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*A CRITICAL ASSESSMENT OF THE DETERMINANTS OF THE WEALTH  
PORTFOLIOS OF SALARIED MIDDLE AND UPPER-INCOME EMPLOYEES  
IN KENYA.* //

by

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A Conceptual Study Paper Submitted in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy in Commerce.

School of Business  
University of Nairobi

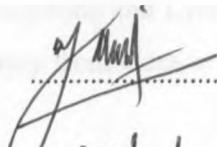
March, 2007

## DECLARATION

This is to confirm that this Independent Conceptual Study Paper which is submitted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy is my original work and has not been presented in any other University.

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## ACKNOWLEDGEMENT

This Independent Conceptual Study Paper has been written with the help of my supervisor, Dr Julius M. Malombe. I recognize the enormous contribution that he made in guiding me through the process of turning the initial idea into an acceptable academic paper. I also wish to thank Professor N. D. Nzomo of the School of Business, University of Nairobi for the useful comments and invaluable insights that he offered during the oral examination.

Special thanks go to Dr Margaret Gachuru of the University of Nairobi for her encouragement and suggestions during discussions. I am also indebted to Mr Anthony K. M. Kilele and Pasque K. Gichohi of the Central Bureau of Statistics for their important inputs on macro economic data.

Last and not least, I dedicate this work to my supportive and loving wife, Eunice and two children: *Livingstone and Lynette* due to their perseverance and understanding when I had to spend time away from them in order to complete this paper.

## ABSTRACT

The accumulation of personal wealth during a person's working life plays a key role in promoting savings, facilitating wealth creation and cushioning people in old age. Understanding the determinants of the accumulation of personal wealth whereby savings exceed consumption over a specified time is critical in informing the structure of personal wealth portfolios. The subject has, as a result, attracted the interest of academicians, practitioners and policy makers in many countries.

This study examines literature on the accumulation of personal wealth. This is done with a view to developing a conceptual model for use in assessing the determinants of the nature, mix and size of wealth holding of salaried-middle and upper income employees in Kenya, where such a study has not been undertaken before. Theoretical and empirical literature from studies in other parts of the world as well as data from wealth reports in Kenya is examined to inform the conceptual model.

The review identifies Life Cycle Hypothesis and Modern Portfolio Theory as the key models that encapsulate the principal concepts that explain personal wealth holding and its determinants. Nonetheless, evidence reviewed shows that the assumptions and conclusions pertaining to these models may not always hold when empirical data is subjected to rigorous analysis. With respect to LCH, this is particularly the case considering that employees nearing retirement are found to have little savings and hold inadequate and heterogeneous wealth. Also, in the case of MPT, people are found to have simple, narrow and undiversified wealth portfolios.

We establish that attributes that are personal to the employee as well as external variables determine the accumulation of personal wealth. Besides age and preferences, the other personal attributes are found to include income; gender; marital status; bequests; education; family size and job while in addition to asset returns, other external variables are: taxes; inflation; culture/tradition; financial markets; prices; costs and advisory services available. The unfavourable economic environment in Kenya that is characterised by low incomes, high uncertainties, substantial liquidity constraints, wide interest-spreads and high costs of debt and transactions suggest that employee wealth is likely to be low and undiversified.

# TABLE OF CONTENTS

Declaration.....	(ii)
Acknowledgement .....	(iii)
Abstract .....	(iv)
List of Contents.....	(v)
List of Tables .....	(vii)
List of Figures.....	(viii)
Appendices.....	(ix)
Abbreviations.....	(x)
<b>1.0: INTRODUCTION .....</b>	<b>1</b>
1.1 Background.....	1
1.2 The Research Problem and Questions .....	5
1.3 Research Approach .....	6
1.4 Key Concepts.....	7
1.5 Importance of the Study .....	9
1.6 Organisation of the Report.....	10
<b>2.0: GENERAL LITERATURE .....</b>	<b>11</b>
2.1 Frameworks for Personal Wealth Studies.....	11
2.2 The Life Cycle Hypothesis (LCH) Framework .....	12
2.3 The Modern Portfolio Theory (MPT) Framework.....	15
2.4 An Evaluation of the LCH and MPT Frameworks .....	18
2.5 Measuring the Wealth Portfolios of Employees .....	20
<b>3.0 : EMPIRICAL LITERATURE .....</b>	<b>22</b>
3.1 Introduction.....	22
3.2 Determinants of Employee Wealth Holdings. ....	22

3.3 The Nature, Mix and Size of Personal Wealth .....	28
3.4 Overview of the Determinants of Employee Wealth Holding in Kenya .....	33
<b>4.0: CONCLUSION</b> .....	<b>34</b>
4.1 Personal Attributes that Determine Employee Wealth Holding .....	34
4.2 External Factors that Influence Employee Wealth Holding .....	35
4.3 The Wealth Portfolios of Employees .....	36
4.4 A Conceptual Model for the Determinants of Employee Wealth .....	37
4.5 Research Gaps Identified .....	39
4.6 Conclusion .....	39
<b>REFERENCES</b> .....	<b>41</b>
<b>APPENDICES</b>	
<b>DEFINITIONS</b>	

## LIST OF TABLES

Table 1: Components of Personal Wealth from Country Surveys.....	29
Table 2: Asset Proportions in Household Wealth for Selected Countries.....	30

## LIST OF FIGURES

Figure 1: A Wage-Material Wellbeing Transmission Model for Households .....	7
Figure 2: Income and Consumption in the Basic Life Cycle Model .....	14
Figure 3: Research Variables in the Personal Wealth Determination Process .....	37
Figure 4: Conceptual Relationships of the Determinants of Personal Wealth.....	38



## APPENDICES

1. Selected Personal Wealth Survey Schemes.....
2. Income and Expenditure Surveys in Kenya.....
3. Personal Wealth (Asset) Classification Schemes .....
4. Portfolio Mixes of Various Countries 1990 to 1991.....

## ABBREVIATIONS

<b>EBRI</b>	Employee Benefits Research Institute (in the U.S)
<b>BHPS</b>	British Household Panel Study
<b>CAPM</b>	Capital Asset Pricing Model
<b>CBK</b>	Central Bank of Kenya
<b>CEPR</b>	Centre for Economic Policy Research
<b>CISDM</b>	Center for International Securities and Derivatives Markets
<b>CMA</b>	Capital Markets Authority
<b>CNRS</b>	Center National de la Rescherche Scientifique
<b>CPI</b>	Consumer Price Index
<b>CRR WP</b>	Centre for Retirement Research Working Paper
<b>DARP</b>	Distributional Analysis Research Programme
<b>EVS</b>	German Socioeconomic Panel (Wealth Survey)
<b>FRS</b>	Financial Research Survey (in U.K.)
<b>FRSS</b>	Family Resources Survey (in U.K.)
<b>GDP</b>	Gross Domestic Product
<b>GSOEP</b>	German Socioeconomic Panel
<b>GoK</b>	Government of Kenya
<b>GTZ</b>	Deutsche Gesellschaft fur Technische Zusammenarbeit
<b>HILDA</b>	Household, Income and Labour Dynamics in Australia
<b>HRS</b>	Health and Retirement Study (A Wealth Survey in the U.S.)
<b>ILFS</b>	Integrated Labour Force Survey (in Kenya)
<b>INSEE</b>	French National Institute for Statistics and Economic Studies
<b>KIPPRA</b>	Kenya Institute for Public Policy Research and Analysis
<b>KSHS</b>	Kenya Shillings, the Currency of Kenya: In Dec 2004, 1 USD= 65 KSHS
<b>LCH</b>	Life Cycle Hypothesis
<b>MPT</b>	Modern Portfolio Theory
<b>NBER</b>	National Bureau of Economic Research
<b>NSE</b>	Nairobi Stock Exchange
<b>PEPs</b>	Personal Equity Plans
<b>PRSP</b>	Poverty Reduction Strategy Paper (in Kenya)
<b>PSID</b>	Panel Study of income dynamics (A wealth survey in U.S.)
<b>RBA</b>	Retirement Benefits Authority

<b>SAPs</b>	Structural Adjustment Programmes
<b>SCF</b>	Survey of Consumer Finances (A wealth Survey in U.S.)
<b>SEDAP</b>	Social and Economic Dimensions of an Ageing Population
<b>SHIW</b>	Survey of Income and Expenditure (in Italy)
<b>TIAA-CREF</b>	Teachers Insurance and Annuity Association –College Retirement Equities Fund
<b>UHBS</b>	Urban Household Budget Survey (in Kenya)
<b>UNDP</b>	United Nations Development Programme
<b>U.K.</b>	United Kingdom
<b>USA/U.S.</b>	United States of America
<b>USD</b>	United States Dollar
<b>WMS</b>	Welfare Monitoring Survey (in Kenya)

## 1.0 INTRODUCTION

### 1.1 Background

The wealth holding of individuals and households<sup>1</sup> has attracted considerable academic attention both at the micro and macro level<sup>2</sup> in the recent past. The structure and distribution of personal wealth which is depicted by inequalities in the wealth holding of different groups is the more widely-studied aspect. A second feature of personal wealth study that has also received research attention is the process of wealth accumulation/deccumulation and its determinants. This is usually tied to a third phenomenon where the academic curiosity is the form in which wealth is held and its adequacy to support similar standard of living after retirement. Employing modern portfolio theory (MPT) yields yet a fourth aspect of personal wealth study that relies on the wide choice of investments and advances in modeling to examine whether the portfolio is optimal. This involves investigating the asset mix, the distribution of the asset returns and how these correlate with one another. This paper focuses on the determinants of the nature, mix and size of personal wealth and endeavors to develop a conceptual model that describes these relationships.

#### *1.1.1 Historical Development of Personal Wealth Studies*

Pioneer studies on personal wealth portfolios were an offshoot from theories on consumption and investments. Informed by finance theory, the seminal paper on MPT by Markowitz(1952) provided researchers with a set of quantitative tools for prescribing how investors should combine their financial assets to maximize return for a given risk thus emphasizing on the nature and mix of wealth held. On the other hand, the thrust of studies by economists was an attempt to gain insight into the life cycle in household economic behaviour, namely wealth, income, savings and consumption. They examined wealth accumulation and its determinants on the foundation of saving and consumption theory. In this line of inquiry, the LCH model of Modigliani and Blumberg (1954) appears to have gained wider acceptance in its proposition that wealth follows a hump-shape to a person's age.

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<sup>1</sup> GoK (2003a) defines a household as a person or a group of persons residing in the same compound answerable to the same head and pooling and sharing resources for common provisions such as food and house rent while Jappelli and Modigliani (2003) use the term "family" and define it to include all persons residing in the same dwelling who are related by blood, marriage or adoption.

<sup>2</sup> United Nations University (2006) reports that the richest 2% adults own half of the global household wealth and that 2/3 of world wealth is owned by people in North America and Europe.

Building on the initial models, a lot of ink and time have been expended by scholars to test the credibility of LCH and MPT frameworks. Tests on the robustness of the models have involved relaxing the assumptions to examine the theoretical base as well as fitness based on empirical data from national balance sheets, estate records, income tax returns and national wealth surveys (see examples in appendix 1).

These studies have resulted into numerous extensions to the original MPT and LCH models to improve their efficacy. Some notable modifications to MPT include: Tobin (1958) adds cash as a risk free asset; Mossin (1969) and Samuelson (1969) consider multi-period models; Merton (1969,1971) works out continuous time horizons; Mayshar (1981) brings in transaction costs in the model; Ibbotson and Siegel (1984) examine the effect of housing wealth on portfolio choice; Bodie, Merton and Samuelson (1992) consider the effect of human capital on the optimal portfolio; King and Leape (1998) examine the optimal portfolio in imperfect capital markets while Heaton and Lucas (2000) study the influence of entrepreneurial income risk. Extensions to the LCH model include the altruistic version with bequests Barro (1974) and Becker (1974) and relaxation of the certainty assumptions.

Researchers have mined theory and wealth data to ascertain the factors that act through consumption, savings and investment to determine personal wealth. In some of the leading studies [Arrondel & Masson 2002; Banks & Smith 2000; Borsch-Supan & Eymann 2000; Guiso, Halliassos & Jappelli 2002; and Mitchell & Moore 1997] researchers have turned out exciting results from examining personal wealth holding using indicants such as net wealth, shares of net wealth by asset types, trends in net wealth and the returns to the assets held. Other areas that are receiving increasing attention are participation in stockholding; the portion of stocks held in the portfolio and how the holding of certain assets such as housing impacts the wealth basket.

In most of the comprehensive studies, researchers begin with a survey of the country's institutions to inform the environment. These studies make similar assumptions: reasonable levels of income and savings; availability of affordable credit; sufficient local investment options; adequate and stable rates of returns to investments; low and stable inflation. And there lies the problem. Such assumptions cannot be sustained in an emerging economy.

Another feature that is often cited in personal wealth studies is the changing face of the investment arena. For instance, privatization of U.K. state enterprises has resulted in the quadrupling of household financial assets in the last twenty years according to Banks and Smith (2000). Other changes highlighted by Borsch-Supan and Eymann (2000), Guiso et al. (2002) and Poterba (2001b) are the broadening of the stockholder base on account of the equity culture, increased financial knowledge leading to prominence of pension schemes, house ownership and higher personal debt due to lower interest costs and increased availability of credit.

This said, it is surprising that very little research on personal wealth is documented in Africa. Yet it is apparent that the changes that transformed the financial markets in western countries are taking root on account of the recent reforms. It is thus conceivable that Kenya is about to enter an era of wide consumption, saving and investment options which has immense implications on personal wealth holding.

From LCH perspective, the key concern on the size of personal wealth is its adequacy at retirement. This is measured by the replacement rate which Munnell, Webb and Delorme (2006) define as the percentage of income after retirement to pre-retirement income. Recent applications of MPT are geared to understanding how the optimal portfolio is impacted by background risks of human capital, business wealth and housing. The studies employ logit, tobit and probit models to study preferences and subjective probabilities in investment behaviour<sup>3</sup>.

### *1.1.2 The Status of Personal Wealth Study in Kenya*

To the best of the researcher's knowledge, no study of personal wealth has been carried out in Kenya. The Central Bureau of Statistics has enlisted financial and technical support from The World Bank, GTZ and UNDP to carry out surveys of employment levels, inflation, household incomes and expenditure (appendix 2). However, the main purpose of these surveys is to study "household welfare" as depicted by the employment rate, earnings levels and

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<sup>3</sup> *The Ph. D. dissertation by Yaxuan (2007) using logit and tobit models on U.S. micro data to examine whether heterogeneity in background risk exposure can explain the observed vast variation in portfolio composition across households, especially the large fraction of households with limited stock market participation".*

expenditure. Indeed, GoK (1998, 2000) lucidly capture the spirit of the surveys by discussing the nature, distribution and levels of poverty in Kenya. Other related data that is provided by the Central Bureau of Statistics is employment, earnings and inflation levels through the annual economic survey as well as earnings and numbers of employees by income groups and location (urban and rural) in the annual statistical abstract. But, none of these reports show data on employees' wealth, expenditures and non-employment income.

In the absence of data on the economic behavior of employees, the "non-poor urban households" per GoK (1998, 2000)<sup>4</sup> are taken as surrogates for salaried middle and upper-income employees in this study. Employment earnings are significant for this category and account for about 80% of the total income. This writer opines that an understanding of how these persons allocate their wealth across assets is of critical concern because the welfare of households depends not only on the level of wealth held but also the risky ness of the portfolio; say the nature and mix of assets.

### *1.1.3 Employee Wealth Holding in Kenya*

In this study, an employee is any person who is employed for pay such as casual, part-time, workers, directors, and partners on a service contract but excludes self-employed persons, family workers who do not receive payment, informal sector employees in small-scale agriculture and pastoralist activities. According to GoK (2005), salaried middle and upper-income employees in Kenya totaled 1,004,768, in 2004 and represented 57% of all the wage earners. Their estimated per capita monthly earnings exceeded KShs 16,300 yielding an average wage income of KShs 34,289. This group is economically important since its total employment earnings of KShs 480 billion in 2004 accounted for 38% of the country's GDP.

As an emerging country, the Kenyan economy is characterized by low economic productivity, undeveloped institutional frameworks, low per capita income, little investments and savings, high unemployment and substantial inflation. The shocks associated with the adoption of SAPs in the late 1980's and early 1990's had significant negative effects on personal wealth in Kenya. A negative economic growth of -0.2% in 2000 a per capita income

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<sup>4</sup> *The Second Report on Poverty, GoK (2000) defines the poor "as those members of society who are unable to afford minimum basic human needs, comprised of food and non food items" p. 20.*

that has been growing at a low annual rate of 4% in the last four years, well below the annual inflation rate of 7.8% signify stagnation. Disposable earnings are therefore low.

Savings and investments are also severely inhibited. For instance, low levels of education as well as dominance of agriculture and hunting which boast 56% of the employed persons as shown by GoK(2003a) suggest that cultural practices and traditional values remain deeply entrenched. Other inhibitions to savings and investments include: high age-dependency rate of 85%<sup>5</sup>, unemployment rate of 14.6% and the migratory habits of labour. Low levels of income imply that the alleviation of poverty presents a bigger challenge and indeed, op cit. concludes that the country's young population structure with 63% below 19 years of age means that larger families are likely to be less able to save and make investments.

The Government has recently embarked on initiatives aimed at poverty reduction and wealth creation such as the reforms adopted in the 1990's whose immediate effect, was to open the economy to market forces<sup>6</sup>. As a result, the scope of available personal investments was widened following decontrol of interest rates in 1991, privatisation of state enterprises, the enactment of the RBA Acts in 1997; the passing of the CMA Act and the promulgation of NSE Rules leading to the commencement of secondary trading in treasury bonds. More state efforts in this direction are evidenced by policy guidelines such as the "Poverty Reduction Strategy Paper<sup>7</sup>", "Economic Recovery Strategy for Employment Creation and Poverty Reduction 2003-2007" according to GoK (2003b). The results of the recent poverty surveys provide a wealth of data that could be extremely useful in this area of study.

## 1.2 The Research Problem and Questions.

Preliminary surveys in Kenya indicate that employees' earnings, savings, investments and the related returns are likely to be low. Consequently, the wealth accumulated by employees during their working life and the resultant stream of incomes from investments may be

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<sup>5</sup> GoK(1996) defines Age Dependency Rate as the ratio of the those under 15 and above 64 years to the working-age population (between 15 to 64 years) while Blake (2003) refines it: Youth Dependency Rate, those under 15 years and Age Dependency Rate for those above 64.

<sup>6</sup> Nding'u (2000) lists the main economic reforms in Kenya between 1990 and 1997 as liberalization of financial markets, deregulation of external trade, freeing up of controls on foreign exchange and capital account, free movement of goods in the domestic market as well decontrol of domestic prices.



inadequate to sustain comparable and reasonable standards of living after retirement. Review of literature on studies in other parts of the world indicates that this state of affairs could be explained by external factors and attributes that are unique to the individual.

In Kenya, survey data has not been gathered on the wealth holding of employees to enable an examination of the possible link between personal wealth and the explanatory variables. There is also no documented study on employee wealth holdings and the determinants of such holdings. This is despite the fact such information would be of enormous importance to employees, employers, academicians and policymakers. This study seeks to fill this knowledge gap by developing a conceptual model for studying the determinants of the nature, mix and size of the wealth of salaried middle and upper-income employees in Kenya.

The foregoing yields three research questions that we seek to answer in this report

- i. What variables potentially explain the wealth holding of salaried middle and upper-income employees in Kenya?
- ii. What is the nature, mix and size of wealth holding for salaried middle and upper-income employees in Kenya?
- iii. What descriptive model can be constructed to study and explain the wealth holding for salaried middle and upper-income employees in Kenya?

### **1.3 Research Approach**

This being a conceptual paper, the study is based on review of literature that informs the theoretical concepts pertaining to personal wealth holding. Documented research works in financial economics and investment finance provide most of the inputs. The postulates from wealth accumulation models and the attendant criticisms are employed to spell out the research problem and construct the research questions. Using the same information, a conceptual framework is developed of the relationships between the nature, mix and size of personal wealth on the one hand and the hypothesized determinants. This framework is validated and enhanced by information gained from review of empirical literature in various

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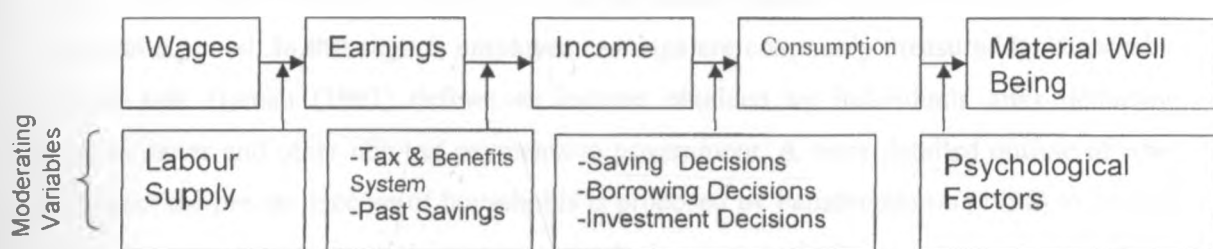
<sup>7</sup> *The PRSP "outlines priorities and measures for poverty reduction and economic growth... and is central to the development of a pro-poor and pro-growth MTEF Budget" GoK(2001).*

parts of the world and examination of related personal wealth data in Kenya. Primary and secondary data on employee wealth holding are not examined in this study.

### 1.4 The Key Concepts

The study of personal wealth is intricately tied to the precursor variables of income, consumption, saving and investments. Thus the central theme of most consumption functions is that people divide their consumption between the present and future based on estimates of their consumption needs in the long-run. Figure 1 below captures the importance of consumption as a link between wellbeing and income as developed by Crossley and Pendakur (2002) using Canadian expenditure data.

**Figure 1:** A Wage-Material Wellbeing Transmission Model for Households



**Source:** Developed from Crossley and Pendakur (2002) p.1

The authors trace how wages transition through earnings, incomes and consumption that finally determine well being. This transmission process is mediated by other labour supply; taxes and benefits; level of past savings; worker’s decisions regarding savings; borrowing and investments as well as personal psychological factors. An advancement of this model is made by investigating the investment activity that is necessary for wealth accumulation. This will be discussed further in section 2.2.2.

Majority of the studies on the accumulation and holdings of personal wealth are underpinned by two conceptual bases. Those rooted on economic theory emphasise the consumer’s inter-temporal resource allocation decision between consumption and saving and therefore subscribe to LCH while those based on finance theory rely on the asset-pricing models to inform the selection of investments, hence emphasis on MPT. This study is informed by these

two conceptual frameworks where the principal concepts are personal wealth and the four closely associated antecedents; income, consumption, saving and investment.

In common with earlier studies, personal wealth denotes the market value of a person's net assets [Bodie & Crane 1997; Johnson & Tanner 1999; King & Dicks-Mereaux 1982 and Weicher 1997]. In the same reasoning, Tracy and Schneider (2001) specify that wealth accumulation occurs when there is a long lasting increase in assets such that savings exceed dissavings. Other wealth definitions that are seldom used are the economist's version that wealth is the command over goods and services [Robinson 1956] and the discounted cash flow method [Gibson & Scobie 2003] whereby wealth is the present value of all estimated future earnings.

Tracy and Schneider (2001) define income as the flow of resources to a consumption unit in a given time period. In this regard, employee earnings are commonly measured by disposable income that Hyman (1992) defines as income obtained by individuals after deducting personal taxes and other non-tax payments to government. A more detailed outline of what comprises the pre-tax income of households is proposed by Papatheodorou (1998) to include labour income; entrepreneurial income; property income; agricultural income; income from social security and other incomes (e.g. alimonies, gifts, remittances and imputed rent).

Juster, Smith and Stafford 1999 define savings as the algebraic sum of new money put into assets plus net repayments of debt obligation. Other researchers [Claus & Scobie 2002; Tracy & Schneider 2001] apply the "stock" concept and define savings as an increase in net wealth over a given period after adjustment for capital gains, losses and net transfers. Hinging on the premises that income is either consumed or saved, the same researchers adopt the more commonly accepted "flow" concept to define savings as the difference between current disposable personal income and consumption expenditure. Loayza, Schmidt-Hebbel and Serven (2000) emphasize the centrality of savings in the wealth accumulation process and state that they drive investments which in turn determine wealth. This role is underscored in leading textbooks [Friedman & Hahn 1996; Reilley & Brown 2000] and reinforced by Ameriks, Caplin and Leahy (2003) from their review of TIAA-CREF data where they report that households with a propensity to plan tend to save a lot and accumulate more wealth.

In their leading textbook, Reilley and Brown (2000) define investment thus:

*"...it is the current commitment of money for a period of time to derive future payments that will compensate the investor for the time the funds are committed, expected rate of inflation and uncertainty of future payments" (p. 99)*

This view is supported by Carsberg (1974) who asserts that the most essential feature of investment is that it involves the commitment of resources that could be used for current consumption; results in some benefit at a future date and that both outlays and expected benefits do not always coincide. The nature of the investment made determines the quantum of funds committed; the choice of assets and debt. Whereas LCH enables us to study the inter-temporal consumption-saving choice decision of the employee, the MPT framework permits an in depth examination of the investor's allocation of resources among alternative investments.

### **1.5 Importance of this Study**

Gibson and Scobie (2003) proffer a conceptual and egalitarian justification for studying personal wealth by showing the high concentration of wealth ownership. This is collaborated by Feldstein (1976) who reports that while the top 1% of income recipients accounted for 5% of the total earnings received in the U.S, the top 1% of wealth holders owned 30% of US personal wealth. The importance of personal wealth is also underscored by Engen, Gale and Ucello (2004), who observe that:

*"Before retirement, consumption may be financed by labour earnings, decumulation of previously accumulated assets or inheritances received. After retirement, consumption is financed by assets accumulated earlier and by annuity income from social security and pensions" (p. 6)*

This analogy assumes more importance when it is noted that consumption is a more direct measure of material wellbeing than income developing countries according to Meyer and Sullivan (2003). Besides, the sheer magnitude of personal expenditure provides more support for a study on personal wealth. In this connection, Miniaci, Monfardini and Weber (2003) show that private consumption comprises 68% of GDP in the West while GoK(2005) reports

that the corresponding figure for Kenya is 74%.

Another motivation for the study on employee wealth is that deregulation and financial liberalization has brought about a wider choice of consumption and investments which when coupled with the rise in equity culture further complicates personal planning for consumption and investments according to Porteba (2001b).

Building on previous researches, this study is premised on the fact that personal wealth is quantifiable and necessary for consumption while the determinants can be isolated and analysed to identify their influence on personal wealth. The paper aims to extend the frontiers of knowledge by synthesizing the existing body of knowledge into a complete conceptual framework that explores the contribution of the hypothesized determinants to employee wealth holding. Furthermore, using a Kenya setting where the conditions are not conducive to wealth accumulation enables the study to expose biases in studies which have been carried out in western countries.

## **1.6 Organisation of the Report**

This paper has four sections. A general review of the field of study and a delineation of the research problem are set out in section 1. The major theories that inform the main concepts as well as the historical development of thought on personal wealth are surveyed in section 2. In section 3, the results of empirical studies and data on personal wealth holdings are examined in the light of the research problem and the identified conceptual frameworks. Section 4 captures the key findings, outlines the conceptual model that is developed there from, lists the identified research gaps and closes with a conclusion summary.

## 2.0 GENERAL LITERATURE

### 2.1 Frameworks for Personal Wealth Studies

Significant research interest in personal wealth by Financial Economists and Investment Finance enthusiasts is traced back to mid 20<sup>th</sup> Century. For a long time, the concept of personal investment was governed by the “casino view” whereby investing and asset pricing were regarded as speculative affairs, the preserve of the rich. This notion was however, shattered by Williams (1938) who showed that the prices of financial assets reflect an “intrinsic value” that can be measured by the discounted stream of future income. The offshoot of this reasoning was a new line of research that was devoted to examining how investors should optimally allocate their savings between competing investments and how assets should be priced. The pride of first place in achieving a breakthrough goes to Markowitz (1952) whose seminal paper expanded on John Burr William’s work and formulated the now famous MPT.

Not to be outdone, Financial Economists were pursuing parallel studies as they attempted to find explanations to three aspects of U.S. macro economic data. The paradoxes of interest were: why aggregate saving rate remained roughly constant over long time periods; the tendency of household saving rates to increase strongly with household income in cross-section data and why income inequality did not increase over long time periods. Answers to these questions were provided through theories of consumption and saving. Thus Duesenberry (1949) formulated the Relative Income Hypothesis; Modigliani and Blumberg (1954) proposed the LCH and Friedman (1957) put forward the Permanent Income Hypothesis.

Thereafter, the MPT and LCH frameworks have tended to dominate and inspire majority of the studies in personal wealth. Nonetheless, Robinson (2000) shows that there are three other conceptual bases that are also used in the study of personal wealth, namely: utility maximisation; goal-directed financial planning and environmental framework. These are discussed below for the sake of completeness.

Originating from philosophy, the *utility maximisation framework* holds that people seek to

maximise satisfaction subject to certain constraints. The *goal-directed financial planning framework* assumes that people set goals of wealth attainment over a given time frame where the major inputs are human capital, a chosen level of consumption and investments held. Finally, the *environmental framework* posits that cultural values, beliefs, traditions and regulations dictate investments activity. For instance, whereas the ownership of land or cattle may have high premium in some societies the receiving of interest income may be regarded as a taboo by others.

The main drawbacks of the *utility maximisation framework* are the difficulty of measurements and the fact that Kahneman and Tversky (1979) among others have shown that people may not always seek to maximize utility. The *goal directed approach* is faulted as unrepresentative of real life situation because it ignores probability estimates of various outcomes. Besides, people rarely articulate their goals. The *environment approach* has received little scholarly attention because of the difficulties in quantifying the variables and the impracticability of assigning functional relationships that represent different environments. Suffice to say that the challenges in developing quantifiable models to study personal wealth using these three approaches inform the decision not to apply the frameworks in this study.

## 2.2 The Life Cycle Hypothesis (LCH) Framework

The concepts of personal wealth accumulation, consumption and saving are often studied in the light of LCH [Bodie & Crane 1997; Gibson & Scobie 2003; Headey, Marks & Wooden 2004; Jappelli & Modigliani 2003; Mitchell & Moore 1997; Sabelhaus & Pence 1999; Shorrocks 1975]. This is demonstrated by Dynan, Skinner and Zeldes (2002) who model U.S savings under uncertainty and proclaim that:

*"As the workhorse of consumption and saving research for the past four decades, the life cycle model has proved flexible and useful for examining a variety of questions". (p. 274).*

Rooted in economic theory, LCH is hailed to be the earliest and most comprehensive theoretical and empirical model showing how wealth, earnings, consumption and savings change during a person's life. Its central building block is the inter-temporal trade-off

between consumption and saving that is premised on interest rates and rational behaviour. LCH notes that the fact that people have finite lives fundamentally affects their earnings, risk tolerance and consumption needs. The framework is attractive and reconciles well with sociologists' life cycle patterns by portraying where the average person is likely to find themselves at any time in the lifecycle.

Resting on the assumption of certainty of life spans, incomes and consumption as well as perfect markets, static or basic model Modigliani and Blumberg (1954) provides the cornerstone for LCH. The model assumes that people care about their own lives only as opposed to their dynasties'. Thus, their concave utility functions lead them to desire a relatively level path of consumption where forward-looking savings behaviour means that the main motivation to save is to accumulate wealth to support consumption at the habitual standard of living during retirement. They borrow before the working life, save while working and dissave when in retirement.

Lydall (1955) takes the same view and opines that incomes should rise from youth to middle age to peak just before retirement, while savings should follow an irregular path and reach the summit later in life. Accordingly, wealth should be an integration of the rate of savings and inheritances. Modigliani (1986) follows this through and concludes that wealth should be hump shaped with respect to age and that 'people attempt to smooth the marginal utility of consumption over their lifetime'<sup>8</sup> as shown in figure 2 below. Under conditions of certainty, a far-seeing retiree would set the lifetime consumption at  $C_0$  and accumulate wealth in lifespan profile A and B when employment income exceeds consumption. In Profile C, the individual draws down on wealth<sup>9</sup> when consumption exceeds employment earnings. This implies a hump shape of wealth and savings with respect to age and a flat consumption path.

Using this framework, supporters of LCH conclude that the most important determinant of individual wealth is age. The early years are associated with negative savings through financial support from parents and relatives; the middle age is characterized by high income, high savings and substantial wealth accumulation while negative savings thereafter lead to decumulation of wealth. Nevertheless, the efficacy of this reasoning in explaining wealth

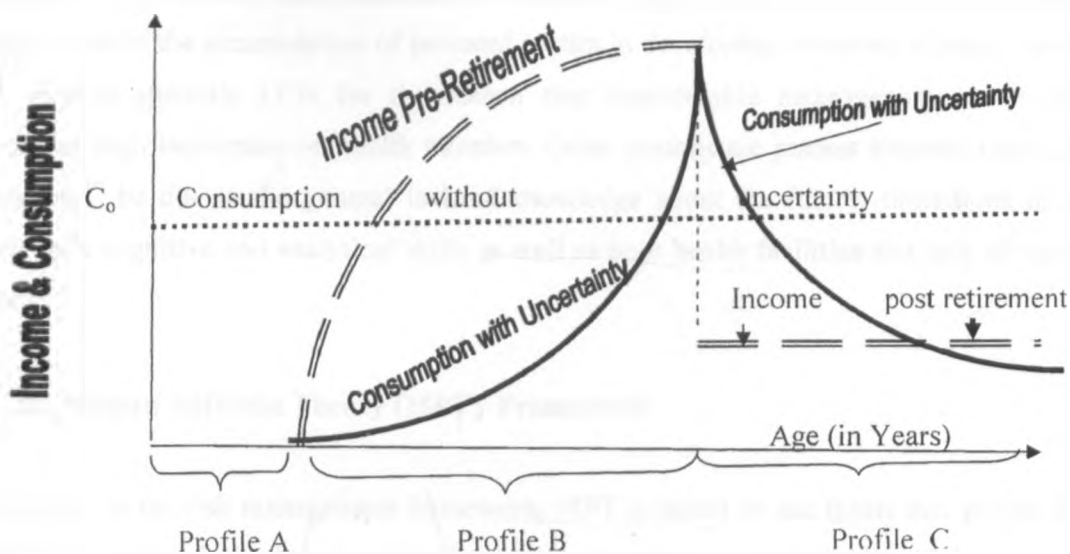
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<sup>8</sup> Browning & Crossley (2000) calls it the process of keeping the marginal utility of money constant over time.



accumulation and portfolios is weakened when the assumptions of certainty and perfect markets are removed.

**Figure 2:** Income and Consumption in the Basic Life Cycle Model



**Source:** Adapted from Mitchell and Moore (1997), Figure I.B.1

Not to be put down easily, a partial cure of the simplification of the basic model is provided by Barro (1974) and Becker (1974) who proposes the altruistic LCH. They recognise the widely observed cases of inheritances, inter-vivo gifts within the same generation and bequests. This remodeled version avers that households care about their descendants as well and therefore build and exhaust estates and inheritances to smooth their dynasty's consumption paths over many generations.

Further improvements of the LCH model are made by Deaton (1992). Browning and Lusardi (1996) who relax the LCH assumptions to allow for uncertainty<sup>9</sup>, precautionary savings due to liquidity constraints, leisure choice and the bequest motive. This yields a hump-shaped consumption path following  $C_1$  in Figure 2, that peaks just before retirement and then tapers in later years. An important support for this more inclusive approach is later provided by Pemberton (1997) who show mathematically that the model would empirically fail by ignoring mortality risk which increases with age and therefore depresses later consumption;

<sup>9</sup> *Uncertainty of earnings, mortality, tastes, health, asset returns/values*

overlooking family size and child care costs hence understating expenditure during working life, failing to recognize the role of income uncertainty and borrowing constraints.

Dynan et al., (2002) show that the controversy whether bequests matter or not in asset accumulation is resolved when uncertainty in lifespan, labour income and health are allowed. Thus analysis of the accumulation of personal wealth in developing countries is better served by a relaxed altruistic LCH for the reason that considerable heterogeneity in income encourages high incidences of wealth transfers. Other reasons are market imperfections and uncertainty<sup>10</sup> be due to the general lack of knowledge about the future; limitations in an individual's cognitive and analytical skills as well as poor health facilities and lack of social security.

### 2.3 The Modern Portfolio Theory (MPT) Framework

Also known as the risk management framework, MPT is based on the thesis that people are wealth maximisers: for a given bundle of wealth they prefer the highest return for any given level of its variability<sup>11</sup> [Francis & Archer 1979; Markowitz 1952]. The constraint of limited resources implies that investors face choice dilemmas because assets are dissimilar in attributes such as the size, timing and risky ness of returns, capital risk, liquidity and lumpiness. Assets also exhibit differences in the relationships between their prices and key economic variables such as interest rates and inflation. The MPT model suggests that investors ought to hold an optimal portfolio that is diversified to maximize returns (a proxy for utility) and minimise risk.

According to the proponents of MPT, its conceptual appeal is that it uses a simple model to identify, evaluate, control, finance and monitor personal wealth accumulation. Besides, risk management is even more important in the arena of personal wealth because unlike businesses, people have a finite life and cannot diversify their human and physical capital in

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<sup>10</sup> Goh and Downing (2002) operationalise uncertainty by the rate of unemployment and inflation, which are reportedly high in developing countries

<sup>11</sup> Whereas the original MPT was based on maximizing wealth at a fixed terminal time, other variants include maximizing the logarithmic utility function (the increase in wealth or Kelly criterion) while in the model by Luenberger (1993) investors have preferences on infinite sequences of wealth

the way investors in companies can<sup>12</sup>. MPT ties well with LCH in that the protection of human and physical capital are the key concerns at early stages in life while the protection and preservation of financial wealth becomes more important in with age.

As a tool for the study of personal wealth, the model's weaknesses are linked to its strengths. Harry Markowitz's MPT prescribed how individuals should structure their financial asset portfolios assuming that they make decisions "myopically" in a static one time horizon. capital markets are perfect and complete, there is certainty and no transaction costs. Tobin (1958) provides a part solution by adding introducing a risk free asset (cash) under the mutual fund theorem and shows that all investors should hold an identical portfolio of safe asset (cash) to risky assets.

More improvement is made when Mossin (1969) and Samuelson (1969) make an attempt to integrate MPT with lifecycle models. They develop the multi-period model to address the investment horizon shortcoming by handling longer periods that mimic lifetime planning of consumption and investment. The analysis demonstrates that an investor can optimise consumption stream over many periods and that the optimal asset allocation does not depend on the investment horizon, hence short-term and long-term investors should hold identical portfolios<sup>13</sup>. In reality though, investment horizons matter a great deal. For one, markets are neither perfect nor complete and consequently, human capital asset is not tradeable, while stock and housing are only tradeable at significant costs. Besides, expected asset returns vary over time.

Part of the answer to the questions posed above is provided by Smith (1971), Chen, Jen and Zions (1971) who recognize the existence of significant transaction costs by employing dynamic programming in the multi-period models. Merton (1969,1971) overcomes the investment horizon problem by building the continuous-time model of optimal consumption and portfolio choice of financial assets. This improved model is made more realistic by Bodie et al. (1992) who add a third choice variable, the amount of work people choose to do. Their analysis offers a good blend of LCH and MPT where they employ the life cycle model with

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<sup>12</sup> Yaxuan(2007) particularly singles out background risk that faces people because of the non-tradeable: idiosyncratic labour income, illiquid housing wealth and untradeable entrepreneurship.

<sup>13</sup> The conditions are: individuals have constant relative risk aversion; all assets are tradable at no cost. investors face constant investment opportunities over time

continuous consumption decisions and trading in risky financial assets to theorise how labour flexibility affects consumption, saving and portfolio investment in the lifecycle.

The continuous-time model results indicate that the fraction of an individual's financial wealth optimally invested in stock should decline with age. The resulting "human capital" argument posits that employee earnings are normally less risky than stock and that the share of human capital in an individual's total wealth should decline with age. Thus younger peoples' total wealth should be dominated by relatively safe human capital which calls for a large share of risky assets (stock) in the financial wealth to get sufficient risk in the wealth.

Secondly, it is rational for the young to prefer stock because they have greater labour flexibility in their labour/leisure decisions. Thus according to the law of large numbers individuals with a longer time horizon should invest more of their wealth in stock because the long run average of their portfolio returns will have a lower variance than the average return for those with shorter horizons. Younger people are therefore likely to recoup any losses from stock market down-turns and are likely to have a continuing flow of labour income until retirement. The more important conclusion is that human capital is crucial in explaining investments, labour and consumption behaviour of rational investors.

The investment horizon argument is further popularised by Jagannath and Kocherlochota (1996), Balduzi and Lynch. (1999) and Lynch and Balduzzi (2000) who argue that the fraction of wealth invested in stock should have a hump shape to age. They claim that younger people who have longer time horizons should allocate a large fraction of their wealth in stocks than a short-term investor (older people), because asset allocations are a function of the non-tradable human wealth. Young people have a long stream of future income which shortens with age leading to a fall in the value of their human capital. Investors respond by shifting the risk composition of their financial wealth in order to offset the decline in their human capital.

Ucello (2000) argues that there is a strong case for a positive correlation between salary and stock allocation. The logic is that higher salaries translate into more human capital, which is either risk-free or dominated by idiosyncratic risk that is only weakly correlated with stock

returns except for fund managers and stock option beneficiaries. Therefore, the relatively safe investment in human capital is rationally combined with a higher investment in stock. She also points out that a higher salary is a good proxy for education and financial sophistication. Arrondel and Lefebvre (2001) round all these arguments up and posit that young, educated, highly-qualified employees and non-salaried workers have high labour-supply flexibility and should have more stock in their wealth. Faig (2002), agrees and theorises that households with large human wealth and a safe job should hold less long-term bonds.

#### **2.4 An Evaluation of LCH and MPT Frameworks**

LCH has faced a number of criticisms. Chang (1993), Browning and Lusardi (1996) and Chen, Hanna and Montalto (1998) point out that the framework is fatally weakened by the fact that people are unable to borrow freely. Besides, the portfolio one holds tends to affect savings significantly since a household that chooses a portfolio with higher earnings will have available more resources over its lifetime for saving and will also have more utility. Unfortunately, higher return portfolios expose the holders to more uncertainty in their consumption, an aspect which LCH is not able to deal with in its original construction since it treats uncertainty and portfolio risk as exogenous. Kennickell Starr-McCluer and Sunden (1996) and Lusardi (2001) downplay the effect of age and disagree that people plan consumption and savings considering their life time resources; that they are forward looking; anticipate the inevitable decline in income at retirement and have an ultimate aim of maximising life time utility. They point out that the lack of problem-solving skills and uncertainty in income and wealth render people unable to define optimal savings, determine consumption plans and set desired wealth levels.

Observed cases that contradict LCH abound. Some of these puzzles include continued saving in retirement [Borsch-Supan 2001; Harvorsen 2003; Poterba 1994]; sharp falls in consumption in retirement [Bernheim, Skinner & Weinberg 1997; Miniaci et al 2003]; the inability of LCH to explain portfolio choice [Hugget 1996; Kocherlakota 1996; Cochrane 1997] or inequality in wealth, Hugget (1996). Empirical evidence contradicting LCH on account of bequest savings [Barro 1974; Becker 1974; Kotlikoff & Summers 1981; Laitner 2001; Park 2001] and the need to relax the assumptions [Browning & Lusardi 1996; Deaton

1992; Dynan et al, 2002] has led researchers to look for modifications in the theory and a search for other determinants of personal wealth.

These arguments notwithstanding, it is recognised that a person's income has a direct impact on the mix and size of wealth held. Those with higher income are able to accumulate more wealth since they have a greater capacity to save, invest and take risk. Juster et al., (1999) provides a middle ground by declaring that differences in wealth holdings are due to varying savings rates and different ex-post rates of returns on those savings. An exciting view is given by Goh and Downing (2002) who model New Zealand Consumption Expenditure and show that consumption is a function of income and wealth in the form:

$$\log(C_t) = \beta_0 + \beta_1 \log(Y_t) + \beta_2 \log(W_t) + ecm_t$$

where: **C** is consumption, **Y** is income, **W** is wealth and "ecm" is the independent and identically distributed residual term. The authors argue that this is consistent with the consumption functions by Modigliani and Brumberg (1954) and Friedman (1957). In this respect, households choose their consumption based on their overall stock of wealth namely human capital, financial and non-financial wealth. The researchers further opine that that since human capital is unobservable; the most common approach is to assume that human wealth is proportional to current income.

MPT is faulted in that the assumptions do not always hold! Investor choices are affected by laws and regulations, asset trading involves transaction costs, and different taxes rates affect asset allocations. However, a more fundamental criticism is that MPT seems to deal with financial assets only. Blake (2003) highlights the seriousness of this design fault by showing that between 1948 and 1994 in the U.K, the share of financial assets in personal wealth, which is the main thrust of MPT, was insignificant at 4.4% compared to housing at 6.8% and human capital at 76.5%.

The foregoing suggests that a study of personal wealth whose conceptual framework ignores housing and human capital is wanting. This writer opines that a detailed personal wealth study must look behind the portfolio structure and examine proxies of human capital, because

these have a profound impact on the generation, storage and consumption of wealth. This view is supported by Faig (2002) who observes that using portfolio theory on the rich asset data from surveys provides invaluable insights into the determinants of portfolio choice by employing the idea that investors should diversify to minimize risk and maximize return. He calls for complex models that address the richer opportunities and necessities facing investors: the models should include realistic treatment of human capital, business wealth and the effect of opportunities that vary over time, transaction costs and borrowing constraints.

## 2.5 Measuring the Wealth Portfolios of Employees

Whilst the early works on the personal investments under MPT were devoted to financial assets,<sup>14</sup> researchers have recently widened their scope to include non-financial<sup>15</sup> assets such as human capital, housing and entrepreneurship. In line with majority of personal wealth studies under the MPT framework tend to omit human capital and entrepreneurship because of issues of transferability and measurement the assets that are considered in this study are cash, bills, bonds, stock and housing.

Cash is the most basic of all assets and is measured by the monetary value of bank deposits, which form the largest portion of money supply. Being the most liquid and popular asset it is also regarded as riskless. Partly because it is 'simple' and also due to the fact that small investors who lack astute financial knowledge and have very little bargaining power collectively hold a large portion, it earns the least returns.

Bonds are widely issued by governments, municipalities and companies as securitisation vehicles and form a large portion of financial instruments. For treasury bonds, Plum. Humphrey and Bowyer (1961) observe that the absence of financial risks leads to very low yields and renders them quite sensitive to changes in interest rates. This results in wide fluctuations in bond prices. Suffice to say that all debt instruments have purchasing power risk, interest rate risk and market risk.

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<sup>14</sup> A more detailed outline of classification of personal assets is laid out in Appendix 3

<sup>15</sup> These assets as illiquid assets on account of their non-negligible trading costs [Pelizzon and Weber 2003].

The principal character of stocks is their upside potential of making profit from capital gains and dividend as well as the downside risk of incurring a capital loss. Benitez-Silva (2003) offers an operational definition that is suitable for the measurement of the concept of the implied wealth: stocks represent the market value of all stock in publicly held corporations, mutual funds, investment trusts or retirement accounts but excludes shares in private businesses. Stocks have a higher financial risk than bonds, because stock prices and dividends are not guaranteed and are more volatile because stockholders have a residual claim to earnings.

Considerable difficulty exists in deriving the wealth content in a house: whether to use open market, investment, insurance or forced sale value. Arrondel and Lefebvre(2001) further highlight the complexity of housing in that they are indivisible (lumpy) and illiquid while the transactions are infrequent, lengthy and costly. They also cite the unusual duality where a dwelling occupied by the owner is both consumption and an investment! Furthermore, a house purchase tends to require debt funding and a longer planning horizon. Georgiev (2002) agrees and notes that:

*“real estate is not traded on centralised exchange, the market is characterised by relative lack of liquidity, large lot size and high transaction costs with properties that are locationally fixed and heterogeneous... ”. (p. 3).*

This notwithstanding, deRoos, Eichholtz and Koedijk (2002) argue that there is growing interest on the part played by housing in personal wealth due to its high ownership rate and the relatively high share in wealth portfolios. Besides, real estate offers investors with an excellent hedge on account of the high correlation its returns with inflation [Ibbotson and Sigel (1984) and Maurer, Reiner and Sebastian (2004)].

The most common measures of the mix of personal wealth for an individual or household are ownership rate of an asset, the conditional asset share and the relative proportions of each asset in the wealth basket, Banks and Smith (2000). Whereas MPT prescribes a diversified wealth holding, that in the ideal case should be optimal by balancing an investor's attitude to risk with the assets' returns, a blending with LCH posits that the fraction of financial wealth invested in stock should fall with one's age and rise with employment income and education.



## 3.0 EMPIRICAL LITERATURE

### 3.1 Introduction

This section examines documented evidence on the potential factors that are found to influence the nature, mix and size of personal wealth.

### 3.2 The Determinants of Employee Wealth Holdings

One of the earliest studies that empirically tested the LCH propositions that personal wealth is an increasing function of age up to retirement was by Shorrocks (1975). The researcher plots wealth against age using longitudinal data from the U.K. Inland Revenue on individuals' estate taxes for the period 1912 to 1971. He finds evidence in support of LCH and a cohort effect on wealth where earlier generations are found to be poorer. The study is criticized because it was for individuals and not households; excluded people who die without wealth and omitted assets that vanish after death such as human capital, pension and annuity rights.

Using a database of 410(k) participants from EBRI records, Vanderhei, Galer, Quick and Rea (1999) carry out a study to determine the investment patterns of employees. Whilst this was a small study, the discovery that employees with the option of buying company stock had a reduced allocation to other equity funds, but in general had a higher overall investment in stocks than others is invaluable finding.

Spurred by the noted increase in house ownership, high share of housing in wealth, substantial returns to real estate<sup>16</sup> and the fact that housing wealth was excluded from the original MPT, researchers [Goetzmann & Ibbotson 1990; Ibbotson & Siegel 1984; Kallberg, Liu & Greig 1996] apply MPT to ascertain the effect of housing, on portfolio choice. They use series of historical U.S. asset return data and report that returns to real estate have low variability and being weakly correlated to financial asset returns, housing wealth offers diversification benefits. Whilst there is concurrence that an efficient portfolio ought to include housing, there is a glaring lack of consensus on its ideal portion. Goetzmann and

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<sup>16</sup> For instance, Ibbotson and Siegel (1984) reports an annual return in the 1947-1982 of 8.3%

Ibbotson (1990) recommend a 50% housing share to wealth while Kallberg et al., (1996) suggest 10% to 20%.

Using 1983 and 1986 SCF data, Gale and Scholz (1994) study the effect of transfers on wealth accumulation in the U.S. Their findings in support of altruistic LCH show that one-third of wealth transfers occur inter-vivo; intended transfers account for 20% of U.S wealth while bequests take up a further 31%.

The role of gender differences in investing and risk-taking on personal wealth was clearly documented by Bajtelsmit and Bernasek (1996) from an analysis of questionnaires send to clients of a large brokerage firm. They report that after age and income, gender was the third most important determinant of investor style whereby women emerged to be more conservative. Similarly, Jianakoplos and Bernasek (1996) construct a measure of relative risk aversion and find that single women are relatively more risk averse in their asset holdings than single men or married couples.<sup>17</sup> In the same study, the researchers report that participants' self-reported investment risk tolerance provides further evidence that women perceive themselves to be less inclined to risk-taking than men. Regarding consumption, Ghokale, Kotlikoff and Sabelhaus (1996) study US wealth data over 1960 to 1990 period for age groups 20 to 89 years and find evidence to suggest that consumption by men exceed that of women and that the pension and human wealth of men in the age group 65 to 85 years exceeds that of women significantly.

In the U.S., Yoo (1994) carries out an extensive study of surveys between 1962 and 1986 to examine the relationship between age and investments. Using regression analysis, he finds that the percentage of investors seeking to maximise their return diminishes as the age of the household increases while the fraction of individuals seeking to safeguard capital increases. Contrary to theory, he also reports during the working life, households tend to progressively increase their holding of stocks while the fraction of cash and cash equivalents held seems to diminish.

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<sup>17</sup> Jianakoplos and Bernasek (1996) use SCF 1989 data whereby the holdings of risky assets as percentage of total assets are regressed on the natural log of wealth and other explanatory variables. The coefficient of the wealth variable thus provides a measure of relative risk aversion.

Bodie and Crane (1997) use TIAA-CREF data in the U.S. and apply quartile analysis to examine how holding of stocks is influenced by the level of wealth. They report that in the lowest net worth quartile, the average proportion of non-retirement assets held in cash is 57%, while in the highest net worth quartile, this falls to 25%. The study confirms the age/wealth profile: younger employees have less net wealth while the older ones have higher net wealth, yielding a positive correlation (coefficient of 0.346) between age and net worth. The fraction of stock held in financial assets is found to decline by 0.6% with each additional year of age.

In an extensive study of 1992 HRS panel data of households, Mitchell and Moore (1997) test empirically whether wealth is associated with potentially explanatory factors such as education, marital status and household total income and report in the affirmative. The study finds that wealth levels strongly increase with education and that the median married couple has three times and eight times the financial wealth of the single male and single female household respectively. As expected, the study finds that the share of total wealth held in housing falls with education from 70% for those not attained high school grade to 40% for advanced degree holders.

The wealth effect of personal preference through risk aversion is examined by Sunden and Surette (1998) in their study of 1992 and 1995 SCF data using a multinomial logit model. They operationalise attitude to risk and measure it by self-reported willingness to exchange risk for return<sup>18</sup>. The researchers find evidence to suggest that risk-averse households invest more conservatively than those willing to exchange above-average risks for higher returns. A combination of gender and marital status is found to determine whether to choose “mostly stocks” or not.

King and Leape (1998) use Consumer Financial Decisions data in the U.S to study the allocation of wealth among assets. Not surprising, they find a prevalence of incomplete portfolios whereby 90% own bank accounts; 50% own stock and 10% all three because transaction costs force optimal portfolios to contain a small number of assets. They further conclude that portfolio choice in imperfect markets depends on (i) income and wealth to

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<sup>18</sup> Absolute risk aversion refers to the monetary value of one's wealth invested in risky assets while relative risk-aversion is denoted by the proportion of risky assets in an investor's portfolio

finance transaction and information costs and (ii) financial information that is proxied by age, education and parent's wealth composition.

The role of entrepreneurial income risk on household portfolio choice is tested using cross-sectional SCF data and Panel of Individual Tax Returns by Heaton and Lucas (2000). The researchers employ tabulations and regression analysis and find that entrepreneurial income risk has a significant influence on portfolio choice and asset prices. Households with high and variable business wealth are found to hold less stock wealth than other similarly wealthy households. Employees who hold stock of the firm in which they work and have lower shares of other company stock.

Ucello (2000) applies probit models on SCF data in the U.S to examine 410(k) asset allocation behaviour by investor characteristics and spousal behaviour. She finds that respondents whose spouses are employed consider this as a way to reduce risks, since lower investment returns can be offset by spousal earnings. Married women with non-working husbands are found to invest more conservatively than those whose husbands work but the asset allocations of married men (compared with other men) are not affected by whether the wife works or not. Surprisingly, the researchers find that spouses do not seem to coordinate their investment decisions to share risk. As expected the study also reveals that stock allocations are higher for employees with more job security and longer service: employees who have worked in the same company for 16 to 20 years hold on average 62% in stock, while those who have been with the company for up to 5 years have on average 31% in stock.

Banks and Smith (2000) examine both FRSS and aggregate data in the period 1980 to 1995 to study the portfolios of U.K. households and their evolution. Using probit models they find that tax affects portfolio choices to the extent that non-tax payers have a lower probability of holding tax-free investments. They also find that the most important factors describing the size and diversification of household financial wealth are age, income and education. The likelihood of holding stocks is found to rise from age 30 at the rate 1% for every 3 years until age 65 and then fall. The most educated are found to hold 7% more of their wealth in stock while the wealthiest 5% have more concentration of stock. These conforming findings lead them to conclude that:

*“the concentration in risky assets increases further in the wealth distribution, although in the top quartile, risky assets are more likely to be held in the form of investment, trusts, unit trusts and PEP’s as opposed to direct holdings in stocks”.* (p.25)

Analysis of household portfolios in Germany in the 1980s and 1990s is done by Borsch-Supan and Eymann (2000) using two sources of micro-data: the Income and Expenditure Survey (EVS) and Spiegel-Verlag survey “Soll und Haben” as well as macro data from German Socioeconomic Panel (GSOEP). They apply probit models and multivariate analysis to investigate investors’ willingness to hold risky assets. They find high ownership rates of domestic bonds and life insurance contracts but low holdings of stock and real estate among German households. The willingness to hold stock is found to increase with age, wealth, education and financial knowledge while persons who actively seek information from diverse banks are more likely to hold diversified portfolios, whereas persons relying on the advice of family and friends or their own bank are more likely to have clearly safe assets only.

It is widely acknowledged culture and tradition play a significant part in shaping the reasoning and the investment decisions of people. An illuminating study in this respect is reported by Reilley and Brown (2000) who compares the portfolio mixes of institutional investors in various countries as detailed in appendix 4. The share of wealth by stocks is high at 72% in UK compared to a paltry 11% in Germany and 24% in Japan<sup>19</sup>. In the same direction, Poterba (2001a) addresses fundamental problem of MPT that the portfolio choice is only for non-taxable investors or investors who face the same positive tax rate on all their portfolio choice. The researcher examines 1995 SCF data to ascertain the effect of taxes and from the probit analysis finds evidence of a link between tax rates and assets held (asset selection) that is stronger than the link between taxes and portfolio shares, from tobit analysis. Taxes are also found to affect the use of borrowing; the frequency (timing) of trading and finally the use of intermediaries to hold portfolios.

Arrondel and Mason (2002) analyse INSEE Survey and aggregate data to ascertain the portfolio choice of French households concerning stockholding. The researchers build on the

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<sup>19</sup> *The higher participation rate in the U.K. is due to the privatisation programmes in 1980s where the government actively encouraged stock ownership while in Germany the law restricts stock ownership by insurance firms to not more than 20% of their investment portfolio; U.K. has a higher inflation rate compared to Germany hence stocks give better cushion. a generous State pension arrangement in Germany makes the workers not look for portfolio growth through stocks.*

works of King and Leape (1998) and bring in sources of future exogenous risk such as health, family risks (marital status and family size), income risk (sector of employment; previous unemployment record and whether employee or self employed). Using quartile and probit regressions, they report an increasing share of financial assets in household gross wealth due to improved earnings on stocks; that the ownership of stocks displays a hump-shaped age profile and that education is a major determinant of stockholding level with a positive correlation.

The controversy on the importance of life-cycle and bequest saving with regard to wealth accumulation is tackled by Dynan et al., (2002) when they use a two period model in which households have an altruistic bequest motive. They examine the 1998 SCF, with lifespan uncertainty and no bequests, and report that savings among the young (30-60 years) are 10% (and -11.3% for the elderly). When uncertainty of life and a bequest motive are introduced, saving among the young climbs to 15% compared to 0.6% for the elderly. Another indication that bequests are important is that the bequest reasons for saving was cited by 12% of the sample; emergency/illness was quoted by 30% while 45% singled out retirement.

A summary of the current state of research on MPT by Faig (2002) is worth mentioning. The researchers examine the Survey of Consumer Finances U.S. 1995 data and report that contrary to theory, the average portfolio share of stock of the young (below 35 years) is lower than the other ages possibly because being poorly informed, they tend to avoid assets such as stocks that are harder to manage.

Using the 2002 Household survey data, Gibson and Scobie (2003) explores the key factors that explain the differences in net wealth, excluding human capital, among households in New Zealand. Decile analyses and third-order polynomial regressions show a marked hump shape of wealth to age with a peak at 55 to 65 years. They employ probit models and find that risk-averse households invest more conservatively<sup>20</sup>. The researchers report that consumption, pension and human wealth of men usually exceeds that of women since the latter tend to have lower recurring income and live longer. A weak correlation of 0.33 between wealth and income is reported while other important wealth determinants are years of secondary

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<sup>20</sup> Attitudes to asset holdings were proxied by age when property was first bought and the share of property in assets while risk aversion was proxied by the share of risky assets (stock).

schooling, the number of children and family health. The same study finds that inheritances have a large effect on wealth in that only  $\frac{1}{3}$  of wealth accumulated is consumed and that the expectation by a person of receiving \$10,000 in inheritances makes such people have \$24,000 more wealth than others.

Outside the western countries, Iwaisako (2003) examines the role of age-pattern relationships in stock and housing portfolios in Japan by subjecting aggregate and disaggregated data to regression and probit analyses. The researcher's findings contradict theory: an increasing share of stock in wealth with age peaking at mid fifties; the percentage of population owning stock increases with age; conditional on ownership of stock the percentage share of stock in wealth decreases with age. The same pattern is also reported with respect to housing and wealth (inclusive of housing). House ownership is reported to have a significant positive impact on stock market participation and shares of stock in financial wealth.

### **3.3 The Nature, Mix and Size of Personal Wealth**

#### ***3.3.1 The Components of the Personal Wealth Basket***

Empirical evidence shows that that the types of assets and debts included in the wealth bracket vary considerably as shown in table I below. In these studies, the unit of observation is the household because this was the only data availed by wealth surveys. A reconciliation of empirical literature and the peculiarities of the environment in Kenya suggest that a study of employee wealth ought to include *bank deposits, treasury bills and bonds, stock and housing*. This restriction is premised on the fact that durables and private businesses are not easily valued; vehicles are rarely used as store of wealth while pension, life insurance policies and personal debts comprise insignificant portions in the personal wealth basket.

As mentioned elsewhere in this paper, wealth studies in developed countries do not concern themselves with personal investment options. However, the widely publicized studies by Banks and Smith (2000), Borsch-Supan and Eymann (2000) and Arrondel and Masson (2002) acknowledge the part played by the governments' 'supply' side policies which led to the introduction of personal pensions, selling of public houses to tenants at less than market

price and the privatisation of nationalised industries<sup>21</sup>. Finally, in defense of the common practice of excluding human capital in wealth studies, it may be argued that the complexity and uncertainties involved may not justify the inclusion.

**Table 1:** Components of Personal Wealth from Country Surveys

Asset Components in Wealth	Country Wealth Surveys				
	SCF (USA)	FRSS (U.K)	EVS (Germany)	SHIW (Italy)	HILDA (Australia)
Bank Deposits	✓	✓	✓	✓	✓
Bills and Bonds	✓	✓	✓	✓	✓
Stocks + Mutual funds	✓	✓	✓	✓	✓
Life Insurances policies	✓	✓	✓	✓	✓
Pensions wealth/Unfunded Superannuation Fund	✓	✓	No	✓	✓
IRA Balances-in U.S. only	✓	✓	No	No	✓
Vehicles	✓	No	No	No	✓
Housing/Property	✓	✓	✓	✓	✓
Farm/Business assets	✓	✓	No	✓	✓
Collectibles and Durables	✓	No	No	✓	✓
Less: Debts	✓	✓	✓	✓	✓

*Source:* Derived from published country surveys<sup>22</sup>

### 3.3.2 The Mix of the Personal Wealth Basket

Simple averages of the results of major studies in table 2 below provide an overall view of typical composition of personal wealth. The summary indicates that real estate forms the single largest and dominant share of household wealth. Averaging 64% share of total wealth, housing holding ranges from 51% in Germany to 82% in Italy. Cash, the most widely-held

<sup>21</sup> Major privatizations include: British Telecom in 1984, British Gas 1986, BNP-Paribas, Aventis, Usnor, Total-Fina Elf, Pechiney, Altadis, CNP, Air France, Credit Lyonnais, EADS, etc in France

<sup>22</sup> Survey sources are as follows: Juster et al., (1999) for SCF in U.S.; Banks and Smith (2000) for FRSS in U.K.; Borsch-Supan and Eymann (2000) for EVS in Germany; Guiso and Jappelli (2000) for SHIW in Italy and finally Headey et al., (2004) for HILDA in Australia.



asset comes a distant second with a share of 30% in Germany and an overall 18%. Finally, stocks and bonds are the least important in personal wealth holding. The importance of housing is emphasized by other studies in the U.S and Europe which, show that house ownership rates and the share of housing in household wealth has been increasing [Arrondel & Lefebvre 2001; deRoon et al., 2002; Mitchell & Moore 1997; Pelizzon & Weber 2003].

**Table 2:** Assets Proportions in Household Wealth for Selected Countries

Asset Type	Range of Share in Household Wealth	Average Share in Household Wealth
Cash, Deposits, Savings	7.6% to 30%	18%
Bonds	1.4% to 3.9%	5%
Stocks	4.9% to 17.2%	11%
Real Estate	51.3% to 82.1%	64%

Source: Appendix 5

From the Ghana Living Standards Survey, Aryeetey and Udry (1997) find that only 5% of the value of household portfolios in urban areas is held in the form of financial assets, compared to 40% in the U.S. The same study reports that farmland and livestock account for 61% of the portfolios of rural households in Ghana.

Another issue is that researches report that most investors hold under-diversified portfolios. This is captured by Georgarakos (2002) who analyses cross-sectional data in the Family Resources Survey in U.K. and reports that:

*“In contrast to the predictions of theoretical models (such as CAPM) the analysis of micro data suggests that most of the households do not include any risky asset in their portfolios and that the diversification across and within different risk asset categories is limited and even so, for the very wealthy” (p. 7).*

The reasons for this diversification puzzle are many: King and Leape (1987) cite information costs; Haliassos and Bertaut (1995) fault high entry/participation and holding costs; Paxson (1990) alludes to borrowing constraints; Heaton and Lucas (2000) see the role of non-diversifiable business income risk; Bernartzi (2001) blames it on the investor’s financial ignorance while Arrondel and Calvo Pardo (2003) cite non-diversifiable risks of wage

income, housing and business wealth.

Literature reviewed has also shown that investors tend to overweight their wealth with holdings in their own country and close geographical region. Cooper and Kaplanis (1994), French and Poterba (1991) and Strong and Xu (2002) call this phenomenon the "equity home puzzle" or "international diversification puzzle". Grinblatt and Keloharju (2001) and Huberman (2001) also cite the documented case whereby people are seen to prefer investing in what is familiar to them, hence "confidence in the familiar". In support, Faruquee, Li and Yan (2004) find a 74% average domestic stockholding to total stocks held in 20 developing countries.

Despite the equity culture, the higher returns associated with stocks and the widely-documented phenomenal growth in stock wealth, another puzzle is the low ownership rate of stocks (non-participation) and a small fraction of stocks in personal wealth portfolios [Guiso et al., 2002; King & Leape 1998; Mankiw & Zeldes 1991].

These puzzles suggest that the cardinal suppositions of LCH and MPT of rational behaviour do not always hold. Irrationality may arise from investors' lack of financial knowledge to plan their investments and consumption as noted by Kennickell et al., (1996) and Lusardi (2001). Another source of irrationality could be the tendency of investors and fund managers to exhibit "herd behaviour". Such behaviour includes buying and selling assets based on past returns as well as buying the recent winners and selling recent losers. Evidence of herding behaviour for stocks of small companies' by equity fund managers is reported by Lakonishok, Shleifer and Vishny (1992) for the period 1985 to 1989. A more elaborate case is brought out by Bikhchandani and Sharma (2001) who quote Mackay (1841) in his observation that:

*"Men, it has been well said, think in herds, it will be seen that they go mad in herds, while they only recover their senses slowly and one by one"* (p. 279).

Suffice to say that irrational behaviour may lead to sub-optimal and poor investments. Browning and Crossley (2000) capture the state of play as follows:

*"Researchers are only beginning to accumulate data on the portfolios that households have and are nowhere near understanding why they hold them. Indeed, the available assets may not only determine the portfolios that households hold but what goods they consume". ( p. 31).*

### **3.3.3 The size of Personal Wealth Held**

The size of personal wealth is often discussed in the relative sense: the absolute level of wealth alongside the income it can generate vis-a-vis the holder's financial requirements. This takes us to the area of retirement planning where the question begging an answered is the income one should have at retirement; a number which Mitchell and Moore (1997) declare to be "a spiritual descendant of LCH". Experts' opinion on this is divided. Bodie (2001) quotes a popular online source of retirement investing advice in the U.S., "The Financial Engines" that tells its clients that:

*"Many financial planners estimate that you will need about 70% of your pre-retirement income to maintain your standard of living". [p. 4]*

Not far off from this counsel, Wharton (2003) cites that Merrill Lynch recommends about 65% to 70% of income before retirement. However, Professor Olivia Mitchell of the Wharton's Pensions Research Council roots for 100% to cater for inflation and longevity risk. This may be more appropriate for employees in Kenya on account of undeveloped social security, higher dependency and inflation rates.

The above notwithstanding, empirical literature shows disturbing and divergent evidence on the adequacy of employees' wealth. A good example is the finding by Mitchell and Moore (1997) in their U.S study that the median American on the verge of retirement has accumulated too little wealth to support a comfortable life in retirement. Consequently Browning and Crossley (2000), restate a confounding paradox in the U.S which is equally applicable anywhere else that:

*"...apparently, similar households appear to reach retirement with very different wealth levels and many more arrive at retirement with little or no wealth at all." (p. 28)*

Munnell, Webb and Delorme (2006) echo similar sentiments from their study of SCF 1983-2004 data where they find that about 43% of households in the U.S. are at risk of having

inadequate retirement income and that most of the working-age population saves virtually nothing outside of their employer-sponsored pension plans. The situation is even grimmer given findings that people do not plan their asset holdings [Kennickell et al., 1996; Yakoboski & Dickemper<sup>24</sup> 1997; and Lusardi 2001].

### 3.4 Overview of the Determinants of Employee Wealth Holding in Kenya

In Kenya, the choice of personal investments is likely to be narrow with a bias towards low-return cash in view of the nascent financial system and undeveloped property market. Thus investment in housing and stock may be hampered by the lack of a property index and stock earnings. Uncertainty in investments which, Goh and Downing (2002) proxy by the unemployment rate and inflation level are significant and could impair the applicability of LCH and MPT in real life. Another related issue is the interest spread. In this connection, Ndung'u and Ngugi (2000) investigate interest rates in Kenya in the period July 1991 to April 1999 and report a large and widening spread following interest rate liberalisation in early 1990s. The researchers warn that this discourages savings and has the economy-wide effect of reducing feasible investment opportunities. Echoing the same sentiments, the Minister for Finance in Kenya regrettably notes:

*"...the current very low deposit interest rates are not remunerative enough to encourage savings. On the other hand, the lending rates have remained too high giving banks high interest rate spreads..." (GoK 2003c p. 24).*

A reported low per capita income, a high age dependency rate, high unemployment and strong familial ties portend a serious threat to the ability of employees to save. This implies reduced capacity to invest whose knock-on effect is low employee wealth holding.

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<sup>24</sup> The data analysis shows that only 36% of current workers in their survey have tried to plan for retirement and 37% having given little or no thought to their retirement.

## 4.0 CONCLUSION

### 4.1 Personal Attributes that Determine Employee Wealth Holding

Majority of personal wealth studies that are premised on LCH report that age is the most important determinant of wealth. A person's absolute level of wealth is found to rise with age, following a hump shape as income increases. Age also affects the nature of assets held and the portfolio structure. Whereas the "human capital", "labour-flexibility" and "horizon" arguments of MPT suggest that the stock share of wealth should decrease with age, this is not supported by empirical evidence. This situation may arise because older people tend to acquire more information on variance and therefore can take more stock; young may shy away from stock because of the headache of managing such investment or due to liquidity constraint. The share of cash and cash equivalents in wealth is found to decrease with age while housing tends to dominate wealth at a younger age.

Income is the second most important determinant of wealth. This is supported by reported positive correlations between income and wealth. People with higher salaries tend to have a higher level of wealth and a higher allocation to stock partly because they have greater capacity to take on risks and the fact that high salaries go hand in hand with education and financial sophistication.

Gender, is reportedly the third most important wealth determinant. Women are reportedly more conservative investors and on average earn and consume less than men. One may hazard a guess that women consume less than men because intuitively they know that their incomes are less and therefore must scale down their consumption in the face of a potentially longer life span! The implication is that female employees would be expected to exhibit a lower level of wealth, a less diversified portfolio, low ownership and reduced share of stock in their wealth.

Couples tend to have a more wealth than singles. Employing the self reported risk aversion rates shows the interplay between gender and marital status which produces a ranking from the group least willing to take investment as follows: single women, married women, single men and finally married men. Women whose husbands are unemployed invest more conservatively than those whose husbands are employed. Spousal earnings do not affect the

investment patterns of men.

A looping relationship is established in that a person's wealth is found to determine their wealth in turn. Wealth portfolios of the wealthier tend to have a higher proportion of stock and lower cash and vice versa. The holding of a housing asset crowds out other assets and reduces investor flexibility.

Wealth holding is also impacted by education. People with more schooling have more wealth and hold a higher portion in stock possibly because increased education is associated with certainty of income, higher income expectations, labour flexibility and more financial information.

Personal preferences affect wealth holding in that risk-averse households invest conservatively and therefore hold a lower proportion of higher return stock in their portfolio and are also less likely to employ leverage. Individual's preference for present consumption over the future affects saving rates and investment patterns.

Owing to altruistic behaviour, bequests savings in the form of inheritances, inter-vivo gifts and bequests are significant and have a substantial impact on wealth holding. In the U.S., the share of bequests to private wealth is estimated by Modigliani (1988) at 80%, by Altig et al. (2001) at 30% while Laitner (2001) suggests it's about 67%.

Job type is also reported to influence wealth. Longer servicing employees hold a larger portion of their wealth in stock and are likely to be senior and better paid. Holders of stable/less risky jobs have a higher share of their wealth in stock. The asset mix is affected by the presence of illiquid asset such as proprietary income.

#### **4.2 External Factors that Influence Employee Wealth Holding**

The wealth impact of non-personal factors is felt by all investors within the same environment in that these catalyze or limit the wealth effect of the personal attributes in 4.1 above. The prices of consumer items as operationalised by inflation rate determines the portion of income that is available for savings (after consumption), while asset prices partly

decide the funding needs for investments and influences asset attractiveness, returns and valuation. The availability of company shares is found to influence the components of wealth in that employees tend to have a higher share of wealth in company shares. Such scenario may be explained by the interplay of increased financial knowledge, "home bias" and "herd behaviour". The regulatory and institutional framework has obvious "supply-side" implications by determining the nature, volumes and terms of available investments. Closely tied to this is the type and cost of available investment advice. Tax structure is also important in that the wealthy avoid heavily taxed assets. The impact of culture and tradition on wealth is felt through the levels of consumption and saving, the direction of investments and whether assets are accumulated at all. The degree of uncertainty significantly affects savings, the quantum and nature of investments, hence wealth. Thus, incomplete portfolios arise where there are imperfect markets and substantial information costs.

#### **4.3 The Wealth Portfolios of Employees**

Literature reviewed shows that personal wealth is measured by the net market value of personal assets (usually cash, treasury bills, bonds, stock and housing) less personal debt. Human capital, business wealth, pension schemes and durables tend to be omitted due to valuation and illiquidity issues. The size of personal wealth is assessed relative to consumption needs after retirement. Empirical evidence shows that employees do not usually plan for retirement and majority reach it with inadequate wealth. Simple undiversified portfolios are reported with prevalence of "home bias" in stocks. Portfolios for the young and less wealthy are dominated by cash. In Kenya, a limitation of available investment options, high inflation rate, the constraints of low income, the challenges of wide interest spreads combined with high financing and transaction costs that is aggravated by uncertainties suggest that employee wealth is likely to be low, simple, narrow and undiversified.

Would planning have helped? Perhaps, since it has been observed that most wealthy people tend to plan their lives; choosing to save or invest rather than spend their money on luxuries and frills. Lusardi (2001) underscores the importance of financial planning and its implications on wealth when she reports from HRS data that 30% of households whose head

is close to retirement don't plan. She quips:

*"Households whose head does not plan have substantially lower wealth holdings than households whose head has made some retirement plans. They also hold different portfolios and most significantly, they are less likely to hold stocks. Those who do not plan are more likely to face difficulties in retirement".(p. 44).*

Then why do most people fail to plan for retirement? Hallman and Rosenbloom (1987) offer a sound explanation and states that:

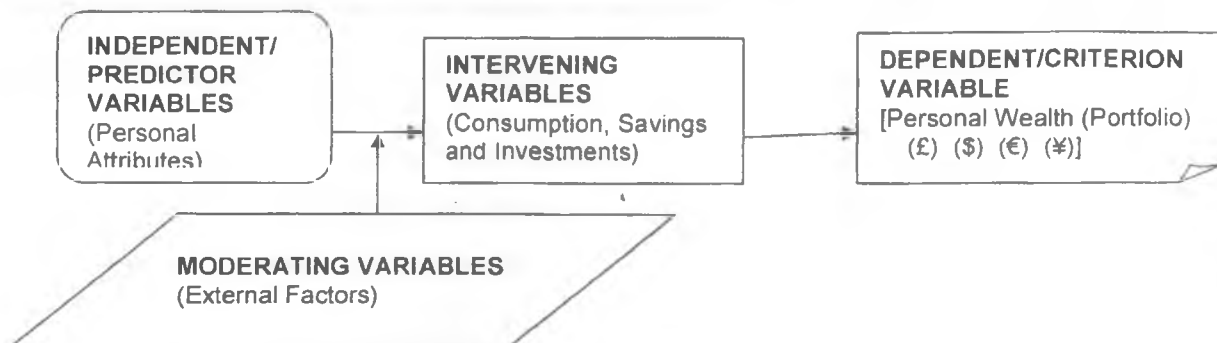
*"the failure to carry out financial planning arises from ignorance, false belief that all is well and will always be well and the natural human tendency for busy people to procrastinate with respect to planning, fear to plan because in part it involves consideration of unpleasant events e.g. death, disability, unemployment..." (p. 11).*

Annamaria Lusardi further notes that workers in the U.S. claim that they do not plan for retirement because they cannot save; retirement was too distant; they could not find the time; they were afraid of the answer and that the process is too complicated.

#### 4.4 A Conceptual Model for the Determinants of Employee Wealth

Under conditions of certainty and perfect markets, LCH and MPT portend that age, attitudes to risk and asset returns are the principal determinants of wealth. This scenario changes when in real life situations of uncertainty and imperfect capital markets and when reported wealth holdings are examined. A synthesis of the postulates from general literature with findings garnered from empirical evidence enables a mapping of the determinants of personal wealth as shown in figure 3.

Figure 3: Research Variables in the Personal Wealth Determination Process



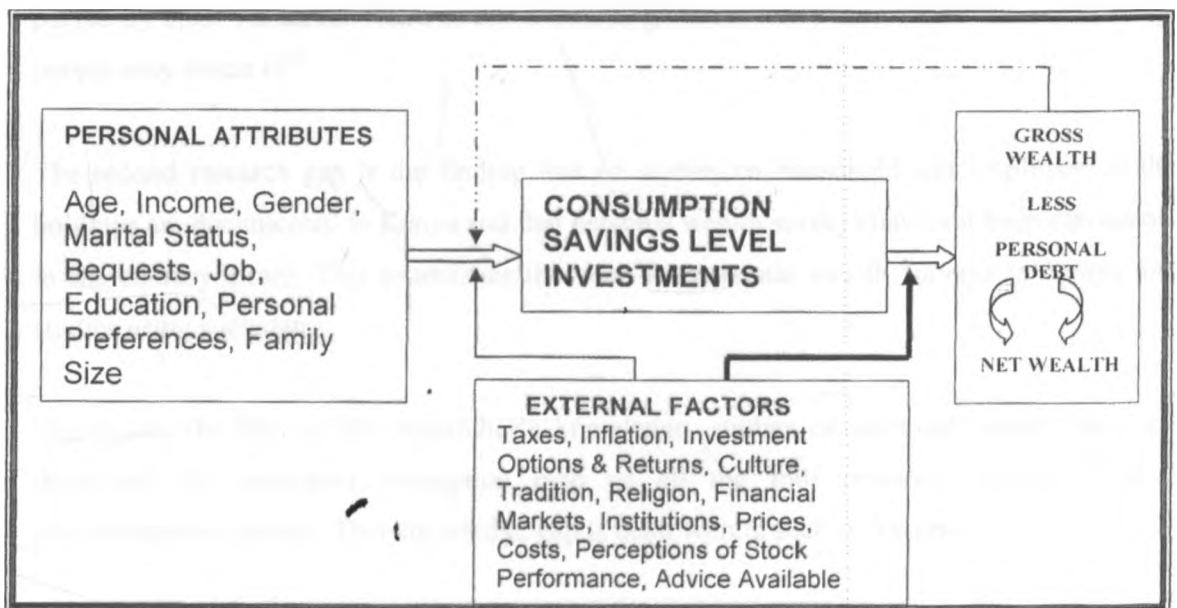
Source: Researcher's Own Conceptualisation



The dependent variable, wealth, is hypothesized to be determined principally by the independent variables labeled as personal attributes. The central role of personal attributes in the wealth equation is captured by Gibson and Scobie (2003) who show that all these elements encompass human capital. The interactions between personal attributes and wealth are moderated by the environment (external factors) which defines the options, rules and social dictums. The effect of the independent variables is manifested midway by savings and the outlay/choice of investments: all these ultimately leading to a certain level and mix of personal wealth.

Using the framework in figure 3 above, a conceptual map that attempts to show the interrelationships between the variables is developed in figure 4 below.

**Figure 4:** Conceptual Relationships of the Determinants of Personal Wealth



*Source:* Researcher’s own Conceptualisation

The source and direction of the principal influences on personal wealth are depicted by the heavy arrows ‘ $\rightleftarrows$ ’. The single line arrow shows the moderating effect of the environment on consumption, savings and investments.

The level of interest rates, availability of credit, asset prices and returns directly impact on

wealth, particularly in its valuation, thus by-passing investment. This relationship is shown by the heavy bold arrow. Finally, literature shows that the final output, assets less debt impacts on consumption, saving and investment and then again wealth thus creating a feedback effect which is captured by the dotted arrow.

#### **4.5 Research Gaps Identified**

This review has revealed three research gaps. Firstly, previous studies take as given some critical aspects in wealth accumulation. They assume availability of investment options, employee ability to save, existence of inexpensive credit and the presence of return data for all major assets. In an emerging country like Kenya, these variables cannot be taken for granted, investment options are limited, savings are low and the cost of money is high. This calls for a study on personal wealth with an extended research design that recognizes the part played by these variables. There is also a need to generate return data for all the assets which people may invest in<sup>25</sup>.

The second research gap is the finding that no studies on household and employee wealth holdings are documented in Kenya and that personal wealth surveys have not been carried out in the country either. This establishes the need for personal wealth surveys in Kenya and studies using such data.

Thirdly, to the best of the researcher's knowledge, studies on personal wealth have not developed an integrated conceptual map of all the four research variables<sup>26</sup> in a comprehensive manner. This knowledge gap is dealt with in section 4.4 above.

#### **4.6 Conclusion**

The literature reviewed has established that researchers on personal wealth are now using personal data from longitudinal and cross sectional surveys as well as retirement accounts. To a large extent, these studies confirm the basic proposition of LCH framework that during the

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<sup>25</sup> In the US for instance, Ibbotson and Associates (2003) is a Yearbook that publishes monthly return data for treasury bills and bonds, corporate bonds, stocks and inflation

<sup>26</sup> These Variables are: Independent, Moderating, Intervening and Dependent Variable.

working life, employee wealth is an increasing function of age as income rises and savings are built up to enable investments.

Furthermore, empirical literature also confirms the altruistic model in which bequests are found to influence personal wealth. Finally, when the certainty assumptions of LCH are relaxed, empirical data shows that personal wealth is also influenced by other personal attributes and external factors. These studies also reconfirm the centrality of income, consumption, savings and investments in the wealth accumulation process. Contrary to the prescriptions of MPT, individual wealth portfolios are found to be incomplete and undiversified. Whilst this may partly explain the reportedly low levels of wealth holding, it is perhaps the result of the undeniable effect of endemic uncertainty (risk of losing job, inflation, mortality, health and dependency) as well as imperfect capital markets. This suggests an important role of idiosyncratic risks and untradable assets which are significant in Kenya.

The review shows there is lack of agreement on what to include in the personal wealth basket. Whilst the typical inclusions are cash, bills, bonds, quoted shares and housing, the common exclusions are farmland, human capital, business wealth, durables and pension assets. A relatively low stock holding, prevalence of simple portfolios with high portions of wealth in cash and concentration of investments in home assets is reported. Even in developed countries, empirical evidence reveals a disturbing phenomenon whereby employees are found to make little investments and that majority of those nearing retirement have inadequate wealth to support the same standard of living thereafter.

The results of the reviews carried out are used to develop a conceptual framework that can be applied to study the wealth holding of salaried middle and upper-income employees in Kenya. Initial indications of applying this model are that employees are likely to hold low, simple and undiversified portfolios that are dominated by cash. No previous studies on the wealth holding of employees in Kenya are found and neither has wealth data for employees and households been gathered. This calls for a study that collects and analyses primary wealth and demographics data of employees.

## REFERENCES

- Ameriks, J., Caplin, A. and Leahy, J. (2003). Wealth Accumulation and the Propensity to Plan. *Quarterly Journal of Economics*, Vol. 118, No. 3 (August 2003) pp. 1007-1047.
- Arrondel, L. and Calvo Pardo (2003). *Portfolio Choice and Background Risk: Theory and Evidence*. CNRS –DELTA. March 2003
- Arrondel, L. and Lefebvre, B. (2001). Behaviour of Households Portfolio in France: The role of Housing. *The Review of Income and Wealth*. December, 2001, Vol. 47, Issue 4 pp. 489-514.
- Arrondel, L. and Masson, A. (2002). *Stockholding in France*. Working paper, 2002-09. Paris: Department et Laboratoire D'Economie Theorique et Appliquee (DELTA).
- Altig, D., Auerbach, A.J., Kotlikoff, L. J. Smetters, K. A. and Walliser, J. (2001). Simulating Fundamental Tax Reform in the United States. *American Economic Review* 91, No 3 (June 2001) pp. 574-595
- Attanasio, O. P. and Hoynes, H. W. (1996). *Differential Mortality and Wealth Accumulation*. NBER Working Paper No. 5126. May 1996.
- Ayeetey, E. and Udry, C. (1997). The Characteristics of Informal Financial Markets in Sub-Saharan Africa, *Journal of African Economies* 6(1), Africa Economic Research Council (AERC) Supplement, pp. 161-203.
- Bajtelsmit, V. L. and Bernasek, A. (1996). Why do Women Invest Differently Than Men? *Financial Counseling and Planning*, 7, pp. 1-10.
- Bajtelsmit, V. L. and VanDerhei, J.A. (1996). *Risk-Aversion and Retirement Income Adequacy*. In Olivia S. Mitchell (Eds). *Positioning Pensions for the Twenty-First Century*. Philadelphia: University of Pennsylvania Press (forthcoming)
- Balduzzi, P. and Lynch, A.W. (1999). Transaction Costs and Predictability: Some Utility Cost Calculations. *Journal of Financial Economics*, 52, pp. 47-78.
- Banks, J. and Smith, S. (2000). *UK Household Portfolios*. London: Institute for Fiscal Studies. April, 2000.
- Barro, R.J. (1974). Are Government Bonds Net Worth? *Journal of Political Economy*, Vol 82, No. 6 November/December, pp. 1095-1117.
- Becker, G.S. (1974). A Theory of Social Interactions. *Journal of Political Economy* Vol 82, No 6 November/December, pp. 1063-1093.
- Benitez-Silva, H. (2003). *Labour Supply Flexibility and Portfolio Choice*. An Empirical Analysis. New York: Suny-Stony Brook. Retrieved on May, 5 2004 <http://www.m.ccsunysb.edu/mibenitezsilv>.

- Bernheim, B., Skinner, J. and Weinberg, S. (1997). What Accounts for the variation in Retirement Wealth Among U.S. Households? *NBER Working Paper 6227*.
- Bernatzi, S. (2001). Excessive Extrapolation and the Allocation of 401(k) Accounts to Company Stock. *Journal of Finance*, Vol. 56, No. 5 October, pp. 1747-64
- Bikhchandani, S. and Sharma, S. (2001). Herd Behaviour in Financial Markets. *International Monetary Fund, IMF Staff Papers*, Vol. 47, No 3, 2001, pp. 279-310.
- Blake, D. (2003). *Modeling the Composition of Personal Wealth in the United Kingdom*. The Pensions Institute, University of London, UK Discussion Paper PI-0007 Retrieved July 2, 2004 <http://www.Pensionsinstitute.org>
- Bodie, Z. (2001). *Retirement Investing: A new approach*. Pension Research Council, The Wharton School, Pennsylvania, Pension Research Council Working Paper PRCWP2001-8 February, 2001. Retrieved August, 30 2004 <http://www.Prc.Wharton.Upenn.ed/Prc/Prc.html>
- Bodie, Z. and Crane, D. B. (1997). Personal Investing: Advice, Theory, and Evidence from a survey of TIAA-CREF Participants, *Harvard Business School*, May 28, 1997
- Bodie, Z. and Merton, R.C, and Samuelson, W. (1992). Labour Supply Flexibility and Portfolio Choice in a Life Cycle Model. *Journal of Economic Dynamics and Control*, Vol. 16, pp. 426-449
- Borsch-Supan, A. and Eymann, A. (2000). *Household Portfolios in Germany*. Sonderforschungs Bereich 504, No. 00-15, University of Mannheim, Germany, July, 2000.
- Browning, M. and Crossley, T. F. (2000). The Lifecycle Model of Consumption and Saving. *Journal of Economic Perspectives*, SEDAP Research Paper No. 28 September, 2000
- Browning, M. and Lusardi, A. (1996) Household Saving: Micro Theories and Macro Facts, *Journal of Economic Literature* 1996, 34(4), December, pp. 1797-1855
- Carsberg, B. (1974). *Analysis for Investment Decisions*. London: Haymark Publishing.
- Chang, Y.R. (1993). Income Uncertainty and Household Saving Behavior: an Empirical Investigation, Unpublished Doctoral Dissertation, The Ohio State University. Quoted in Chen, P., Hanna, S. and Montalto, C. (1998). *What Comes First? The Saving Decision or the Investment Decision?* Midwest Finance Association 3/38.
- Chen, A.H.Y., Jen, F.C. and Zions, S. (1971). The Optimal Portfolio Revision Policy. *Journal of Business*. Vol. XLIV, no. 1, January 1971. In 'E. J. Elton & Gruber M. J. (1972) (Eds.). *Security Evaluation and Portfolio Analysis*. New Jersey: Prentice-Hall Inc., pp. 434-447.
- Chen, P., Hanna, S. and Montalto, C. (1998). *What Comes First? The Saving Decision or the Investment Decision?* Midwest Finance Association 3/38 .
- Claus, I. and Scobie, G. M. (2002) *Saving in New Zealand: Measurement and Trends*. News Zealand Treasury Working Paper 02/02 March 2002.

- Cochrane, J.H. (1997). Where is the Market Going? Uncertain Facts and Novel Theories. *Federal Reserve Bank of Chicago Economic Perspectives*, Vol 21(6), November, pp. 3-37
- Cooper, I. and Kaplanis, F. (1994). Home Bias in Equity Portfolios, Inflation Hedging and International Capital Market Equilibrium. *Review of Financial Studies* 7, pp. 45-60.
- Crossley, T. F. and Pendakur, K. (2002). *Consumption Inequality*. Working Paper Series 2002-09. McMaster University and Simon Fraser University Retrieved on 26 July 2004. <http://www.Socserv.Socsci.mcmaster.ca/econ/>.
- Daynan, K.E., Skinner, J. and Zeldes, S. P. (2002). The Importance of Bequests and Life-Cycle Saving in Capital Accumulation: An Answer. *The American Economic Review*, Vol. 92.
- Deaton, A. (1992). *Understanding Consumption*. Oxford: Oxford University Press.
- deRoos, F. A., Eichholtz P. and Koedijk, K. (2002). The Portfolio Implications of HomeOwnership. *Discussion Paper Series No. 3501, Center for Economic Policy Research (Cepr)*, August 2002. Retrieved December 10, 2004 [www.cepr.org/pubs/dps/dp3501.asp](http://www.cepr.org/pubs/dps/dp3501.asp)
- Duesenberry, J. (1949). *Income, Savings and The Theory of Consumer Behaviour*. Harvard University Press, Cambridge, M.A Cited in Huggett, M. and Ventura, G (2000). Understanding Why High Income Households Save more than Low Income Households. *Journal of Monetary Economics* 2000. Vol. 45, pp. 361-397
- deRoos, F., Eichholtz, P. and Koedijk, K. (2002) The Portfolio Implications of Home Ownership. *Centre for Economic Policy and Research*. Discussion Paper Series No 3501. August 2002
- Engen, E. M. Gale, W. G., and Ucello, C. (2004). *Lifetime Earnings, Social Security Benefits, and the Adequacy of Retirement Wealth Accumulation*. Center for Retirement Research at Boston College.
- Faig, M. (2002). *How Do Households Invest their Wealth?* Center for Research in International Economics (CREI), Universitat Pompeu Fabra (UPF) and the Generalitat de Catalunya.
- Faruquee, H. Li, S. and Yan I. K. (2004). *The Determinants of International Portfolio Holdings and Home Bias*. International Monetary Fund, IMF Working Papers WP/04.
- Feldstein, M. (1976). Social Security and the Distribution of Wealth. *Journal of the American Statistical Association*, Vol. 71 No 356. (Dec., 1976), pp. 800-807
- Francis, J.C. and Archer, S H. (1979). *Portfolio Analysis* (2<sup>nd</sup> ed.). Englewoods Cliffs: Prentice-Hall. Inc.
- Fredrickson, E. B. (1971) Eds. *Frontiers of Investment Analysis*. (Rev. Ed.). Syracuse, New York: International Education Publishers
- French, K. R. and Poterba, J. M. (1991). *Investor Diversification and International Equity Markets*. National Bureau of Economic Research, NBER Working Paper Series, Working Paper No. 3609, January 1991.

- Friedman, M. (1957). *A Theory of Consumption Function*. Princeton University Press, Princeton, NJ.
- Friedman, B. M. and Hahn, F. H. (1996). *Handbook of Monetary Economics*. Vol. I. Elsevier Science BV. Amsterdam.
- Gale, W. G. and Scholz, J. K. (1994). Intergenerational Transfers and the Accumulation of Wealth. *Journal of Economic Perspectives*. Fall 1994, Vol. 8. No. 4 , pp. 145-160.
- Georgiev, G. (2002). *The Benefits of Real Estate Investment*. CISDM Working Paper, University of Massachussets, March 1, 2002.
- Ghokale, J., Kotlikoff, L. and Sabelhaus, J. (1996). Understanding the Postwar Decline in U.S Savings: A Cohort Analysis. *Working Paper 5571, National Bureau of Economic Research*.
- Gibson, J.K and Scobie, G. M. (2003). Net Wealth of New Zealand Household: An Analysis Based on the Household Savings Survey. Paper Presented to a *Symposium on Wealth and Retirement* , Sponsored by the Retirement Commission, Wellington.
- Goetzmann W.N. and Ibbotson, R. (1990). The Performance of Real Estate as an Asset Class. *Journal of Applied Corporate Finance* 3, pp. 65-76.
- Goh, K. L. and Downing, R. (2002). *Modeling New Zealand Consumption Expenditure over the 1990's*. New Zealand Treasury, Working Paper 02/19 September 2002.
- Government of Kenya GoK(1996). *Welfare Monitoring Survey II, 1994, Basic Report*. Government Printer
- (1998). *First Report on Poverty in Kenya: Volume II Poverty and Social Indicators*. Ministry of Planning and National Development, Nairobi, Kenya.
- (2000). *Second Report on Poverty in Kenya: Volume I Incidence and Depth of Poverty*. Ministry of Finance and Planning, Nairobi, Kenya.
- (2001). *Poverty Reduction Strategy Paper for the Period 2001-2004. Volume II*, June 2001, *Nairobi, Kenya* Government Printer.
- (2002). *Basic Report, Urban Household Budget Survey 1993/94*. Government Printer.
- (2003a). *Report of 1998/99 Labour Force Survey*. Ministry of Finance and Planning, Nairobi, Kenya.
- (2003b). *Kenya: Economic Programme for 2003 – 2007: Economic Recovery Strategy for Employment Creation and Poverty*, May 2003. Nairobi: Government Printer.

- (2003c). *Budget for Fiscal Year 2003/4*. Speech Delivered by Minister for Finance, Honourable D. Mwiraria, 12<sup>th</sup> June 2003, The National Assembly.
- (2005). *Kenya: Statistical Abstract 2005*. Central Bureau of Statistics/ Government Printer. Nairobi, Kenya
- Grinblatt, M. and Keloharju, M. (2001). Distance, Language and Cultural Bias: The Role of Investor Sophistication. *Journal of Finance*; 56 (2001), pp. 1053-1073.
- Guiso, L. and Jappelli, T. (2000). Household Portfolios in Italy. *Center for Studies in Economic and Finance (CSEF)*, Italy, Working Paper No. 43, July 2000.
- Guiso, L., Haliassos, M. and Jappelli, T. (2002) Eds. *Household Portfolios*. Cambridge: MIT Press
- Haliassos, M. and Bertaut, C. (1995). Why do so Few People Hold Stocks? *Economic Journal*, 105, pp. 1110-29.
- Hallman, G.V. and Rosenbloom, J, S (1987). *Personal Financial Planning*. Mc Graw-Hill
- Halvorsen, E. (2003). *A Cohort Analysis of Household Saving in Norway*. Statistics Norway, Research Department, Discussion Papers No. 354, August 2003.
- Headey, H., Marks, G. and Wooden, M. (2004). The Structure and Distribution of Household Wealth in Australia. *Melbourne Institute Working Paper No. 12/04*.
- Heaton, J. and Lucas, D. (2000). Portfolio Choice and Asset prices: The Importance of Entrepreneurial Risk. *Journal of Finance*, Vol 55, pp. 1163-1198
- Huberman, G. (2001). Familiarity Breeds Investment. *Review of Financial studies*, (2001), pp. 659-680.
- Huggert, M. (1996). Wealth Distribution in Life Cycle Economies. *Journal of Monetary Economics*, 38 (3), pp. 469-94.
- Hyman, D.N. (1992). *Economics*. Irwin, USA
- Ibbotson and Associates (2003). *Stocks, Bonds, Bills, and Inflation: 2003 Yearbook*. Ibbotson, R. G. and Singuefield, R. A. Chicago, Ibbotson Associates.
- Ibbotson, R. G. and Siegel, L. B. (1984). Real Estate Returns: A Comparison with Other Investments. *Journal of the American Real Estate and Urban Economics*. Vol. 12, No.1. 1984, pp. 219-242
- Iwaisako, T. (2003). Household Portfolios in Japan. *NBER Working Paper Series, WP9647*. Retrieved December, 10 2006 <http://www.nber.org/papers/wp9647>
- Jaganathan, R. and Kocherlakota, N.R. (1996). Why Should Older People Invest less in Stocks than Younger People? *Federal Reserve Bank of Minneapolis Quarterly Review*. Vol. 20, No. 3, Summer 1996, pp. 11-23.



- Jappelli, T. and Modigliani, F. (2003). *The Age-Saving Profile and the Life-Cycle Hypothesis*. Center for Studies in Economics and Finance, Working Paper No. 9, March 2003.
- Jinakoplos, N. and Bernasek, A. (1996). *Are Women More Risk Averse?*. Colorado University Working Paper.
- Johnson, P. and Tanner, S. (1999). *Ownership and Distribution of Wealth*. Political Quarterly, Vol. 69(4), pp. 365-377
- Juster, F. T., Smith, J.P. and Stafford, F. (1999). The Measurement and Structure of Household Wealth. *Labour Economics*, Vol 6. pp. 253-275
- Kahneman, D. and Tversky, D. (1979). *Prospect Theory: An Analysis of Decision Making Under Risk*. *Econometrica*, Vol 47, No 2 (March, 1979), pp. 263-292
- Kallberg, J.G., Liu, C.H. and Greig, D.W. (1996) The Role of Real Estate in Portfolio Allocation Process. *Journal of Real Estate Economics* 1996, Vol 24, Issue 3, pp. 359-377
- Kennickell, A. B., Starr-McCluer, M. S. and Sunden, A.E (1996). *Financial Advice and Household Portfolios*. Working Paper, Board of Governors of the Federal Reserve Board, September, 1996.
- King, M.A. and Dicks-Mireaux, L-D. L. (1982). Asset Holdings and Life Cycle. *Economic Journal* 92 (June), pp. 247-267.
- King, M.A. and Leape, J.I. (1987). *Asset Accumulation Information and the Life Cycle*. NBER Working Paper No. 2392, September 1987.
- King, M.A. and Leape, J.I. (1998). Wealth and Portfolio Composition: Theory and Evidence. *Journal of Political Economy*, Vol 69, pp. 155-193
- Kocherlakota, N. R. 1996. The Equity Premium: It's Still a Puzzle. *Journal of Economic Literature*. 34 (March), pp. 42-71
- Kotlikoff, L. and Summers, C.H. (1981). The Role of Intergenerational Transfers in Aggregate Capital Accumulation. *Journal of Political Economy*, August 1981, 89(4), pp. 706-732
- Laitner, J. (2001). Wealth Accumulation in the U.S.: Do Inheritances and Bequests Play a Significant Role? Michigan Retirement Research Center. Working Paper WP 2001-019.
- Lakonishok, J., Shleifer, A. and Vishny, R. W. (1992). The Impact of Institutional Trading on Rules. *Journal of Financial Economics*, Vol. 32, pp. 23-43.
- Levinson, M. (1999). *A Guide to Financial Markets*. London: Profile Books Ltd.
- Loayza, N., Schmidt-Hebbel, K. and Servén, L. (2000). Saving in Developing Countries: An Overview. *The World Bank Economic Review*, Vol 14, No.3, pp. 393-414.
- Luenberger, D. G. (1993). Preferences Foundations for Log Mean-Variance Criteria in Portfolio Choice Problems. *Journal of Economic Dynamics and Control*. Vol 17, pp. 887-906

- Lusardi, A. (2001). *Explaining Why So Many People Do Not Save*. Boston: Center for Retirement Research at Boston college, CRR WP 2001-05, September 2001.
- Lydall, H. (1955). The Life Cycle of Income, Saving and Asset Ownership, *Econometrica*, 23, 1955
- Lynch, A.W. and Balduzzi, P. (2000) Predictability and Transaction Costs: The Impact of Rebalancing Rules and Behaviours. *Journal of Finance* 55, pp. 2285-2309.
- Mackay, C. (1841). *Extraordinary Popular Delusions and the Madness of Crowds*. London: R Bentley.
- Mankiw, N. G. and Zeldes, S.P. (1991). The Consumption of Stockholders and Non-Stockholders. *Journal of Financial Economics*, 29, March, pp. 97-112.
- Markowitz, H. (1952). Portfolio Selection. *Journal of Finance*. Vol. 7, No.1, (March 1952), pp. 77-91.
- Merton, R.C. (1969). Lifetime Portfolio Selection Under Uncertainty :the *Continuous-Time Case*. *Review of Economics and Statistics* Vol. 51, pp. 247-257
- Merton, R.C. (1971). Optimum Consumption and Portfolio Rules in a Continuous-Time Model. *Journal of Economic Theory*, Vol.3, pp. 373-413
- Maurer, R. Reiner, F. and Sebastian, S. (2004). Characteristics of German Real Estate Return Distributions. Evidence from Germany and Comparison to U.S. and U.K. *Journal of Real Estate Portfolio Management* Vol.10, No.1 pp 59-76
- Mayshar, J. (1981). Transaction Costs and the Pricing of Assets. *The Journal of Finance*, Vol 36, No. 3, June pp 583-597.
- Meyer, B. D. and Sullivan, J. X. (2003). Measuring the Well-Being of the Poor Using Income and Consumption. *Journal of Human Resources* 38(S), pp. 1180-1220.
- Meyer, R. and Kenneth, W. (1996). Risk and Return to Housing, Tenure Choice and the Value of Housing in an Asset Pricing Context. *Real Estate Economics*. Vol. 24, Issue 1, pp. 113-131.
- Miniaci, R., Mofardini, C. and Weber, G. (2003). *Is there a Retirement Consumption Puzzle in Italy?* The Institute for Fiscal Studies, WP 03/14.
- Mitchell, O. and Moore, J. F. (1997). *Retirement Wealth Accumulation and Decumulation: New Developments and Outstanding Opportunities*. The Wharton School, University of Pennsylvania, Working paper 79-12.
- Modigliani, F. (1986). Life Cycle, Individual Thrift, and the Wealth of Nations. *American Economic Review*. Vol. 76, pp. 297-313.
- Modigliani, F. (1988). The Role of Intergenerational Transfers and Life-Cycles Savings in Aggregate Capital Accumulation. *Journal of Economic Perspectives*, Spring 1988, 2(2), pp. 15-40.

- Modigliani, F. and Brumberg, R. (1954). *Utility analysis and the Consumption Function: An Interpretation of Cross-Sectional Data*, in Kenneth Kuhikira Ed., *Post Keynesian Economics*. New Brunswick, New Jersey: Rutgers University Press, 1954.
- Mossin, J. (1969). Optimal Multi-period Portfolio Choice Policies. *Journal of Business*. Vol. 41, No. 2, April 1969, pp. 215-229.
- Munnell, A. H., Webb, A. and Delorme, L. (2006). *A New National Retirement Risk Index*. An Issue in Brief Center for Retirement Research at Boston College, June 2006, Issue Number 48.
- Nairobi Stock Exchange (2002). *NSE Handbook 2002* .
- Ndung'u, N.S. (2000). *The Exchange Rate and the Interest Rate Differential in Kenya: A Monetary and Fiscal Policy Dilemma*. KIPPRA discussion paper No. 1, Kenya January 2000.
- Ndung'u, N.S and Ngugi, R. W. (2000). *Banking Sector Interest Spread in Kenya*, KIPPRA discussion paper No. 5 DP/05/2000, Kenya. January 2000.
- Papatheodorou, C. (1998). *Inequality in Greece: An Analysis by Income Source*. London School of Economics Discussion Paper No. DARP 39 July 1998.
- Park, C. (2001). *Is Extended Family in Low Income Countries Altruistically Linked?* National University of Singapore (NUS) Working Paper No. 0107 September 2001. Retrieved September 19, 2004 <http://www.fas.nus.edu.sg/ecs/pub/wp/wp0107.pdf>
- Paxson, C. (1990) . Borrowing Constraints and Portfolio Choice. *Quarterly Journal of Economics*. 105(2), 1990, pp. 535-543.
- Pelizzon, L. and Weber, G. (2003). Are Households Portfolios Efficient? An Analysis Conditional on Housing. *Cepr Discussion, Paper 3890*. Retrieved January 23, 2005 from <http://www.cepr.org/pubs/dps/DP3890.asp>
- Pemberton, J. (1997). The Empirical Failure of the Life Cycle Model with Imperfect Capital Markets. *Oxford Economic Papers*, New Series, Vol. 49, No 2. (April, 1997), pp. 129-151.
- Plum, L. V., Humphrey, J. H. and Bowyer, J. W. (1961). *Investment Analysis and Management*. Revised Edition. Richard D. Irwin Inc. Illinois.
- Polkovichenko, V. (2003). *Household Portfolio Diversification*, Working Paper, University of Minesota.
- Poterba, J.M (ed)1994. *International Comparisons of Household Savings*, NBER, Project Report, University of Chicago Press, Chicago. Quoted in Halvorsen, E. (2003). *A Cohort Analysis of Household Saving in Norway*. Statistics Norway, Research Department, Discussion Papers No. 354, August 2003.
- Poterba, J. M. (2001a). Taxation and Portfolio Structure: Issues and Implications. *National Bureau of Economic Research*, Working Paper 8223, April 2001. Retrieved September, 1 2004 <http://www.nber.org/papers/wp8223>.

- Poterba, J.M. (2001b). The Rise of the "Equity Culture", U.S Stock Ownership Patterns, 1989-1998. January 2001.
- Reilley, F.K. and Brown, K. C. (2000). *Investment Analysis and Portfolio Management*. (6<sup>th</sup> Ed.). The Dryden Press, USA.
- Robinson, J. (1956). *The Accumulation of Capital*. McMillian, London
- Robinson, C. (2000). *Conceptual Frameworks for Personal Finance*. Schullich School of Business. York University, Canada.
- Sabelhaus, J. and Pence, K. (1999). Household Savings in the 1990's: Evidence from Cross-Section of Wealth Surveys. *Review of Income and Wealth* 45, pp. 435-54.
- Samuelson, P. (1969). Lifetime Portfolio Selection by Dynamic Stochastic Programming. *Review of Economics and Statistics*, 51, pp. 239-246
- Shorrocks, A. F. (1975). The Age-Wealth Relationship: A Cross-Section and Cohort Analysis. *Review of Economics and Statistics*. May 1975, Vol. 57, pp. 155-63.
- Smith, K.V. (1971). *Portfolio Management-Theoretical and Empirical Studies of Portfolio Decision Making*. Los Angeles: Holt, Rinehart and Winston, Inc.
- Strong, N. and Xu, X. (2003). Understanding the Equity Home Bias: Evidence from Survey Data. *Review of Economics Statistics* 85 (2), 2003, pp. 307-312.
- Sunden A.E. and Surette, B.J. (1998). Gender Difference in the Allocation of Assets in Retirement Savings Plans. *American Economic Review* 88 (2), pp. 207-211.
- Tracy, J. and Schneider, H. (2001). Stocks in the Household Portfolio: A Look Back at the 1990's *Federal Reserve Bank of New York, Current Issues in Economics and Finance*, Vol. 7, No. 4 April 2001.
- Tobin, J. (1958). Liquidity Preference as Behaviour Towards Risk. *The Review of Economics Studies*. Vol. XXV, No. 67, February 1958. pp. 65-87.
- United Nations University (2006). *The World Distribution of Household Wealth*. World Institute for Development Economics Research of the United Nations University. Retrieved on December. 13 2006 [www.wider.unu.edu](http://www.wider.unu.edu)
- Ucello, C. E. (2000). *Do Spouses Coordinate Their Investment Decisions in Order to Share Risks?*. Center for Retirement Research at Boston College, CRR WP 2000-09, November 2000.
- Vanderhei, J., Galer, R., Quick, C, and Rea, J. (1999). *401 (K) Plan Asset Allocation Account Balances and Loan Activity*. EBRI Issue Brief No. 205.
- Wharton (2003, September 9). The Pitfalls of Retirement Planning. *The East African Standard, Financial Standard*, pp.14-16.

- Weicher, J.C. (1997). *The Rich and the Poor: Demographics of the U.S. Wealth Distribution*. *Federal Reserve Bank of St. Louis, Review* July/August 1997.
- Williams, J.B. (1938). *The Theory of Investment Value*. Cambridge, M.A. Harvard University Press. 1938 Reprinted (Burlington, VT: Fraser Publishing, 1997).
- Yakoboski, P. and Dickemper, J. (1997). *Increased Saving but Little Planning: Results of the 1997 Retirement Confidence Survey*. Employee Benefits Research Institute Issue Brief 191.
- Yaxuan, Q. (2007). *Essays on Household Finance and Asset Pricing*. Ongoing and Unpublished Ph.D. Dissertation, Rutgers Business School-Newark and New Brunswick. Rutgers University, Retrieved January, 3, 2007. [http://www.fina.org/PHD/IMCA\\_FMA\\_yaxuan.pdf](http://www.fina.org/PHD/IMCA_FMA_yaxuan.pdf).
- Yoo, P. S. (1994). *Age Dependent Portfolio Selection*. Federal Reserve Bank of St. Louis, Working Paper 1994-003A.

## Selected Personal Wealth Survey Schemes

## Appendix 1

Name	Names of Survey	Country	Data Years	Periodicity	Sample	Purpose
PSID	Panel Study of Income Dynamics	USA	1968	Annual longitudinal survey started with 4,800 families	Uses 5,000 original families and nationally representative sample of 35,000 individuals in the US	Obtains economic and demographic data on households.
SCF	Survey of Consumer Finances	USA	1983,1989, 1992,1995, 1998	Every three years	4,000-4,500 Households	Designed as a complete survey of household wealth by Federal Reserve Bank. Covers whole US population with special attention to the more wealthy.
HRS	Health and Retirement Study	USA	from 1992	Every two years	7,607 Households	Panel study which includes at least 1 person in the household born 1931-1941.Obtains data on asset Accumulation, Consumption and Savings
AHEAD	Assets and Health Dynamics of the oldest old	USA	1994	Longitudinal survey	Area probability sampling of 9, 473 households and 11,965 individuals	Focus on people aged 70+ to obtain information on changes in assets, health and family for those in second half of retirement period
INSEE	French National Institute for Statistics and Economic Studies	France	1986,1992, 1998	6 Years intervals	14,800 Households	Survey of household in order to evaluate the total amount and consumption of their wealth
	German Socioeconomic Panel	Germany	1990-1997		5,000 Households	Checks households ownership of assets
EVS	Survey of Income and Expenditure	Germany(b oth East and West)	1978,1983 1988,1993,1998;2 003	Five year intervals	Quota sampling to cover 0.2% of all households in Germany: say 75,000	Provide official statistics on the standards of living of households in Germany by collecting data on households' income, property, debt and consumption expenditure
SHIW	Survey of House hold Income and Wealth(SHIW)	Italy	1989,1991,1993, 1995,1998	Every May and September	7,000-8000 Households	Information on Income, consumption, personal contribution/ benefits and wealth. Unit of observation is family. Done by Bank of Italy
HILDA	Household, Income and Labour Dynamics in Australia	Australia	1994, 2002		A household panel survey of a large national probability sample of 7,682 households and 15,127 persons	Collects data on assets and debts held by a large national sample of Australian households
BHPS	British Household Panel Study	UK	From 1991: Scotland and Wales were included in 1999 and Northern Ireland in 2001	Annual longitudinal survey of a panel based on households	Nationally representative sample of 5,000 households and 10,000 individuals over 16 years	Interviews every member of the sampled household Provides further understanding of social and economic change at the individual and household level in Britain and the U.K.
FRS	Family Resources Survey	UK	From 1992 and was extended to include Northern Ireland in 2002.	Quarterly	26,000 Households	Sponsored by the Office for National Statistics to collect policy information about UK population. Collects data on basic household and individual characteristics; household income; ownership of vehicles and durables; careers and disabilities
FRSS	Financial Research Survey	UK	1997-1998		4,800 Individuals	Focus on people aged 70+ to obtain information on changes in assets for those in second half of retirement period

Name	Names of Survey	Periodicity	Latest	Sample Size and Coverage	Survey done By	Purpose
UHBS	Urban Household Budget Survey	1969 1970/71 1974 1979 1981/82 1993/94	1993/94	4,800 Households in all 57 Urban Centers <sup>1</sup> plus all District Head Quarters. 63% Response rate	Central Bureau of Statistics  Results Published in 2002	To obtain information for use in updating the existing consumer price index; gain insight into patterns of expenditure (using 1994 prices) and income distribution among different sociological groups and finally to collect household consumption data See GoK (2002)
ILFS	The 1998/99 Integrated Labour Force Survey	1998/99 Was first of its Kind	1998/99	11,049 Households Randomly selected country wide. 86% Response Rate	Central Bureau of Statistics  Results Published in 2003	To update data on the labour force, determine the size and output of the informal sector and estimate the extent of child labour See GoK (2003a)
WMS	Welfare Monitoring Survey	WMS I 1992 WMS II 1994 WMS III 1997	1997-	10,000 Households countrywide	Central Bureau of Statistics  Results Published in 1998	To obtain data on in order to understand the magnitude, severity and dimensions of poverty among different socio-economic groups in the country and on how individuals and households respond to the challenge. The data would also provide input into the Social Dimensions of Development initiatives See GoK (1996)
First Report on Poverty in Kenya Volume II	Welfare Monitoring Survey	1998	1998	Derived from 1997 WMS above	Central Bureau of Statistics  Results Published in 2003	To provide information on the different faces of poverty in Kenya. See GoK (1998)
Second Report on Poverty in Kenya. Volume I	Welfare Monitoring Survey	2000	2000	Derived from 1997 WMS above	Central Bureau of Statistics  Results Published in 2003	To provide information on the different faces of poverty in Kenya See GoK (2000)
Statistical Abstract	Statistical Abstract	Annually	2005	Data from all employers Labour Statistics showing employment earnings	Central Bureau of Statistics  Published in 2006	Various. See GoK (2005)

<sup>1</sup> Urban denotes all Centres with a population of 10,000 and above.

LIQUIDITY	
Liquid Assets	Illiquid Assets

ACCESSIBILITY	
Accessible Wealth	In-Accessible Wealth

TRADABILITY	
Tradable Wealth	Un Tradable Wealth

PHYSICAL FEATURES	
Intangible Assets	Tangible Assets

RISKY NESS	
Risk less Asset	Risky Asset

**Financial**

	Yes	No
Cash	Yes	No
Treasury Bills	Yes	No
Treasury Bonds	Yes	No
Corporate Bonds	Yes	No
Cooperative Shares	No	Yes
Preferred Shares	No	Yes
Stock-Local	Yes	No
Mutual Funds-Local	Yes	No
Investment Trusts-Local	Yes	No
Business value-Local	No	Yes
Off shore investments-Stock/Funds	Yes	No
Off shore investments-House	No	Yes
Off shore investments-Business	No	Yes
LifeInsurance-Endowment Policy	No	Yes

	Yes	No
Cash	Yes	No
Treasury Bills	Yes	No
Treasury Bonds	Yes	No
Corporate Bonds	Yes	No
Cooperative Shares	Yes	No
Preferred Shares	Yes	No
Stock-Local	Yes	No
Mutual Funds-Local	Yes	No
Investment Trusts-Local	Yes	No
Business value-Local	Yes	No
Off shore investments-Stock/Funds	Yes	No
Off shore investments-House	No	Yes
Off shore investments-Business	No	Yes
LifeInsurance-Endowment Policy	No	Yes

	Yes	No
Cash	Yes	No
Treasury Bills	Yes	No
Treasury Bonds	Yes	No
Corporate Bonds	Yes	No
Cooperative Shares	No	Yes
Preferred Shares	No	Yes
Stock-Local	Yes	No
Mutual Funds-Local	Yes	No
Investment Trusts-Local	No	Yes
Business value-Local	No	Yes
Off shore investments-Stock/Funds	Yes	No
Off shore investments-House	No	Yes
Off shore investments-Business	No	Yes
LifeInsurance-Endowment Policy	No	Yes

	Yes	No
Cash	Yes	No
Treasury Bills	Yes	No
Treasury Bonds	Yes	No
Corporate Bonds	Yes	No
Cooperative Shares	Yes	No
Preferred Shares	Yes	No
Stock-Local	Yes	No
Mutual Funds-Local	Yes	No
Investment Trusts-Local	Yes	No
Business value-Local	Yes	No
Off shore investments-Stock/Funds	Yes	No
Off shore investments-House	Yes	No
Off shore investments-Business	Yes	No
LifeInsurance-Endowment Policy	Yes	No

	Yes	No
Cash	Yes	No
Treasury Bills	Yes	No
Treasury Bonds	Yes	No
Corporate Bonds	Yes	No
Cooperative Shares	No	Yes
Preferred Shares	No	Yes
Stock-Local	No	Yes
Mutual Funds-Local	No	Yes
Investment Trusts-Local	No	Yes
Business value-Local	No	Yes
Off shore investments-Stock/Funds	No	Yes
Off shore investments-House	No	Yes
Off shore investments-Business	No	Yes
LifeInsurance-Endowment Policy	No	Yes

**Non-Financial**

	No	Yes
House	No	Yes
Undeveloped plot of land	No	Yes
Farm assets-cows etc	No	Yes
Human Capital	No	Yes

	No	Yes
House	No	Yes
Undeveloped plot of land	No	Yes
Farm assets-cows etc	No	Yes
Human Capital	No	Yes

	No	Yes
House	No	Yes
Undeveloped plot of land	No	Yes
Farm assets-cows etc	No	Yes
Human Capital	No	Yes

	No	Yes
House	No	Yes
Undeveloped plot of land	No	Yes
Farm assets-cows etc	No	Yes
Human Capital	No	Yes

	No	Yes
House	No	Yes
Undeveloped plot of land	No	Yes
Farm assets-cows etc	No	Yes
Human Capital	No	Yes

**Notes**

**Cash:** This includes Cash in hand, Current/Savings/Fixed accounts, Housing Development Bonds account balances in bars ks

**Corporate Bonds** Includes Commercial paper

**Investment Trusts** Includes Unit trusts

**Exclusions from wealth** Durable assets, Human Capital, Business Wealth and Life Insurance endowment Policy



Appendix 4

Portfolio Mixes of Various Countries 1990 to 1991

	USA (Pension Funds)	UK (Pension Funds)	Germany (Insurance and Mutual Funds)	Japan (Life Insurance)
Cash	10%	5%	4%	6%
Bonds	29%	12%	45%	22%
Domestic Equities	41%	54%	9%	22%
Foreign Equities	4%	18%	2%	2%
Real Estate	8%	9%	5%	6%
Other	8%	2%	35%	42%
Total	100%	100%	100%	100%

*Source:* Adapted from Reilley and Brown (2000) pp 60

## Survey Results on Composition of Household Wealth

Appendix

3

### 1 Composition of Household Wealth in Australia in 1999

Source: Tan and Voss (2000), Adapted from Table 1 pp 5  
 [Data from Australian National Accounts: National Income, Expenditure and Product]

Currency and Deposits	9.40%	9.9%	11.9%
Stocks	7.30%	7.7%	9.3%
Life and Pension Funds	16.50%	17.3%	
Real Estate	59.60%	62.5%	73.6%
Other	2.50%	2.6%	3.1%
Durable goods	4.70%	2.6%	
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

### 2 Composition of Household Financial Wealth in France in 1997

Source: Arrindel and Mason (2002), Adapted from Table 1 pp 29  
 [Data from Patrimoine 97 INSEE Survey]

Currency and Deposits		33%	40.4%
Bonds		3%	3.3%
Stocks and Mutual funds		40%	49.5%
Life Insurance		19%	
Other Financial Assets		5%	6.7%
<b>Total</b>		<b>100%</b>	<b>100.0%</b>

### 3 Average Assets Allocations of US Households in 1998

Source: Tracy and Schneider (2001), Chart 2 pp 2  
 [from SCF Data]

Cash, Bank Deposits and Retirement Plans	22%	20%	27.9%
Stocks	11.6%	15%	14.9%
Bonds	3%	4%	3.9%
Real Estate	42%	53%	53.4%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

### 4 Average Assets Allocations of German Households in 1997

Source: Borsch-Supan and Eymann (2000), Table 1 pp 36  
 [Data from Deutsche Bundesbank]

Cheques and Deposits Accounts, Savings Contracts	34%	16.8%	21.1%
Building Societies Savings Contracts	3%	1.7%	2.1%
Stocks	17%	8.4%	10.6%
Bonds	17%	8.5%	10.7%
Insurance and Pension Wealth	23%	11.2%	
Other financial assets	7%	3.3%	4.1%
Real Estate Wealth	82%	40.9%	51.3%
Durable Goods	18%	9.1%	
<b>Total</b>	<b>100%</b>	<b>100.0%</b>	<b>100.0%</b>

### 5 Average Assets Allocations of UK Households as at 1995

Source: Banks and Smith (2000), pp 25 Table 1  
 [Data from personal sector balance sheet and Inland Revenue Statistics]

Cheques and Deposits Accounts, Savings Contracts		11.8%	18.6%
National Savings Accounts		1.5%	2.4%
Bonds		0.9%	1.4%
Stocks, mutual and Unit trusts		10.9%	17.2%
Real Estate Wealth		35.2%	55.6%
Insurance and Pension Wealth		27.0%	
Building trade assets and land 2.9% and Consumables 6.8%		9.7%	
Others		3.0%	4.7%
<b>Total</b>		<b>100.0%</b>	<b>100.0%</b>

### 6 Average Assets Allocations of Italian Households as at 1998

Source: Guiso and Jappelli (2000), pp 46 Table 4  
 [from 1998 SHIW data]

Cheques and Deposits Accounts, Savings Contracts		5.7%	7.2%
Certificates of Deposits		0.3%	0.4%
Bonds		2.6%	3.2%
Stocks, mutual and Unit trusts		3.9%	4.9%
Real Estate Wealth		65.8%	82.1%
Insurance and Pension Wealth		2.0%	
Business Assets		9.0%	
Durable goods		8.9%	
Others Financial Assets		1.8%	2.2%
<b>Total</b>		<b>100.0%</b>	<b>100.0%</b>

#### Averages for sample taken

Cheques and Deposits Accounts, Savings Contracts	18%
Bonds	5%
Stocks, Mutual and Unit trusts	11%
Real Estate Wealth	64%

## **DEFINITIONS**

### **Central Bank**

Central Bank of Kenya; It is a government body which regulates all the banks and is banker to the central government

### **CMA**

An institution set up by GOK to regulate the Capital Markets in Kenya

### **IRA**

A Retirement Plan that provides some tax advantages for retirement savings in the U.S.

### **RBA**

An institution established in 1997 by GOK to regulate pension schemes and provident funds including all the related parties: Trustees, Custodians, Administrators and Investment Managers.

### **Stocks**

Ordinary Shares (Equity) in a limited liability company. In this study, this is limited to shares of companies listed in the Nairobi Stock Exchange

### **401(K) Plans**

A type of employer-sponsored retirement plan named under a section of the U.S. Internal Revenue Code. It allows a worker to save for retirement while deferring income taxes on saved money or earnings until withdrawal. The most common are participant-directed plans where the employee can select from a number of investment options usually an assortment of mutual funds that emphasise stocks, bonds, money market investments or some mix of the above.