small sample (only 42 households out of 28,002 households) and hence their population weighted statistics consistently display a large amount of variance. In this case the percentage of child headed households who report remittance income as their main source of income varies between 68% and 93% of child headed households at the 95% level of confidence. Statistics for child headed households are thus at best tentative.

[4] Missing incomes are also a common problem in household surveys. However Vermaak (2008) shows that multiple imputation for missing values makes very little difference to poverty estimates.

Table 6.2: Percentage of households with zero total household income, 2006

	% of households with zero income	std error
Nuclear Type	13.92	0.422
single	23.60	0.921
couple	12.33	1.140
nuclear family	3.33	0.363
single parent	15.78	0.858
Extended Type	6.26	0.341
three generation	4.07	0.440
skip generation	5.34	0.707
multi generation	3.84	2.296
complex but related	9.82	0.698
Other Type	25.27	1.704
siblings only	30.71	2.418
complex unrelated	12.85	1.963
child headed	67.79	8.819
Total	11.91	0.299

Source: Own estimates using GHS 2006
Notes: The data are weighted

Looking at zero household incomes for specific household types, child headed households have a very high percentage of households with zero income (67.79% of all child headed households). This is however expected given that such child headed households do not contain the working aged. Amongst nuclear type households, single person households and single parent households contain a high percentage of zero incomes at 23.6% and 15.78% respectively. However, recall that single person households and single parent households have a relatively higher reliance upon remittance income as their main source of income (which was not collected in the GHS 2006) compared to other household types. It therefore stands to reason that single person and single parent households have a higher percentage of households with zero reported income.

Table 6.3: Percentage of zero income and non-zero income pensioner households, 2006

% of pensioner households	**African**	**Coloured**	**Indian**	**White**	**Total**
Zero Income	2.35	5.86	5.37	36.69	7.82
Non- Zero Income	97.65	94.14	94.63	63.31	92.18
Std Error	0.32	2.20	2.53	3.01	0.63
N	4,852	723	113	661	6,349

Source: Own estimates using GHS 2006
Notes: The data are weighted

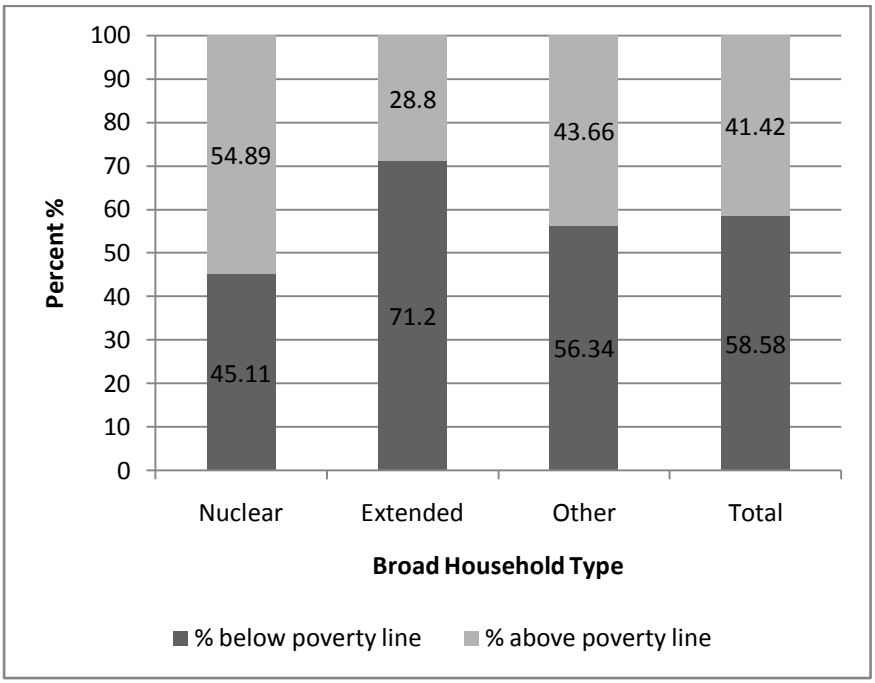
A further potential source of zero incomes (apart from remittance income) is the fact that the GHS 2006 collects no information on monthly income from *private* pensions (information on the state old age pension however is provided), interest or dividends. This omission will again underestimate total household income for these households and thus bias poverty estimates upwards. Table 6.3 presents the percentage of zero income and non-zero income households who have at least one household member of pension age by race.[5] In this regard 7.82% of households containing a pensioner report a total household income of zero whilst as many as 36.69% of White households containing a pensioner report zero household income. Given that such pensioners within these households would qualify for the state old age pension (provided they were truly receiving no income), these households are almost certainly falsely appearing as zero income households. Nonetheless, despite these apparent reporting errors, such zero income pensioner households comprise only 411 out of a total of 28,002 households.

6.2 Per capita estimates of poverty

Bearing the above limitations within the data in mind, table 6.4 presents per capita poverty headcount ratios and poverty gap ratios for each of the broad household type categories using the R447 per month poverty line and lower R242 per month poverty line (constant 2006 prices). Firstly, looking at poverty using the R447 poverty line (as displayed in corresponding figure 6.1), extended type households have a higher poverty headcount ratio than both nuclear and other type households with 0.712 (71.2%) of all extended type households falling below the poverty line compared with 0.451 (45.1%) of nuclear type households and 0.563 (56.3%) of other type households. Such poverty rankings seem plausible given the demographic characteristics of broad household types presented in Chapter 4 (see section 4.2.2). The poverty gap ratio for the R447 poverty line however shows that nuclear type households are further away from the poverty line than extended type households (the depth of poverty). Thus extended type households appear to be more closely clustered around the poverty line.

[5] Men qualify for the state old age pension at 65 years of age. Women qualify for the state old age pension at 60 years of age.

Figure 6.1: Per capita poverty headcount ratios by broad household type (R447 poverty line), 2006



Source: Own estimates using GHS 2006
Notes: See table 6.4 for standard errors; the data are weighted

Examining the poverty headcount ratios for broad household types at the lower R242 poverty line (which depicts more intense levels of poverty) shows very similar results. However the poverty gap ratio at the lower R242 poverty line increases for nuclear type households whilst decreases for extended type households compared to the R447 poverty line. Overall, these results suggest that extended type households are more likely to fall below the poverty line than nuclear type households. However, of those households falling below the poverty line, nuclear type households appear to be deeper in poverty than extended type households.

Table 6.4: Per capita poverty estimates by broad household type (constant 2006 prices), 2006

	Headcount Ratio	Std Error	Poverty Gap Ratio	Std Error
R 447 poverty line				
Nuclear	0.4511	0.0089	0.6311	0.0061
Extended	0.7120	0.0081	0.5803	0.0062
Other	0.5634	0.0222	0.6645	0.0171
Total	0.5858	0.0074	0.6017	0.0053
R 242 poverty line				
Nuclear	0.3078	0.0073	0.6537	0.0051
Extended	0.4864	0.0092	0.4978	0.0052
Other	0.3754	0.0212	0.7762	0.0170
Total	0.3996	0.0071	0.5639	0.0041

Source: Own estimates using GHS 2006; Notes: The data are weighted

Table 6.5: Per capita poverty estimates by household type, 2006

		Head-count	Std Error	Poverty Gap	Std Error	Head-count	Std Error	Poverty Gap	Std Error
		R447 poverty line				R242 poverty line			
Nuclear	single	0.2883	0.0127	0.8833	0.0124	0.2543	0.0125	0.9551	0.0124
	couple	0.2366	0.0134	0.6510	0.0112	0.1509	0.0117	0.9042	0.0110
	nuclear family	0.4018	0.0119	0.5347	0.0072	0.2279	0.0090	0.5402	0.0056
	single parent	0.7317	0.0123	0.6910	0.0106	0.5738	0.0130	0.6542	0.0106
Extended	three generation	0.7562	0.0099	0.5817	0.0083	0.5320	0.0132	0.4700	0.0078
	skip generation	0.7833	0.0138	0.4913	0.0097	0.4328	0.0149	0.4158	0.0086
	multi generation	0.7547	0.0650	0.5569	0.0507	0.5114	0.0799	0.4336	0.0450
	complex but related	0.5876	0.0151	0.6418	0.0108	0.4271	0.0136	0.6112	0.0092
Other	siblings only	0.5992	0.0271	0.7618	0.0237	0.4654	0.0281	0.8482	0.0251
	complex unrelated	0.5104	0.0351	0.5401	0.0231	0.2644	0.0301	0.6562	0.0212
	child headed	1.0000	0.0000	0.8625	0.0431	0.9728	0.0206	0.7829	0.0759

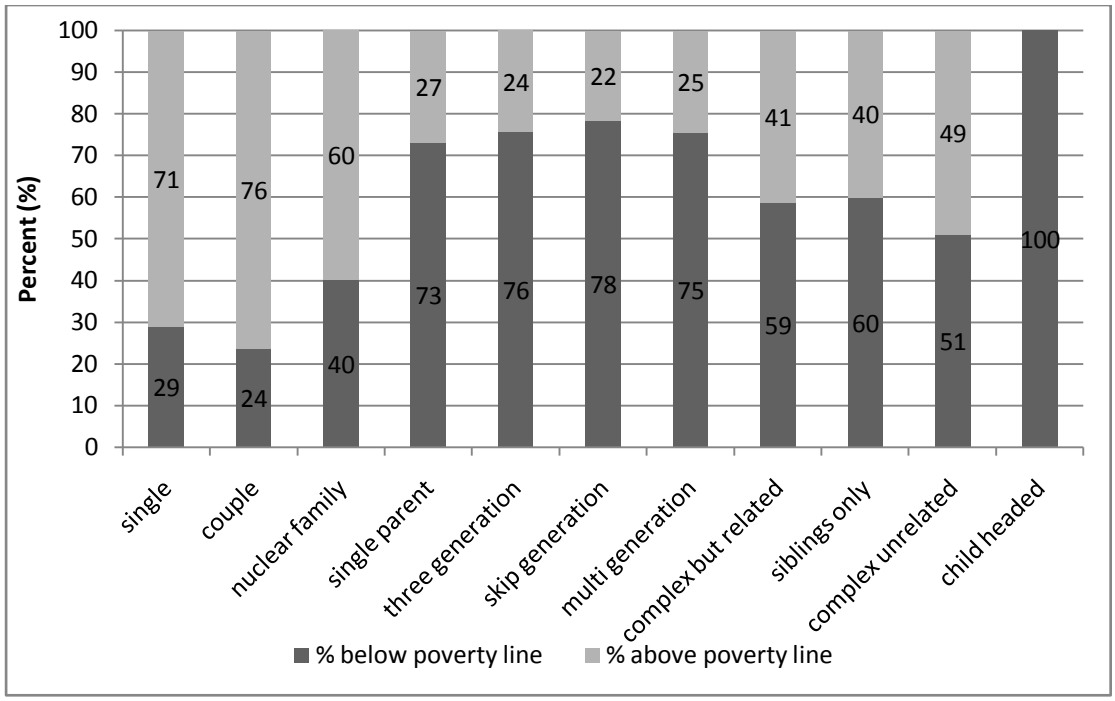
Source: Own estimates using GHS 2006
Notes: No equivalence scales
The data are weighted

Although examining broad household types is generally instructive, it has been shown at length that specific household types within these broad household type categories may show considerable heterogeneity (see Chapter 4) and are thus worth examining individually. In this regard, table 6.5 displays poverty headcount ratios and poverty gap ratios for each specific household type at the R447 poverty line and the R242 poverty line. Looking at poverty headcount ratios for the higher R447 poverty line (also corresponding to figure 6.2 below), child headed households have an alarming poverty headcount ratio of 1.0 (100%). However given their small sample size as well as reliance upon remittance income (which was omitted from this analysis), the accuracy of this estimation is rightly questionable.[6] Single parent households contain the second highest proportion of individuals below the R447 poverty line at 0.73 (73%). This is noteworthy given that single parent households fall under the broad household category of nuclear, and as already discussed, nuclear type households have the lowest levels of poverty. Nonetheless single parent households are also particularly female-headed (approximately 87% of single parent households are female-headed) as well as containing no other potentially income-generating/receiving adult members. Hence single parent households seem rightly vulnerable to poverty. However it must be borne in mind that single parent households also rely more heavily upon remittance income than other household types.[7] Complex but related households have a significantly lower headcount ratio of 0.588 (58.8%) than

[6] Child headed households have a small sample size of only 97 individuals (or 42 households). Furthermore, 84% of child headed households site remittance income as their main source of income.
[7] Approximately 15% of single parent households have remittance income as their main source of income as opposed to an average of 11% for all household types.

other extended type households. Nonetheless this figure is still comparatively high when compared to poverty head count ratios for nuclear type households.

Figure 6.2: Per capita poverty headcount ratios by broad household type (R447 poverty line), 2006



Source: Own estimates using GHS 2006
Notes: See table 6.5 for standard errors
The data are weighted

Overall, per capita poverty estimates according to household type categories show that nuclear type households appear to be less vulnerable to poverty than extended type households, both at the R447 poverty line and at the R242 poverty line. Nonetheless, within these broad household type categories certain specific household types deviate from this general pattern. More specifically, amongst nuclear type households, single parent households have a much higher headcount ratio which seems plausible given their demographic characteristics, whilst amongst extended type households, complex but related households have a significantly lower headcount ratio.

6.3 Equivalence Scales

Per capita estimates of poverty ignore the fact that resource requirements for individuals and households are not necessarily homogenous. As detailed in Chapter 5, a common adjustment in the literature is to attempt to account for economies of scale in household size (given the relative reduction in consumption needs of larger households compared to smaller households due to public goods), as well as to account for the lower costs of children (given the lower consumption needs of

children relative to adults) by employing equivalence scales. Given that certain household types contain more children and more household members than others, this means that the choice of equivalence scale is also likely to impact upon the relative poverty estimates between these household types. The analysis that follows therefore examines the sensitivity of poverty estimates to the specific choice of equivalence scale with respect to households of different composition.

6.3.1 Economies of Scale

The relationship between household size and household composition has already been detailed in Chapter 3. It was found that extended type households contained a higher number of household members as well as greater variance in household size than nuclear type households. Single person households had the smallest household size followed by couple households with mean household sizes of one and two respectively (this is unsurprising given the definitions of single person and couple households). Largest household sizes were multi generation households and three generation households with mean household sizes of 8.39 and 6.52 respectively in 2006. These findings therefore suggest that extended type households will be biased towards reporting higher poverty levels compared to nuclear type households if economies of scale are not accounted for.

Table 6.6: Sensitivity of poverty estimates to economies of scale for broad household types, 2006

		Nuclear		**Extended**		**Nuclear**		**Extended**	
Equivalent poverty line	θ	**Head-count**	Std Error	**Head-count**	Std Error	**Poverty Gap**	Std Error	**Poverty Gap**	Std Error
R 447	**1.0**	0.4511	0.0089	0.7120	0.0081	0.6311	0.0061	0.5803	0.0062
R 551	**0.9**	0.4505	0.0090	0.6990	0.0083	0.6311	0.0061	0.5728	0.0061
R 633	**0.75**	0.4544	0.0090	0.6852	0.0084	0.6249	0.0061	0.5555	0.0060
R 779	**0.6**	0.4591	0.0091	0.6675	0.0087	0.6185	0.0060	0.5396	0.0059

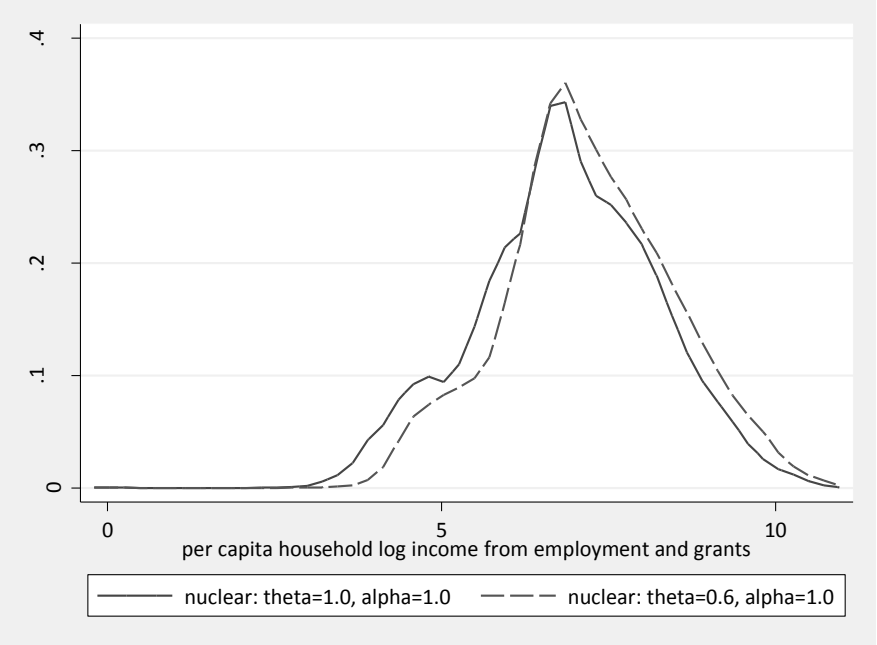
Source: Own estimates using GHS 2006
Notes: Child cost α=1.0, the data are weighted

Table 6.6 explicitly tests this hypothesis. Four different plausible weightings for θ (similarly used by Woolard and Leibbrandt, 2001) are compared to the base category for θ where no economies of scale parameter is employed (i.e. θ=1.0). Child costs are held constant at α= 1.0. The poverty line employed is R447 per capita per month which is then subsequently adjusted according to the equivalence scale (see Chapter 5 for a discussion of this process). Nuclear type households experience little to no change in the proportion of households below the poverty line as the value of θ is decreased (and hence the affect of economies of scale is increased). Extended type households do however experience a consistent decline in their poverty headcount ratios as the value of θ is

decreased. Similarly, the poverty gap ratio adjusts disproportionately for nuclear and extended type households– whilst both nuclear and extended type households experience a decline in their poverty gap ratio as the value of θ is decreased, this reduction is three and a half times greater for extended type households. It is thus clearly evident that the choice of economies of scale parameter does have a marked impact upon estimates of poverty amongst broad household types.

Figures 6.3 and 6.4 show how the economies of scale parameter affects the distribution of household income for nuclear and extended type households respectively. Using an Epanechnikov kernel density estimation of the natural log of per adult equivalent household income, the figures compare the two outermost values for θ– namely, where θ= 1.0 and where θ= 0.6.[8]

Figure 6.3: Epanechnikov kernel estimation – Sensitivity of per adult equivalent household log income to the economies of scale parameter (θ) for nuclear type households



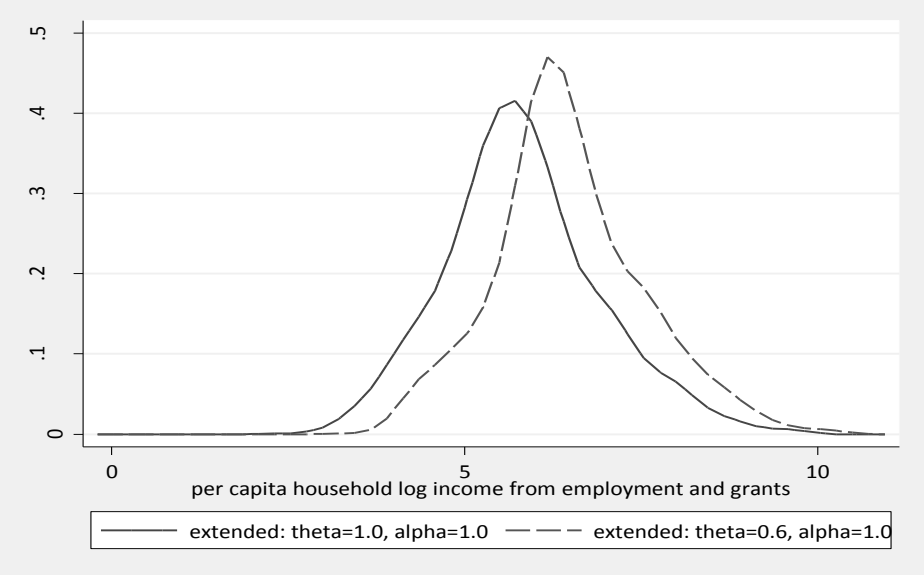
Source: Own estimates GHS 2006
Notes: The data are weighted

As can be seen in figure 6.3, nuclear type households experience a rightward shift in their distribution of per equivalent household income. Median per adult equivalent income shifts from natural log income 6.80 (R 898 in constant 2006 prices) where θ= 1.0, to natural log income 7.11 (R 1224 in constant 2006 prices) where θ= 0.6. Extended type households experience a comparatively much greater rightward shift of their distribution (as shown in figure 6.4). Median per adult equivalent income moves from natural log 5.72 (R 305 in constant 2006 prices) where θ= 1.0 to

[8] Income is derived from earned income from employment as well as unearned income from social grants.

natural log 6.33 (R 561 in constant 2006 prices) where θ= 0.6. Hence, it can be clearly seen from the figures that the economies of scale parameter disproportionately affects the per adult equivalent income distribution of extended type households compared to nuclear type households. Furthermore, if the poverty line was not adjusted in line with changes in the equivalence scale, decreasing the value of θ would cause a dramatic fall in poverty (given the sizable rightward shift in the distribution).

Figure 6.4: Epanechnikov kernel estimation – Sensitivity of per adult equivalent household log income to the economies of scale parameter (θ) for extended type households



Source: Own estimates GHS 2006
Notes: The data are weighted

Table 6.7 shows the impact of changing the economies of scale parameter for each specific household type by comparing headcount and poverty gap ratios where θ= 1.0 and θ= 0.6 (child costs are held constant where α=1.0). Looking within the broad household category of nuclear, single person, couple and single parent households all experience an increase in their poverty headcount ratios when the value of θ is decreased. Only nuclear family households experience a slight decrease in their poverty head count ratio amongst nuclear type households. This is due to the fact that the equivalent poverty line adjusts upwards when the value of θ is decreased, such that households which derive little benefit from economies of scale in consumption, record overall increases in their headcount ratios. This is particularly true for single person and couple households which have small fixed household sizes of one and two respectively and thereby experience little to no economies of scale.

Table 6.7: Sensitivity of poverty estimates to economies of scale for specific household types

Economies of scale		**θ= 1.0**		**θ= 0.6**			**θ= 1.0**		**θ= 0.6**		
Equivalent poverty line		R447		R551			R633		R779		
		Head-count	Std Error	Head-count	Std Error	% Δ of Head-count	Poverty Gap	Std Error	Poverty Gap	Std Error	% Δ of Pov Gap
Nuclear	single	0.288	0.0127	0.349	0.0132	21.01	0.883	0.0124	0.806	0.0124	-8.80
	couple	0.237	0.0134	0.280	0.0164	18.38	0.651	0.0112	0.642	0.0118	-1.32
	nuclear family	0.402	0.0119	0.388	0.0120	-3.32	0.535	0.0072	0.516	0.0069	-3.55
	single parent	0.732	0.0123	0.744	0.0124	1.70	0.691	0.0106	0.685	0.0106	-0.84
Extended	three generation	0.756	0.0099	0.696	0.0109	-8.00	0.582	0.0083	0.528	0.0083	-9.20
	skip generation	0.783	0.0138	0.766	0.0142	-2.16	0.491	0.0097	0.463	0.0092	-5.77
	multi generation	0.755	0.0650	0.645	0.0755	-14.57	0.557	0.0507	0.469	0.0460	-15.83
	complex but related	0.588	0.0151	0.561	0.0147	-4.58	0.642	0.0108	0.626	0.0103	-2.51
Other	siblings only	0.599	0.0271	0.626	0.0263	4.48	0.762	0.0237	0.747	0.0242	-1.97
	complex unrelated	0.510	0.0351	0.419	0.0357	-17.82	0.540	0.0231	0.572	0.0225	5.86
	child headed	1.000	0.0000	1.000	0.0000	0.00	0.863	0.0431	0.855	0.0618	-0.92

Source: Own estimates GHS 2006
Notes: Child cost α=1.0
The data are weighted

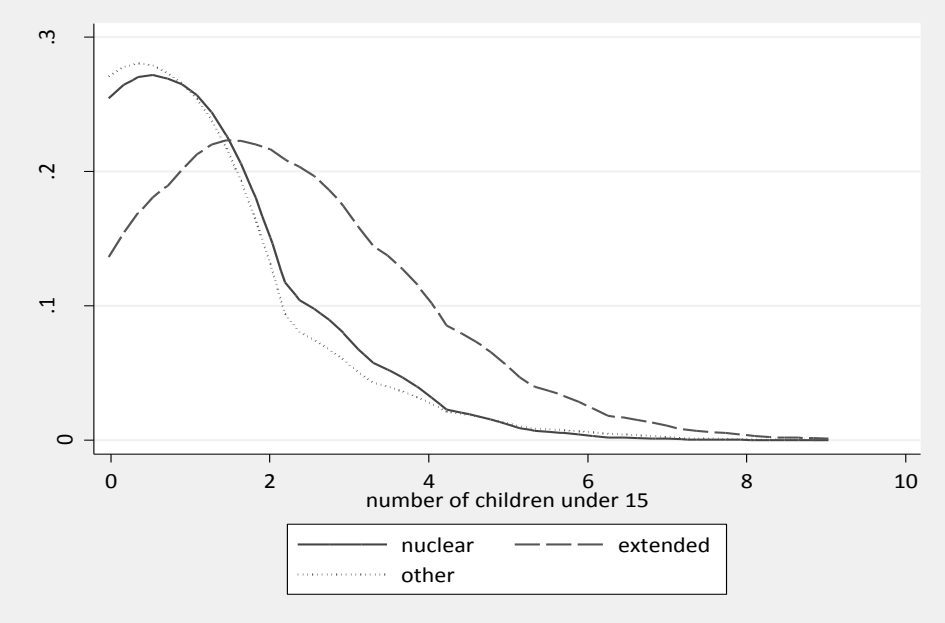
All extended type households experience a decrease in their headcount ratios when the value of θ is decreased. This is most notable for three generation and multi generation households– again, an unsurprising result given that these household types contain a minimum of three and four household members respectively. Poverty gap ratios show that, in general, all households falling below the poverty line move closer to the poverty line when the value of θ is decreased (with the exception of complex unrelated households).

Overall, it is clear that the choice of economies of scale parameter has a marked impact upon the distribution of poverty amongst households of different composition when using equivalence scales. More specifically, extended type households become comparatively less poor compared to nuclear type households as the economies of scale weighting is increased. This is particularly true when comparing single person and couple households amongst nuclear type households, to three generation and multi generation households amongst extended type households.

6.3.2 Child Costs

An equivalence scale typically adjusts for economies of scale in household consumption (as examined above) *as well as* adjusting for the lower consumption needs of children compared to adults. The latter is undertaken by simply weighting the consumption needs of children by some proportion of the comparative needs of adults (see equation 5.1 in Chapter 5). As was the case for changing the economies of scale parameter demonstrated above, the choice of child costs is also likely to effect the distribution of poverty amongst households of different composition given that different household types have different numbers of children.

Figure 6.5: Epanechnikov kernel estimation– no. of children under 15 yrs by broad household type



Source: Own estimates using GHS 2006
Notes The data are weighted

Figure 6.5 examines the distribution of the number of children younger than fifteen years of age living in a household according to broad household type, using an Epanechnikov kernel density estimation. Nuclear and other type households have a very similar distribution with the majority of nuclear households containing no children under the age of fifteen (59% of nuclear type households), as well as the majority of other type households containing no children (67% of other type households). Extended type households have a very different pattern compared to nuclear and other type households. In this regard only 15% of extended type households contained no children under the age of fifteen, with a median number of children equal to two. Importantly, this implies that extended type households will be more sensitive to the choice of child costs when estimating poverty compared to nuclear or other type households.

The above relationship between household composition and the number of children under the age of fifteen is largely expected. Given that single person households and couple households both by definition contain no children, it is no surprise that the majority of nuclear type households contain no children. Furthermore given that three generation, skip generation and multi-generation households all contain more than one generation of family members it is warranted that the minority of extended type households contain no children under the age of fifteen.

Table 6.8: Sensitivity of poverty estimates to child costs for broad household types

		Nuclear		**Extended**		**Nuclear**		**Extended**	
Equivalent poverty line	**Child Cost**	**Head-count**	Std Error	**Head-count**	Std Error	**Poverty Gap**	Std Error	**Poverty Gap**	Std Error
R 447	**1**	0.4511	0.0089	0.7120	0.0081	0.6311	0.0061	0.5803	0.0062
R 477	**0.75**	0.4436	0.0088	0.7008	0.0081	0.6272	0.0060	0.5720	0.0061
R 511	**0.5**	0.4350	0.0088	0.6857	0.0082	0.6209	0.0059	0.5613	0.0059
R 551	**0.25**	0.4239	0.0086	0.6668	0.0082	0.6112	0.0057	0.5465	0.0057

Source: Own estimates using GHS 2006
Notes: Economies of scale parameter θ=1.0
The data are weighted

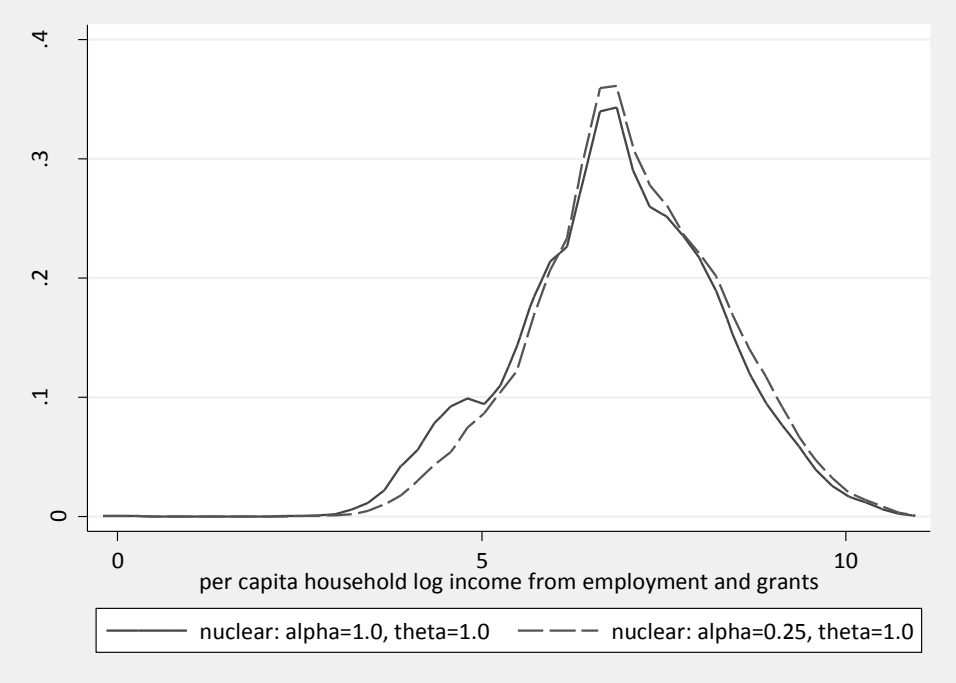
The relationship between estimates of poverty for different household types and child costs are explicitly tested in table 6.8. Poverty headcount ratios and poverty gap ratios are calculated using three different plausible values for α (whilst θ is held constant at 1.0) compared to the base category where α= 1.0 (i.e. a child is weighted the same as an adult as in per capita estimates of poverty).[9] The poverty line employed is R447 per capita per month which is adjusted according to the equivalence scale chosen.

Overall, changing the child cost weighting (α) has a much slighter impact upon poverty estimates compared to changing the economies of scale parameter (θ) discussed above. In this regard, the poverty headcount ratios for nuclear and extended type households fall by 6.02% and 6.35% respectively as child costs are reduced from α= 1.0 to α=0.25. Poverty gap ratios similarly experience small declines. Figure 6.6 and figure 6.7 display Epanechnikov kernel density estimations for the distribution of the natural log of per adult equivalent income for nuclear and extended household type households respectively. The figures demonstrate the two outermost cases for child costs, where α= 1.0 (i.e. children are given the same weight as adults as in per capita estimates) and where α= 0.25 (i.e. children are weighted as one quarter of an adult). As can be seen in figure 6.6, the

[9] This is similar to the sensitivity analysis undertaken by Woolard and Leibbrandt (2001).

income distribution for nuclear type households remains fairly stable when adjusting the value of α. Median per adult equivalent income changes from natural log income 6.80 (R 898 in constant 2006 prices) when α= 1.0 to natural log income 6.95 (R 1043 in constant 2006 prices) when child costs are α= 0.25.

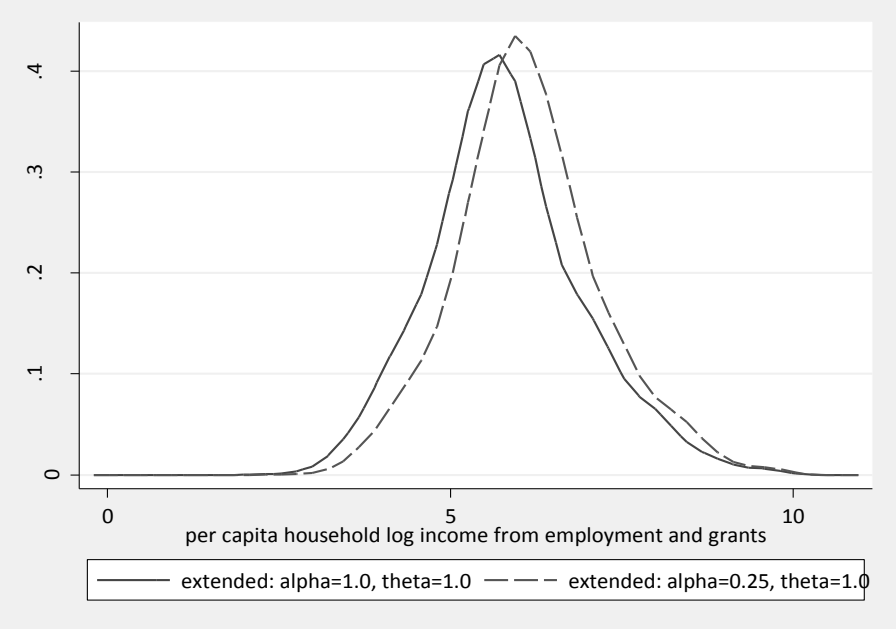
Figure 6.6: Epanechnikov kernel estimation – Sensitivity of per adult equivalent household log income to child costs (α) for nuclear type households



Source: Own estimates GHS 2006
Notes: The data are weighted

Extended type households experience a proportionally greater rightward shift in their per adult equivalent income distribution (as displayed in figure 6.7), from a median per adult equivalent income of natural log 5.72 (R 305 in constant 2006 prices) when child costs are α= 1.0 to a median per adult equivalent income of natural log 6.07 (R 432 in constant 2006 prices) when child costs are α= 0.25. Hence, these figures show that the choice of equivalence scale in terms of child costs disproportionately affects the per adult equivalent income distribution of extended type households compared to nuclear type households. The fact that the poverty headcount ratios presented in table 6.8 above do not substantially decrease when the value of α is altered, is because the poverty line is also adjusted in accordance with changes in the equivalence scale.

Figure 6.7: Epanechnikov kernel estimation – Sensitivity of per adult equivalent household log income to child costs (α) for extended type households



Source: Own estimates GHS 2006
Notes: The data are weighted

Table 6.9 shows how different weightings of α affect the poverty headcount and poverty gap ratios for each specific household type. Amongst nuclear type households, decreasing the value of α from 1.0 to 0.25 increases the poverty headcount ratio for single person and couple households (whilst decreasing the headcount ratio for nuclear family and single parent households). Such increases in the headcount ratio take place due to the fact that decreasing the value of α simultaneously increases the equivalent poverty line and therefore households with no children under the age of fifteen which do not benefit from child costs (namely, single person and couple households) record increases in their headcount ratio. Overall, aggregate changes in the headcount ratio for the broad household type category of nuclear appear slight when decreasing the value of α given that changes in the headcount ratios of specific nuclear type households move in opposite directions.

Extended type households are more consistent in terms of movements in their headcount ratios. In this regard, only complex but related households experience an increase in their poverty headcount ratio when the value of α is decreased. Of all household types, child headed households experience the greatest reduction in their poverty headcount ratio (by 14%) when the value of α is decreased. This result is plausible given that child headed households contain members under the age of fifteen years only.

Table 6.9: Sensitivity of poverty estimates to child costs for specific household types, 2006

Child cost		**α= 1.0**		**α=0.25**			**α= 1.0**		**α= 0.25**		
Equivalent poverty line		R447		R477			R511		R551		
		Head-count	Std Error	Head-count	Std Error	% Δ of Head-count	Poverty Gap	Std Error	Poverty Gap	Std Error	% Δ of Pov Gap
Nuclear	single	0.2883	0.0127	0.3051	0.0128	5.81	0.8833	0.0124	0.8581	0.0124	-2.86
	couple	0.2366	0.0134	0.2745	0.0163	16.02	0.6510	0.0112	0.6225	0.0116	-4.38
	nuclear family	0.4018	0.0119	0.3556	0.0110	-11.51	0.5347	0.0072	0.5174	0.0067	-3.24
	single parent	0.7317	0.0123	0.6966	0.0124	-4.79	0.6910	0.0106	0.6561	0.0103	-5.05
Extended	three generation	0.7562	0.0099	0.7140	0.0105	-5.58	0.5817	0.0083	0.5426	0.0079	-6.73
	skip generation	0.7833	0.0138	0.6900	0.0147	-11.91	0.4913	0.0097	0.4626	0.0094	-5.83
	multi generation	0.7547	0.0650	0.6974	0.0707	-7.59	0.5569	0.0507	0.5236	0.0477	-5.97
	complex but related	0.5992	0.0271	0.6221	0.0263	3.82	0.7618	0.0237	0.7505	0.0228	-1.48
Other	siblings only	0.5876	0.0151	0.5629	0.0148	-4.20	0.6418	0.0108	0.6123	0.0102	-4.61
	complex unrelated	0.5104	0.0351	0.4709	0.0356	-7.74	0.5401	0.0231	0.5518	0.0233	2.17
	child headed	1.0000	n/a	0.8596	0.0923	-14.04	0.8625	0.0431	0.8750	0.0891	1.45

Source: Own estimates GHS 2006
Notes: Economies of scale θ=1.0
The data are weighted

Overall, the choice of child cost weighting (α) has a clear impact upon estimates of poverty for different household types. Whilst the income distribution for nuclear type households is relatively stable when child costs are decreased, the income distribution for extended type households clearly shifts rightwards. Such changes are however much more complex at the specific household level. Indeed, headcount ratios for specific households amongst broad household types are seen to move in opposite directions when the value of α is decreased.

6.3.3 Combined Effects of Economies of Scale and Child Costs

Given that both the economies of scale parameter and the child cost weighting have the ability to affect estimates of poverty in isolation, it follows that combinations of θ and α equally effect poverty estimates with respect to household types. Headcount ratios and poverty gap ratios are calculated for plausible combinations of θ and α and presented in the Appendix (See tables 8 and 9). Table 6.10 summarises this information by displaying the distributional effects of changing the equivalence scale between the two most extreme (yet nonetheless plausible) cases of equivalence scale– namely, per capita estimates of poverty where θ= 1.0 and α= 1.0 (equivalence scale 1) and per adult equivalent estimates of poverty where θ= 0.6 and α= 0.25 (equivalence scale 2).

Table 6.10: Poverty headcount ratios and poverty rankings, 2006

Rankings	Equiv. scale 1: θ=1.0 & α=1.0	Head-count	Std Error	Equiv. scale 2: θ=0.6 & α=0.25	Head-count	Std Error	% Δ in head-count
1	Extended Type	0.7120	0.0081	Extended Type	0.6329	0.0086	-11.12
2	Other Type	0.5634	0.0222	Other Type	0.5284	0.0230	-6.21
3	Nuclear Type	0.4511	0.0089	Nuclear Type	0.4606	0.0088	2.12
1	child headed	1.0000	n/a	child headed	0.8832	0.0908	-11.68
2	skip generation	0.7833	0.0138	single parent	0.7220	0.0123	-1.33
3	three generation	0.7562	0.0099	skip generation	0.6977	0.0154	-10.93
4	multi generation	0.7547	0.0650	three generation	0.6631	0.0113	-12.31
5	single parent	0.7317	0.0123	siblings only	0.6399	0.0260	6.79
6	siblings only	0.5992	0.0271	multi generation	0.5981	0.0777	-20.75
7	complex but related	0.5876	0.0151	complex but related	0.5408	0.0144	-7.96
8	complex unrelated	0.5104	0.0351	single	0.4825	0.0151	67.34
9	nuclear family	0.4018	0.0119	complex unrelated	0.4080	0.0361	-20.05
10	single	0.2883	0.0127	nuclear family	0.3617	0.0113	-9.99
11	couple	0.2366	0.0134	couple	0.3184	0.0173	34.58

Source: Own estimates GHS 2006
Notes: The data are weighted

Amongst broad household types, changing the equivalence scale leaves relative poverty rankings unchanged (although the poverty headcount ratios between nuclear and extended type households have moved closer together). In this regard, extended type households have consistently higher headcount ratios than nuclear type households. This aligns with the demographic characteristics of household heads from extended type households as opposed to nuclear type households shown in Chapter 4.

Relative poverty rankings however change considerably when changing the equivalence scale. In this regard, complex unrelated and multi generation households are most positively affected by this change– decreasing their headcount ratios by 20% and 21% respectively. Single person and couple households are most adversely affected this change– their headcount ratios increase by 67% and 35% respectively. This is because single person and couple households comparatively contain the smallest household sizes and no children and thus do not benefit from economies of scale or child costs whilst multi generation and complex unrelated households have large household sizes with a high number of children. Nonetheless single person and couple households consistently remain amongst the least poor of household types despite increases in their headcount ratios. Nuclear family households also remain amongst the least poor when changing the equivalence scale, thus

amongst nuclear type households, only single parent households are seen to have comparatively high levels of poverty. Child headed households have the greatest proportion of households below the poverty line for all equivalence scales.[10] Skip generation and three generation households also have consistently high levels of poverty.

6.3.4 Conclusion: Equivalence Scales

In conclusion, the lesson from section 6.3 is clear. The choice of economies of scale parameter (θ) as well as child cost (α) has a definite influence upon the distribution of poverty amongst household types. More specifically, estimates of poverty using per capita household income (by implicitly choosing θ=1.0 and α= 1.0) bias poverty towards extended type households compared to nuclear type households. Nonetheless the poverty rankings of broad household types are robust to changes in the equivalence scale– namely, extended type households have consistently higher poverty headcount ratios than nuclear type households. The same is not true however for specific household types which undergo substantial change. Amongst nuclear type households decreasing the value of θ and α increases the headcount ratio of single and couple households whilst decreasing the headcount ratio of nuclear family households. Amongst extended type households, decreasing the value of α increases the headcount ratio of complex but related households, whilst decreasing the headcount ratio of three generation, skip generation and multi generation households. In general however, skip generation and three generation households have consistently high levels of poverty whilst couple, single person and nuclear family households have consistently low levels of poverty across equivalence scales.

6.4 Per Adult Equivalent Estimates of Poverty: Changes over Time

Table 6.11 and 6.12 present changes in poverty levels by household type across time. In this regard, both *per adult equivalent* estimates of poverty and *per capita* estimates of poverty are calculated for 1995 and 2006.[11] Three equivalence scales are utilised– namely, where θ= 1.0 and α= 1.0 (per capita), where θ= 0.9 and α= 0.5 (this corresponds to May et al (1995) which is widely adopted in South Africa) and where θ= 0.6 and α= 0.25 (an outermost choice of equivalence scale).

[10] Small sample sizes (below 1% of the total sample in any year) and a reliance upon remittance income which is not captured in these estimates make these estimates undeniably unreliable.

[11] Income from grants is not strictly comparable between the OHS 1995 and GHS 2006. This is because the OHS 1995 only explicitly accounts for household members receiving the old age pension and the disability grant. All other grants are grouped within the category of 'other grants'. For the present analysis any recipient of 'other grants' in the OHS 1995 is simply assigned the average value of other grants. Nonetheless such other grants are of lesser importance given that they only account for only 9.3% of all the grants received.

Between 1995 and 2006 poverty headcount ratios are seen to increase for the total population. Changes in poverty levels for South Africa are highly debated in the literature (c.f. Meth&Dias, 2003; Ardington et al, 2005; Leibbrandt et al, 2005; Hoogeveen& Osler, 2005; Van der Berg et al, 2006; Meth, 2006). Whilst there is general consensus that the level of poverty increased between 1995 and 2000, the trend in poverty post-2000 is more uncertain (although it is suspected to have declined). These results suggest that any potential decreases in poverty following 2000 have not been enough to outweigh an overall increase in poverty between 1995 – 2006.

More specifically, table 6.11 reveals that extended type households are poorer than nuclear type households in both 1995 and 2006. Furthermore there is a large increase in the headcount ratio of extended type households between 1995 and 2006 whereas there is a small decrease in the headcount ratio of nuclear type households.[12] Thus, the overall increase in the headcount ratio for the population as a whole appears to be driven mainly by extended type households. Furthermore, extended type households are seen to be consistently poorer than nuclear type households, irrespective of the year of comparison or the choice of equivalence scale (see section 6.3 above). This may suggest that extended type household structures are adopted by households as a means of economic survival during times of hardship (c.f. Keenan, 1986; Beittel, 1992). In this regard, economic need may compel households to take on further potentially income-generating members resulting in more extended type households. Alternatively, economic hardship may also cause the unemployed to seek out already income-earning (and hence potentially income-sharing) households (c.f. Klasen and Woolard, 2005). In this regard, nuclear forms of household organisation can be viewed as a luxury good that are influenced by the degree of economic need.

Looking at changes in poverty headcount ratios for specific type households between 1995 and 2006, couple and nuclear family households experience the greatest declines in their headcount ratios of 33.31% and 5.01% respectively (equivalence scale: θ=0.9 and α=0.5). This is contrasted by multi generation, complex unrelated, and complex but related households which experienced substantial increases in their headcount ratios of 28.44%, 27.60%, and 9.41% respectively (equivalence scale: where θ=0.9 and α=0.5).

[12] This is with the exception of equivalence scale 3 where both nuclear and extended type households experience an increase in their headcount ratios. Nonetheless this increase is greater for extended type households.

Table 6.11: Head count ratios for selected per adult equivalent estimates of poverty by household type, 1995 and 2006

Equivalence scale	**1. θ = 1.0 & α = 1.0**					**2. θ = 0.9 & α = 0.5**					**3. θ = 0.6 & α = 0.25**				
	Poverty line = R447					Equivalent poverty line = R580					Equivalent poverty line = R883				
	1995		2006			1995		2006			1995		2006		
	Head-count	Std Error	Head-count	Std Error	% Δ	Head-count	Std Error	Head-count	Std Error	% Δ	Head-count	Std Error	Head-count	Std Error	% Δ
Nuclear Type	0.4572	0.0021	0.4511	0.0089	-1.36	0.4419	0.0021	0.4369	0.0088	-1.13	0.4282	0.0021	0.4606	0.0088	7.58
single	0.2620	0.0084	0.2883	0.0127	10.03	0.3012	0.0088	0.3054	0.0128	1.40	0.4350	0.0099	0.4825	0.0151	10.92
couple	0.3603	0.0074	0.2366	0.0134	-34.34	0.3891	0.0075	0.2595	0.0160	-33.31	0.4132	0.0076	0.3184	0.0173	-22.95
nuclear family	0.4202	0.0026	0.4018	0.0119	-4.38	0.3930	0.0025	0.3733	0.0115	-5.01	0.3610	0.0025	0.3617	0.0113	0.20
single parent	0.6791	0.0046	0.7317	0.0123	7.75	0.6730	0.0047	0.7175	0.0125	6.61	0.6683	0.0047	0.7220	0.0123	8.04
Extended Type	0.6650	0.0022	0.7120	0.0081	7.06	0.6359	0.0023	0.6770	0.0082	6.47	0.5817	0.0023	0.6329	0.0086	8.79
three generation	0.6911	0.0027	0.7562	0.0099	9.43	0.6577	0.0028	0.7192	0.0105	9.35	0.6015	0.0028	0.6631	0.0113	10.24
skip generation	0.7648	0.0062	0.7833	0.0138	2.42	0.7553	0.0063	0.7292	0.0148	-3.46	0.7277	0.0065	0.6977	0.0154	-4.12
multi generation	0.6293	0.0180	0.7547	0.0650	19.93	0.5694	0.0180	0.7313	0.0666	28.44	0.5129	0.0180	0.5981	0.0777	16.61
complex but related	0.5417	0.0050	0.5876	0.0151	8.48	0.5175	0.0050	0.5663	0.0147	9.41	0.4568	0.0049	0.5408	0.0144	18.39
Other Type	0.4184	0.0085	0.5634	0.0222	34.67	0.4236	0.0085	0.5539	0.0221	30.75	0.3879	0.0084	0.5284	0.0230	36.23
siblings only	0.5286	0.0169	0.5992	0.0271	13.37	0.5501	0.0169	0.6168	0.0264	12.12	0.5746	0.0168	0.6399	0.0260	11.37
complex unrelated	0.3739	0.0097	0.5104	0.0351	36.51	0.3730	0.0097	0.4759	0.0356	27.60	0.3142	0.0092	0.4080	0.0361	29.85
child headed	1.0000	n/a	1.0000	n/a	0.00	1.0000	n/a	0.9801	0.0201	-1.99	1.0000	n/a	0.8832	0.0908	-11.68
Total	0.5491	0.0016	0.5858	0.0074	6.68	0.5282	0.0016	0.5614	0.0072	6.28	0.4956	0.0016	0.5493	0.0072	10.82

Source: Own estimates OHS 1995, GHS 2006
Notes: The data are weighted

Table 6.12: Poverty gap ratios for selected per adult equivalent estimates of poverty by household type, 1995 and 2006

Equivalence scale	**1. θ = 1.0 & α = 1.0**					**2. θ = 0.9 & α = 0.5**					**3. θ = 0.6 & α = 0.25**				
	Poverty line = R447					Equivalent poverty line = R580					Equivalent poverty line = R883				
	1995		2006			1995		2006			1995		2006		
	Pov Gap	Std Error	Pov Gap	Std Error	% Δ	Pov Gap	Std Error	Pov Gap	Std Error	% Δ	Pov Gap	Std Error	Pov Gap	Std Error	% Δ
Nuclear Type	0.6711	0.0017	0.6311	0.0061	-5.96	0.6672	0.0017	0.6210	0.0059	-6.92	0.6682	0.0017	0.5862	0.0058	-12.26
single	0.8577	0.0078	0.8833	0.0124	2.98	0.7892	0.0078	0.8642	0.0124	9.51	0.6479	0.0079	0.6167	0.0123	-4.81
couple	0.8159	0.0068	0.6510	0.0112	-20.20	0.7937	0.0068	0.6523	0.0115	-17.82	0.7907	0.0068	0.6045	0.0120	-23.55
nuclear family	0.5969	0.0018	0.5347	0.0072	-10.42	0.5916	0.0018	0.5216	0.0069	-11.83	0.5969	0.0017	0.5021	0.0066	-15.88
single parent	0.7822	0.0043	0.6910	0.0106	-11.66	0.7780	0.0043	0.6740	0.0104	-13.37	0.7766	0.0043	0.6642	0.0104	-14.47
Extended Type	0.6751	0.0019	0.5803	0.0062	-14.04	0.6634	0.0019	0.5534	0.0059	-16.58	0.6583	0.0019	0.5191	0.0055	-21.14
three generation	0.6741	0.0023	0.5817	0.0083	-13.70	0.6627	0.0023	0.5495	0.0081	-17.08	0.6500	0.0023	0.5038	0.0080	-22.49
skip generation	0.7266	0.0057	0.4913	0.0097	-32.39	0.7053	0.0057	0.4675	0.0094	-33.71	0.7004	0.0057	0.4414	0.0092	-36.98
multi generation	0.6416	0.0142	0.5569	0.0507	-13.21	0.6632	0.0140	0.4998	0.0477	-24.64	0.6412	0.0136	0.4423	0.0421	-31.01
complex but related	0.6466	0.0040	0.6418	0.0108	-0.73	0.6360	0.0039	0.6246	0.0104	-1.80	0.6595	0.0039	0.6117	0.0099	-7.25
Other Type	0.7071	0.0070	0.6645	0.0171	-6.03	0.6758	0.0070	0.6654	0.0170	-1.54	0.6973	0.0070	0.6821	0.0169	-2.18
siblings only	0.8379	0.0159	0.7618	0.0237	-9.09	0.8226	0.0158	0.7556	0.0232	-8.15	0.8038	0.0157	0.7433	0.0235	-7.52
complex unrelated	0.6333	0.0072	0.5401	0.0231	-14.72	0.5897	0.0071	0.5418	0.0230	-8.11	0.6190	0.0069	0.5712	0.0225	-7.72
child headed	1.0000	n/a	0.8625	0.0431	-13.75	1.0000	n/a	0.8171	0.0781	-18.29	1.0000	n/a	0.8980	0.0869	-10.20
Total	0.6742	0.0016	0.6017	0.0053	-10.76	0.6654	0.0016	0.5822	0.0049	-12.50	0.6637	0.0016	0.5515	0.0046	-16.91

Source: Own estimates OHS 1995, GHS 2006
Notes: The data are weighted

Poverty gap ratios are presented in table 6.10. These show an interesting pattern of change for broad household types across time. In 1995, nuclear and extended type households appear to have a comparatively similar depth or intensity of poverty. However, between 1995 and 2006, the poverty gap ratio for extended type households decreases by two to three times that of nuclear type households (depending on the equivalence scale) resulting in the depth of poverty for nuclear type households to now exceed that of extended type households in 2006. This result may however be more apparent then real. This is due to the fact that there are more extended type households below the poverty line in 2006 compared to 1995, and as such, these new households in poverty are likely to be close to the poverty line, hence improving the appearance of the poverty gap ratio despite the fact that the depth of poverty of households in poverty in 1995 has not changed.[13]

6.5 Conclusion

The relationship between poverty and household structure appears to be relatively clear at the broad household type level. In this regard, extended type households are poorer than nuclear type households for all plausible values of θ (the economies of scale parameter) and α (the child cost weighting)– although the discrepancy in poverty headcount ratios between nuclear and extended type households begins to close as the values of θ and α are decreased. This result aligns with earlier evidence regarding the demographic characteristics of nuclear versus extended type households presented in Chapter 4. Furthermore this also suggests that nuclear forms of household organisation can be viewed as a luxury good that can be less afforded by households facing economic constraints. Across time (between 1995 and 2006), the proportion of households below the poverty line increased for extended type households whilst decreased for nuclear type households.

The relationship between specific household types and poverty however is less clear compared to broad household types. This is due to the fact that changes in the values of θ and α have the ability to markedly change the relative poverty rankings amongst household types. Nonetheless, child headed, three generation and skip generation households all have consistently high levels of poverty for all equivalence scales whilst couple and nuclear family households have consistently low levels of poverty. Furthermore, couple and nuclear family households markedly decreased their head count ratios between 1995 and 2006, whilst multi generation, complex unrelated, and complex but related households experienced the greatest increases in their headcount ratios.

[13] The poverty gap ratio is known to be deceptive. In this regard if new households fall into poverty but are very close to the poverty line, the poverty gap ratio will decrease despite the fact that the original households below the poverty line have not improved their status (c.f. United Nations, 2005).

Chapter 7: Conclusion

This dissertation has attempted to evaluate trends in household composition for South Africa in the post-Apartheid period, with a specific focus upon changes in the demographic characteristics and poverty levels of different household types. Although previous research has been undertaken on trends in household composition within South Africa as has work been done on poverty within South Africa, both the poverty levels and demographic characteristics of households of different composition remain under-explored.

In terms of trends in household structure, Goode's (1963) convergence theory predicts that the process of modernisation will result in traditional societies transitioning from a household composition of predominantly extended forms of household organisation (i.e. households that contain immediate family members plus 'other' relatives) to a household composition of predominately nuclear forms of household organisation (i.e. households that contain immediate family members only). The validity of this theory both locally and internationally however remains highly contested in the current literature (c.f. Amoateng, 1997; Ziehl, 2001; Amoateng et al, 2007; Wittenberg&Collinson, 2007).

Using data from the nationally representative October Household Survey and General Household Survey, a comparison of household composition in South Africa is made for the period 1995 – 2006. This reveals that nuclear forms of household organisation are in fact declining whilst extended forms of household organisation are rising (in contention with convergence theory). Such broad brush strokes however mask much more unique changes in household composition with respect to the specific household level. In this regard, amongst nuclear type households there appears to be a substantial rise in single person households. This result is driven almost completely by Africans and suggests that the migratory system of labour (a common source of single person households specifically for Africans) has not diminished despite the abolishment of mobility controls with the fall of Apartheid. Furthermore, the percentage of nuclear family households is shown to diminish markedly over the period for all race groups. This is followed by a rise in non-traditional forms of extended type household organisation such as skip generation and complex but related households.

Such a rise in non-traditional forms of household organisation may perhaps be in response to the progression of the HIV/AIDS epidemic, whereby households re-organise in order to care for the sick or orphaned. Alternatively, households may be becoming more complex in response to economic

hardship. In this regard, additional income-contributing members are adopted in an attempt to increase the overall pool of available household income during times of economic need (c.f. Keenan, 1986; Beittal, 1992). Complex forms of household organisation may similarly arise where the unemployed attach themselves to already income-receiving households (c.f. Klasen&Woolard, 2005). Hence, household composition in South Africa appears to be undergoing unique change in the post-Apartheid period.

A deeper understanding of household structure in South Africa however, requires an analysis of the demographic characteristics of households of different composition. In this regard, certain correlates of modernisation correspond to the *predictions* of convergence theory– namely, that nuclear type households are more educated, have higher incomes and are more urbanised than extended type households. This is further confirmed by a probit on the probability of a household head residing in an extended type household as opposed to a nuclear type household. The probit model reveals that extended type household heads are more likely to be African than White, female-headed than male-headed, and more likely to be unemployed than employed compared to nuclear type household heads. Extended type household heads therefore fit the demographic profile of poorer households.

A common thread throughout the analysis of household composition in South Africa is the heterogeneity of household types both *between* broad household types and *within* broad household types. A univariate and multivariate analysis of specific household types demonstrates this heterogeneity. More specifically, amongst a sample of nuclear type household heads, heads that are female, African, unemployed or economically inactive, and living in a non-metropolitan area are more likely to reside in single parent households than in nuclear family households. Similarly, amongst a sample of extended type household heads, heads that are younger, male, White, more educated, economically active and living in a metropolitan area are more likely to reside in complex but related households than in three generation households.

An analysis of poverty and household composition aligns with the demographic characteristics of household types investigated above. In this regard, per capita poverty headcount ratios for broad household types reveal that extended type households are poorer than nuclear type households. However such per capita estimates of poverty implicitly ignore the affect of economies of scale in consumption (θ) as well as child costs (α). Indeed, ignoring economies of scale and child costs biases poverty estimates towards extended type households compared to nuclear type households. Nonetheless, taking into account a range of plausible values for θ and α, such adjusted estimates of

poverty consistently reveal that extended type households are poorer than nuclear type households (although the degree of disparity between these two household types narrows as the values of θ and α are decreased). This suggests that nuclear forms of household composition may be viewed as a luxury good that can be less afforded by households facing economic constraints. Across time, extended type households are also found to be growing increasingly poor over the period 1995 – 2006 whilst nuclear type households appear to be getting less poor as shown by their respective headcount ratios.

The relationship between poverty and household structure for specific household types is much less clear than for broad household types. This is due to the fact that changes in the values of θ or α substantially alters the poverty rankings between specific household types. Nonetheless, child headed households can be consistently identified as particularly vulnerable to poverty (notwithstanding their small sample size) followed by skip generation and three generation households. Amongst nuclear type households, single parent households seem far more vulnerable to poverty. This is justifiable given that single parent households consist of only one income earner (whom is most likely African and female) with at least one additional child dependant.

Overall, household composition in South Africa is seen to be undergoing significant change over the period 1995 – 2006. However this change is not towards an increase in nuclear type households as convergence theory supposes. In fact, non-standard forms of household composition are seen to be rising whilst standard forms of household composition appear to be falling. Changes *between* broad household types further mask considerable heterogeneity *within* broad household types. Furthermore, household types are seen to differ both in terms of their demographic characteristics as well as in terms of their poverty levels. With regards to poverty specifically, extended type households are found to be poorer than nuclear type households. Whilst extended type households appear to be getting poorer over the period 1995 – 2006, nuclear type households appear to be growing less poor. The relationship between household structure and poverty however is particularly sensitive to the choice of scale economies and child costs. This is especially true when measuring poverty at the specific household level.

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Appendix

Table 1: Changes in broad household type, 1995 – 2006

	1995	1997	1999	2002	2004	2006
Nuclear	67.09	56.97*	62.43*	59.67*	62.02*	62.68*
Extended	29.31	38.59*	32.48*	35.16*	33.25*	32.70*
Other	3.60	4.44*	5.09*	5.18*	4.73*	4.61*
Total	100	100	100	100	100	100

Source: Own estimates using OHS 1995, OHS 1997, OHS 1999, GHS 2002, GHS 2004, GHS 2006
Notes: * statistically different from estimate in 1995 at 95% level of confidence
The data are weighted

Table 2: Changes in nuclear type households, 1995 – 2006

	1995	1997	1999	2002	2004	2006
single	12.26	10.02*	18.07*	19.50*	21.13*	21.13*
couple	9.12	8.47*	9.05	7.44	7.75*	8.44
nuclear family	34.49	26.69*	23.65*	22.06*	21.38*	21.38*
single parent	11.22	11.79	11.66	10.67	11.76	11.73

Source: Own estimates using OHS 1995, OHS 1997, OHS 1999, GHS 2002, GHS 2004, GHS 2006
Notes: * statistically different from estimate in 1995 at 95% level of confidence; percentages sum to 100% for each year when combined with the remaining household types (shown in tables 3&4); the data are weighted

Table 3: Changes in extended type households, 1995 – 2006

	1995	1997	1999	2002	2004	2006
three generation	16.86	20.52*	16.83	17.79	18.18*	15.28*
skip generation	3.75	6.09*	4.65*	5.67*	5.36*	6.15*
multi generation	0.40	0.48	0.23*	0.24*	0.23*	0.17*
complex but related	8.31	11.50*	10.76*	11.46*	9.47*	11.10*

Source: Own estimates using OHS 1995, OHS 1997, OHS 1999, GHS 2002, GHS 2004, GHS 2006
Notes: * statistically different from estimate in 1995 at 95% level of confidence; percentages sum to 100% for each year when combined with the remaining household types (shown in tables 2&4); the data are weighted

Table 4: Changes in other type households, 1995 – 2006

	1995	1997	1999	2002	2004	2006
complex unrelated	2.11	2.46	2.84*	2.52*	1.97	1.84
siblings only	1.47	1.92*	2.14*	2.51*	2.61*	2.63*
child headed	0.03	0.07	0.11*	0.15*	0.15*	0.14*

Source: Own estimates using OHS 1995, OHS 1997, OHS 1999, GHS 2002, GHS 2004, GHS 2006
Notes: * statistically different from estimate in 1995 at 95% level of confidence; percentages sum to 100% for each year when combined with the remaining household types (shown in tables 2&3); the data are weighted

Table 5: Changes in nuclear type households by race, 1995 and 2006

	African		Coloured		White		Indian	
	1995	2006	1995	2006	1995	2006	1995	2006
single	12.43	23.15*	6.77	8.69	15.79	18.59	3.36	9.13*
couple	5.09	5.50	7.75	6.99	27.11	27.11	7.05	11.98
nuclear family	30.69	16.79*	42.50	34.30*	42.95	36.58*	55.40	48.97
single parent	13.25	12.97	7.89	10.78*	4.98	5.56	7.69	6.95

Source: Own estimates using OHS 1995, GHS 2006

Notes: * statistically different from estimate in 1995 at 95% level of confidence; percentages sum to 100% for each year when combined with the remaining household types (shown in tables 3&4); the data are weighted

Table 6: Changes in extended type households by race, 1995 and 2006

	African		Coloured		White		Indian	
	1995	2006	1995	2006	1995	2006	1995	2006
three generation	20.13	17.43*	18.65	16.21	2.71	2.80	13.75	7.75*
skip generation	4.69	7.20*	2.45	5.32*	0.93	0.98	0.72	1.59
multi generation	0.50	0.19*	0.41	0.09*	0.02	0.02	0.00	0.37*
complex but related	9.52	11.86*	9.04	12.04*	2.58	5.64*	9.79	11.66

Source: Own estimates using OHS 1995, GHS 2006

Notes: * statistically different from estimate in 1995 at 95% level of confidence
The data are weighted

Table 7: Education level of the household head by household type, 1995 and 2006

		No schooling	Grade 1 - 7	Grade 8 - 11	Matric	Degree or diploma	Total
1995	single	11.63	29.48	32.1	16.2	10.58	100
	couple	8.517	17.13	30.95	24.96	18.45	100
	nuclear family	12.06	24.48	31.04	18.48	13.94	100
	single parent	24.71	31.1	28.76	7.308	8.128	100
	three generation	34.31	34.17	23.68	3.841	3.994	100
	skip generation	38.83	31.72	20.4	5.379	3.671	100
	multi generation	20.51	37.94	29.13	9.861	2.555	100
	complex but related	14.88	27.07	33.91	14.06	10.09	100
	siblings only	5.596	23.95	36.99	23.88	9.583	100
	complex unrelated	11.71	24.29	29.09	19.7	15.2	100
	Total	17.99	27.33	29.56	14.3	10.83	100
2006	single	9.416*	22.64*	34.02	23.01*	10.91	100
	couple	7.285	14.63	29.14	27.98	20.97	100
	nuclear family	6.298*	20.8*	31.79	26.18*	14.94	100
	single parent	14.83*	26.71*	33.5*	14.9*	10.07	100
	three generation	34.35	36.94	21.31	4.663	2.738	100
	skip generation	42.4	33.77	17.63	3.888	2.308	100
	multi generation	30.51	45.52	10.79	5.232	7.951	100
	complex but related	8.261*	21.84*	38	20.1*	11.81	100
	siblings only	3.866	15.6	47.83*	26.39	6.321	100
	complex unrelated	13.22	17.6	28.14	23.52	17.51	100
	Total	14.84*	24.64*	30.78	18.9*	10.83	100

Source: Own estimates using OHS 1995, GHS 2006
Notes: * statistically different from estimate in 1995 at 95% level of confidence
The data are weighted

Table 8: Poverty headcount ratios by household type- varying the equivalence scale, 2006

	θ = 1.0		**θ = 0.9**						**θ = 0.75**						**θ = 0.6**					
	α = 1.0		α = 0.75		α = 0.5		α = 0.25		α = 0.75		α = 0.5		α = 0.25		α = 0.75		α = 0.5		α = 0.25	
	Pov line = R447		Pov line = R545		Pov line = R580		Pov line = R620		Pov line = R664		Pov line = R700		Pov line = R740		Pov line = R810		Pov line = R844		Pov line = R883	
	Head-count	Std Error	Head-count	Std Error	Head-count	Std Error	Head-count	Std Error	Head-count	Std Error	Head-count	Std Error	Head-count	Std Error	Head-count	Std Error	Head-count	Std Error	Head-count	Std Error
Nuclear Type	0.451	0.009	0.446	0.009	0.437	0.009	0.429	0.009	0.451	0.009	0.440	0.009	0.435	0.009	0.458	0.009	0.465	0.009	0.461	0.009
single	0.288	0.013	0.303	0.013	0.305	0.013	0.316	0.013	0.323	0.013	0.324	0.013	0.337	0.013	0.371	0.013	0.470	0.015	0.482	0.015
couple	0.237	0.013	0.257	0.016	0.259	0.016	0.277	0.016	0.275	0.016	0.277	0.016	0.295	0.016	0.295	0.016	0.303	0.016	0.318	0.017
nuclear family	0.402	0.012	0.386	0.012	0.373	0.011	0.358	0.011	0.385	0.012	0.370	0.011	0.358	0.011	0.382	0.012	0.369	0.011	0.362	0.011
single parent	0.732	0.012	0.728	0.013	0.717	0.013	0.703	0.012	0.733	0.013	0.721	0.013	0.714	0.012	0.738	0.013	0.736	0.013	0.722	0.012
Extended Type	0.712	0.008	0.690	0.008	0.677	0.008	0.659	0.008	0.680	0.009	0.663	0.008	0.650	0.009	0.656	0.009	0.648	0.009	0.633	0.009
three generation	0.756	0.010	0.729	0.010	0.719	0.011	0.705	0.011	0.712	0.011	0.701	0.011	0.687	0.011	0.682	0.011	0.675	0.011	0.663	0.011
skip generation	0.783	0.014	0.762	0.015	0.729	0.015	0.689	0.015	0.773	0.014	0.722	0.015	0.702	0.015	0.751	0.014	0.735	0.015	0.698	0.015
multi generation	0.755	0.065	0.731	0.067	0.731	0.067	0.681	0.071	0.729	0.067	0.711	0.068	0.681	0.071	0.645	0.075	0.645	0.075	0.598	0.078
complex but related	0.588	0.015	0.575	0.015	0.566	0.015	0.554	0.015	0.566	0.015	0.556	0.014	0.549	0.014	0.555	0.015	0.549	0.014	0.541	0.014
Other Type	0.563	0.022	0.553	0.022	0.554	0.022	0.545	0.022	0.540	0.023	0.545	0.023	0.543	0.022	0.534	0.023	0.531	0.023	0.528	0.023
siblings only	0.599	0.027	0.614	0.026	0.617	0.026	0.624	0.026	0.625	0.026	0.623	0.026	0.632	0.026	0.633	0.026	0.635	0.026	0.640	0.026
complex unrelated	0.510	0.035	0.477	0.036	0.476	0.036	0.457	0.036	0.440	0.036	0.452	0.036	0.444	0.036	0.422	0.036	0.418	0.036	0.408	0.036
child headed	1.000	0.000	0.980	0.020	0.980	0.020	0.860	0.092	0.980	0.020	0.980	0.020	0.883	0.091	0.980	0.020	0.883	0.091	0.883	0.091
Total	0.586	0.007	0.572	0.007	0.561	0.007	0.548	0.007	0.569	0.007	0.555	0.007	0.547	0.007	0.560	0.007	0.559	0.007	0.549	0.007

Source: Own estimates GHS 2006
Notes: The data are weighted

Table 9: Poverty gap ratios by household type- varying the equivalence scale, 2006

	θ = 1.0		**θ = 0.9**						**θ = 0.75**						**θ = 0.6**					
	α = 1.0		α = 0.75		α = 0.5		α = 0.25		α = 0.75		α = 0.5		α = 0.25		α = 0.75		α = 0.5		α = 0.25	
	Pov line = R447		Pov line = R545		Pov line = R580		Pov line = R620		Pov line = R664		Pov line = R700		Pov line = R740		Pov line = R810		Pov line = R844		Pov line = R883	
	Pov Gap	Std Error	Pov Gap	Std Error	Pov Gap	Std Error	Pov Gap	Std Error	Pov Gap	Std Error	Pov Gap	Std Error	Pov Gap	Std Error	Pov Gap	Std Error	Pov Gap	Std Error	Pov Gap	Std Error
Nuclear Type	0.631	0.006	0.625	0.006	0.621	0.006	0.609	0.006	0.619	0.006	0.621	0.006	0.608	0.006	0.611	0.006	0.594	0.006	0.586	0.006
single	0.883	0.012	0.862	0.012	0.864	0.012	0.844	0.012	0.836	0.012	0.843	0.012	0.820	0.012	0.763	0.012	0.615	0.012	0.617	0.012
couple	0.651	0.011	0.637	0.011	0.652	0.012	0.635	0.012	0.628	0.012	0.641	0.012	0.623	0.012	0.618	0.012	0.618	0.012	0.604	0.012
nuclear family	0.535	0.007	0.528	0.007	0.522	0.007	0.511	0.007	0.518	0.007	0.519	0.007	0.510	0.007	0.512	0.007	0.512	0.007	0.502	0.007
single parent	0.691	0.011	0.683	0.011	0.674	0.010	0.658	0.010	0.682	0.011	0.678	0.010	0.660	0.010	0.682	0.011	0.671	0.011	0.664	0.010
Extended Type	0.580	0.006	0.564	0.006	0.553	0.006	0.539	0.006	0.545	0.006	0.541	0.006	0.526	0.006	0.537	0.006	0.527	0.006	0.519	0.006
three generation	0.582	0.008	0.563	0.008	0.549	0.008	0.531	0.008	0.541	0.008	0.531	0.008	0.516	0.008	0.527	0.008	0.516	0.008	0.504	0.008
skip generation	0.491	0.010	0.475	0.010	0.468	0.009	0.458	0.009	0.454	0.009	0.462	0.009	0.443	0.009	0.456	0.009	0.445	0.009	0.441	0.009
multi generation	0.557	0.051	0.523	0.049	0.500	0.048	0.503	0.046	0.465	0.047	0.456	0.046	0.448	0.044	0.454	0.045	0.434	0.044	0.442	0.042
complex but related	0.642	0.011	0.632	0.011	0.625	0.010	0.615	0.010	0.626	0.010	0.623	0.010	0.612	0.010	0.623	0.010	0.618	0.010	0.612	0.010
Other Type	0.664	0.017	0.668	0.017	0.665	0.017	0.672	0.017	0.676	0.017	0.668	0.017	0.669	0.017	0.676	0.017	0.679	0.017	0.682	0.017
siblings only	0.762	0.024	0.754	0.024	0.756	0.023	0.752	0.023	0.746	0.024	0.754	0.023	0.748	0.023	0.743	0.024	0.745	0.024	0.743	0.024
complex unrelated	0.540	0.023	0.548	0.023	0.542	0.023	0.553	0.023	0.566	0.023	0.544	0.023	0.545	0.023	0.564	0.023	0.563	0.023	0.571	0.023
child headed	0.863	0.043	0.854	0.059	0.817	0.078	0.885	0.089	0.851	0.066	0.820	0.084	0.881	0.088	0.847	0.075	0.916	0.087	0.898	0.087
Total	0.602	0.005	0.590	0.005	0.582	0.005	0.570	0.005	0.577	0.005	0.575	0.005	0.562	0.005	0.571	0.005	0.559	0.005	0.551	0.005

Source: Own estimates GHS 2006
Notes: The data are weighted