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Scheme Design, the Regulatory Factors Affecting Occupational Defined Contribution Schemes in Kenya

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Abstract: **Scheme design is critical for defined contribution scheme and the role of the regulator very important. Members are likely to end up with low benefits if the regulatory environment is not supportive to enhanced benefits. Scheme design should be carefully considered in establishment and review of defined contribution schemes to deliver adequate benefits to members. Based on modern portfolio and the life cycle theories, the study investigated the key regulatory factors affecting occupational defined contribution schemes in Kenya. Primary data were collected using a questionnaire administered to scheme administrators in the sample. A logistic econometric model was applied to evaluate the regulatory factors affecting scheme design. Most schemes had undergone some form of design change since inception, with the overriding change being conversion from defined benefit to defined contribution. In addition most schemes did not target any level of pensions to their members and paid pension through purchase of annuities. Further, most scheme administrators reported that their scheme was poor. The results also revealed that the key regulatory factor affecting scheme design was the existence of a separate public pillar. Gender was important but was mostly associated with poor scheme designs.**

Keywords: **Scheme Design, Defined Contribution, Pension, Retirement Benefits Schemes.**

I. INTRODUCTION

The history of formal pension schemes in Kenya is closely associated with the social, economic and political developments towards an industrial society that the country witnessed after the Second World War (Marwa, 1992). The earliest insured pension plans in Kenya were mainly administered from England and were exclusively for the whites. Such plans were informal and discriminatory. It was only in the late 1950s that the colonial government set up a social security scheme along the lines of one existing in England as well as encouraging the development of occupational pension plans (Angima, 1985). The period after independence saw a steady growth in the number of pension plans owing to the social, economic and industrial growth in the country.

There are different types of occupational retirement benefits schemes in Kenya. A scheme can be contributory or non-contributory; a contributory scheme is one where the employees contribute towards pension provision by the employer while non-contributory scheme is where the employer meets the entire cost of pension provision. It can also be insured or non- insured (deposit administration); insured schemes are pension provision arrangements through execution of an insurance policy, where benefits are guaranteed while for non-insured schemes the benefits payable depend on investment returns and contributions, there is no guarantee as to the level of benefits. The arrangement can also be Defined benefit (Final salary) or Defined contribution (Money purchase); defined benefit is where members are promised a pension calculated by multiplying the number of years of pensionable service by a proportion of their pensionable salary, for instance n/500*p while defined contribution schemes involve building up pension according to contributions over the

years and investment returns. Occupational retirement benefits schemes can also be established as pension schemes, providing periodic payments after retirement or provident funds which provide one lump sum payment on retirement (Chartered Insurance Institute, 1998).

On the regulatory front, the Retirement Benefits Act was enacted in 1997 as part of the reform process in the financial sector in order to bring the retirement benefits industry under a harmonized legislation and to address the many problems that had hitherto faced the industry. The law has a dual objective: first, to protect the interests of members and sponsors of retirement schemes so as to ensure that members receive a reasonable retirement income and that the sponsor's investment in its human resource is safeguarded; second, to spur Kenya's economic growth through enhancing the mobilization of domestic savings and capital formation as well as deepening the money and capital markets. The Retirement Benefits Authority (RBA) is mandated to regulate personal and occupational retirement benefits schemes (Mutuku, 2005).

The earliest retirement benefits schemes to be established in Kenya were insured plans providing guarantees to members on the level of benefits (Angima, 1985). With time the insured plans gave way to Defined Benefit (DB) schemes which guaranteed a pension based on an actuarial formula targeting a replacement ratio. Since then, many schemes converted from DB to DC. In the year 2001, Defined Contribution (DC) schemes constituted 84 percent of all occupational schemes and by 2005 the proportion had risen to 87 percent (Retirement Benefits Authority, 2005). DC plans have become the primary retirement savings vehicle for many employees in Kenya and the DC design continues to grow in importance. However, DC plans, unlike DB plans, involve no promises about the size of the pension and no risk to the employer with entire risk borne by scheme members. Therefore, a DC scheme should be based upon a design that will deliver adequate benefits to members. While several studies have been carried out in the area of retirement benefits such as conversion of DB schemes to DC schemes (Chirchir, 2010); pension choices (Cocco and Lopes, 2004) and effect of insufficient knowledge on retirement savings (Lusardi, 2003). In Kenya, Njuguna (2011) carried out a study on the determinants of pension fund corporate governance while Ngetich (2012) carried out a study on determinants of the growth of individual pension schemes. There has been no specific study exploring the regulatory factors affecting scheme design in occupational defined contribution schemes in Kenya and is what this study sought to answer.

II. LITERATURE REVIEW

Several theories relevant to this study were reviewed. The classical school of economics began with the publication of Adam's (1776) monumental work, 'The Wealth of Nations'. Much of this work was in developing theories about the way market economies work. The working of the 'invisible hand' was such that it leads all individuals in the market, in pursuit of their own self-interests, to produce the greatest benefit for the society as a whole. The approach known as 'laissez-faire' places total reliance on markets and anything that prevents markets from clearing properly should be done away with. The government was not supposed to intervene in markets but was to play its role by encouraging free trade and free markets. Any imperfections in the market that prevented this process should be dealt with by the government to ensure that optimum equilibrium in the economies or markets were attained. The government was supposed to achieve optimum equilibrium through the use of 'supply-side policies' to reduce market imperfections and ensure a balanced budget based on three theories; free market theory, says law and quantity theory of money. Much of Adam Smith's work laid the foundation of modern economics. Much of this work has subsequently been updated by modern economists, generally referred to as neo-classical economists. Knowledge of Classical Economic theory is useful to Occupational Defined Contribution (ODC) schemes. Unlike the NSSF of Kenya which is compulsory for the formal sector unless specifically exempted, establishment of ODC schemes is voluntary. Employers may or may not establish the schemes. However, the government encourages establishment of these schemes through various incentives to members and employers, mostly through tax incentives. Therefore, the establishment and operation of ODC schemes is totally reliant on markets, thus encouraging free trade and free markets.

Under classical economics, the value of a product was thought to depend on the costs involved in producing that product. Goods were distributed in an economy, it was assumed, in the same way that costs were distributed. The problem with this approach was that prices for a product did not always reflect the expected value as indicated by the costs of a product. Something was wrong with the perspective that the cost of a product was expressed in its price, a phenomenon that is explained by differences in 'utility'. Neo-classical economics emerged as a school in macroeconomics during the 1970s. It emphasizes the importance of rigorous micro-foundations, in which the macroeconomic model is built up from the

actions of individual agents, whose behaviuor is modeled by microeconomics. It refers to a general approach to economics based on supply and demand which depends on individuals or economic agent operating rationally, each seeking to maximize their individual utility or profit by making choices on available information. Neo-classical economics is based on three main assumptions: rationality and self interest, utility and profit maximization, and full and relevant information.

Modern Portfolio theory addresses the question of how to invest one's money during the accumulation phase has been widely explored in a well-developed model of investment decision-making commonly denominated-modern portfolio theory (MPT). The principles of MPT are at the heart of investment decision-making, both in employer-directed DB plans, and employee-directed DC plans. The MPT influences everything from strategic asset allocation decisions in defined benefit DB plans, and investment advice and education programs in defined contribution DC plans, to more technical issues such as performance attribution for investment managers. The MPT seeks to characterize capital market assets, whether stocks or fixed income investments, in terms of their expected mean return and their volatility or variance, hence the term "mean-variance" investing. Rational investors seek out efficient combinations of securities that optimize risk and return, and a given portfolio is on the "efficient frontier" if it offers the highest return for a given level of risk. Individuals and institutions select from the array of portfolio choices on the efficient frontier based on their expected utility. In their utility preferences, individuals are presumed to be risk-averse, meaning that they penalize, or demand higher compensation for, riskier investments. Also, as risk increases, the compensation they require increases at a faster rate.

Shiraz (2004) studied target benefit levels and reported that the criteria widely used is the Replacement Ratio (RR). The alternative suggested was targeting a specific multiple of member's salary as a notional 'cash target' at retirement. For instance, the employer might set the contribution objective as 'delivering five times the member's final salary on average' at retirement. While this was one way of defining the contribution scale, other scales were possible that better reflected the 'secondary' objectives of a program while neutral in a budgetary sense. For example, if the objective was to reward long service, this could be achieved by having a lower employer contribution level initially, followed by a higher one, say after five years. Additional Voluntary Contributions (AVCs) could also be used to supplement the savings for retirement, taking in consideration the taxation rules.

III. RESEARCH METHODOLOGY AND DATA ANALYSIS

The research philosophy that guided the work was positivitism. The study adopted a cross-sectional descriptive design. A questionnaire was administered to a selected sample of scheme administrators in Kenya. Alogit model was used to examine the regulatory factors affecting scheme design in ODC schemes in Kenya. This was appropriate since the dependent variable was categorical with binary response. The regressand (scheme design) was a binary variable taking 1, if the design was good or 0 if poor. The scheme administrators were assumed to be risk neutral and therefore preferred good designs to poor designs. Good design results when the objective function is realized or closely mirrors the actual results, poor design results in low benefits.

If the dependent variable (scheme design), Y=1, meaning that the scheme design is good, then:

$P_i = E(Y=1 \mid X_i) = \beta_0 + \beta_1 X_1 + \ldots + \beta_i X_i + \varepsilon_i$ ……(1)

Where: Y=1 means the scheme has a good scheme design and $X_1 \ldots X_i$ are independent variables,

$E(Y=1 \mid X_i)$ means a function in which the regressand and regressors are Y and X_i respectively

β_0 is a constant, $\beta_1 \ldots \beta_i$ are regression coefficients

P_i is the probability of a good design and ε_i is the error term

Since the probability of a good design is P_i, then the probability of a poor design is $(1-P_i) = 1/(1+e^{zi})$, hence the ratio of the probability that a scheme will have a good design to the probability that it will be poor is as follows:

$P_i/(1-P_i) = (1+e^{zi})/(1+e^{-zi}) = e^{zi}$ ……(2)

Therefore;

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The natural logarithm of (2) is:

$L_i = \ln (P_f/(1-P_i)) = Z_i$

$= \beta_0+\beta_1X_1+\ldots.+\beta_iX_i + \varepsilon_i$

The population comprised of 1339 occupational defined contribution schemes as published in the Retirement Benefits Authority Annual Report for the financial year 2011 – 2012 (RBA, 2012). The selection of the sample was based on stratified random sampling technique. The population was first divided into mutually exclusive groups that were relevant, appropriate and meaningful in the context of the study (Sekaran, 2003). Thus, the schemes were selected according to three different scheme sizes; small, medium and large schemes. Small schemes were those with a membership of 50 or less, medium schemes with a membership between 51 upto 100 and large schemes with a membership above 100. The research instrument used in this study was the questionnaire.

Internal consistency is an indicator of how well the different items measure the same concept. This is important since a group of items purporting to measure one variable should indeed be clearly focused on that variable (Nunnally, 1978). The Cronbach's alpha (α) is a reliability coefficient that indicates how well the items in a set are positively correlated to one another (Sekaran, 2003). The coefficient alpha measures internal consistency reliability among group of items combined to form a single scale. It is a statistic that reflects the homogeneity of the scale measured. Generally, reliability coefficients of 0.70 or more ($\alpha \geq 0.70$) are considered good (Nunnally, 1978) and was the benchmark used for this study. The regulatory related determinants had Cronbach's alpha of 0.718 and was considered good and none of the items could be deleted since this could have led to lowering of the coefficient and reliability.

The unit of analysis for this study was the retirement benefits scheme. The sample included schemes drawn from the small, medium and large schemes as per the RBA list of schemes 2012. Participants were scheme administrators or senior managers working under the administrator with delegated authority.

IV. DATA ANALYSIS

Since this study was also inferential in nature, data analysis started with testing for the statistical significance. The primary purpose of the inferential statistics was to estimate or predict the regulatory factors of scheme design from a selected sample of cases. A logit model which is a specialized regession model of binomial response variables was used because the dependent variable was categorical. Logit models use the inverse of the standard normal cumulative distribution function and assume the categorical dependent reflects an underlying quantitative variable. Since the explanatory variables were categorical, dummy variables were used. The model was used to predict the probability of a good design based on the predictors. The model established the regulatory factors of scheme design in Kenya, the significance level used was 0.05 percent.

Multicollinearity issues were considered because in multivariate models, it is desirable for each independent variable to be highly correlated with the dependent variable, but not among the independent variables. The study used Anderson *et al.* (1996) guide that 0.80 is a more acceptable threshold level and severe multicollinearity existed if the coefficient was more than 0.8. Also the omnibus tests of model coefficients were performed to check that the model (with explanatory variables) was an improvement over the baseline model (with no explanatory variables). This was determined through differences in the -2 log-likelihoods by use of chi-square tests. Cox & Snell and Nagelkerke R squares were used to establish the proportion of variation in scheme design explained by the model. The Hosmer and Lemeshow tests were used to assess the goodness of fit of the model to the data. Lastly, the classification table of logit model was used to determine the proportion of the outcome that was correctly classified relative to the null model. The Odds Ratios were used in the interpretation of the significant coefficients in the equations. The tests and first logit were analysed using SPSS. Since marginal effects could not be computed in SPSS, these were run in Stata and predicted the probability of achieving a good design.

Since a logistic model was used for the analysis, test for multicollinearity was important. Given that the explanatory variables did not have high correlation (>0.8), they were all considered good for model. The Omnibus Tests of Model Coefficients were used to check that the model (with explanatory variables included) was an improvement over the baseline model (without explanatory variables). The inclusion of the factors reduced the -2 log likelihood by 35.646 with

11 degrees of freedom. The -2 log likelihood (deviance) measured how well the model explained variations in scheme design. The p value for the result was 0.000 which was less than usual cut off significance level of 0.05. This led to the conclusion that the addition of the factors to the model explained the variations in scheme design.

Further, the model with a Cox and Snell and Nagelkerke R Square of 0.185 and 0.266 respectively, explained between 18.5 and 26.6 percent of the variation in scheme design. In addition, the Hosmer & Lemeshow test of the goodness of fit showed that the model was a good fit to the data as p=0.398 (>.05). The null hypothesis that the model does not fit was thus rejected. Lastly, the classification table of the logit model for regulatory related factors, correctly classified the outcome for 78.7 percent of the cases compared to 71.8 percent in the null model (without explanatory variables), providing an improvement in the prediction. Table 4.1 below presents the results for the logit regression for regulatory factors affecting scheme design.

Table 4.1: Logit Regression Results for Regulatory Related Factors of Scheme Design

Variable		B	S.E.	Wald	Df	Sig.	Odds Ratio
Step 1[a]	Incentive participate			1.289	3	.732	
	Incentive participate(Not Important)	.000	1.414	.000	1	.998	1.000
	Incentive participate(Least Important)	1.012	1.011	1.001	1	.317	2.750
	Incentive participate(Important)	-.086	.616	.020	1	.889	.917
	Taxation			.938	2	.626	
	Taxation(Least Important)	.580	1.200	.234	1	.629	1.786
	Taxation(Important)	-.471	.982	.231	1	.631	.624
	Separate pillar			7.647	3	.045	
	Separate pillar(Not Important)	1.927	1.044	3.407	1	.065	6.869
	Separate pillar(Least Important)	1.452	.723	4.036	1	.044	4.270*
	Separate pillar(Important)	.998	.565	3.119	1	.077	2.714
	Gender			6.934	3	.049	
	Gender(Not Important)	-1.501	.748	4.019	1	.043	.223*
	Gender(Least Important)	-.553	.814	.461	1	.497	.575
	Gender(Important)	-21.217	28420.722	.000	1	.999	.000
	Constant	-.426	.716	.354	1	.552	.653

*Implies the Ratio is Significant at 0.05

Table 4.1 presents the regression coefficients (β), the Wald statistic (to test the statistical significance) and the Odds Ratio for each regulatory related factor category (ranking). The results indicated that the coefficients for existence of a separate public pillar and gender were significant (Wald=7.647, df=3, p<.050 and Wald 6.934, df=3, p<0.050 respectively). Thus the existence of a separate public pillar and gender were making a contribution to the predictive power of the model. The coefficient for existence of a separate public pillar (ranked, least important) was significant and positive, indicating that an increased ranking of the existence of a separate public pillar was associated with increased odds of achieving a good scheme design. The Odds Ratio shows that respondents that ranked the existence of a separate public pillar as least important were four (4) times more likely than those ranking it as very important (reference category) to achieve a good scheme design, holding other factors constant. The coefficient for gender (ranked, not important) was significant and negative, indicating that an increased ranking of gender was associated with reduced odds of achieving a good scheme design. The Odds Ratio shows that respondents that ranked gender as not important were 0.223 times (much less) likely, than those ranking it as very important (reference category) to achieve a good scheme design, holding other covariates constant. Table 4.2 below presents the results of the marginal effects for regulatory related factors for scheme design.

Table 4.2: Marginal Effects for Regulatory Related Factors: Y= Pr(Good design) = 0.26529493

Variable |	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]	X
Incentives (Not Important)	.2847477	.2734	1.04	0.298	-.251117 .820612	.033333
Separate pillar(Least Important)	.4218939*	.20498	2.06	0.040	.020137 .82365	0.127778
Taxation(Not Important)	.0763175	.11074	0.69	0.491	-.140735 .29337	.155556
Taxation(Least Important)	.0515106	.25688	0.20	0.841	-.451963 .554984	.044444
Gender(Not Important)	-.1777911*	.09958	-1.79	0.044	-.372967 .017384	.072222
Gender(Least Important)	-.1930557	.23117	0.84	0.504	-.260027 .646138	.044444
Gender(Important)	-.2459689	.14313	1.72	0.086	-.034557 .526494	.144444

From table 4.2, the predicted probability of achieving a good design was 0.27 for administrators of occupational defined contribution schemes. Marginal effects and discrete changes were listed under dy/dx column. For a unit increase in the ranking of existence of a separate public pillar for those ranking it as least important than very important, the predicted probability of achieving a good design increased by 42.19 percent, holding other factors constant at the reference points. For a unit increase in the ranking of gender for those ranking it as not important than very important, the predicted probability of achieving a good design reduced by 17.78 percent, holding other determinants constant at the reference points. From the results it was concluded that the existence of a separate public pillar and gender were the most important regulatory related factors of scheme design for occupational defined contribution schemes. However, gender was associated with the reduced probability of achieving a good design. The findings were consistent with those of Blake *et al.* (2004) who concluded that plan design were occupation and gender specific. In addition the findings supported those of Slade (1999) that the existence of a separate public pillar such as the Stakeholder Pension Plan of the UK was an important determinant of design. However, incentives for members to participate at increased levels and the taxation rules were largely disregarded in scheme design.

V. CONCLUSION

The objective of this paper was to assess the regulatory related factors affecting scheme design for occupational defined contribution schemes in Kenya. The results revealed that regulatory agencies placed more emphasis on the existence of a separate public pillar and gender considerations as important factors in scheme design. But incentives for members to participate at increased levels and taxation rules were given less emphasis, making them weak factors of scheme design. It would be important for policy makers mainly the regulator, the Retirement Benefits Authority, to actively provide incentives both to members and the employers for establishment of new schemes as well as enhancement of benefits for existing schemes. The literature review points to tax incentives, providing options of contracting out from National Social Security Fund of Kenya if the scheme delivers superior benefits to members. The study made a proposition for the structuring of scheme design by constantly reviewing it as the economic environment changes. This way the members' benefits would be adequate and hedged against various risks. This study contributed to a new understanding that design should not necessarily be fixed, but reviewed periodically.

REFERENCES

[1] Altmann, R. (2001), Let's get DC Right Before its Too Late. *Journal of Pensions Management,* Vol. 7, No.1, pp. 38 - 45

[2] Ameriks, J.,Caplin, A., Leahy, J. (2002), *Wealth Accumulation and the Propensity to plan*. NBER Working paper 8920, National Bureau of Economic Research, Cambridge, Massachusetts.

[3] Ameriks, J., Zeldes S.P. (2004), 'How do household portfolio shares vary with age?' Working Paper, Columbia University

[4] Angima, J.N.M. (1985), Employers' Accounting for the Cost of Pension Schemes in Kenya, Unpublished MBA Project, University of Nairobi

[5] Bajtelsmit, V.L., Bernasek, A. (1999), Why do women invest differently than men? *Finance Counselor Plan* 7:294–305

[6] Barber, B., Odean, T. (2001), Boys will be boys: gender, overconfidence, and common stock investments. *Quarterly Journal of Economics* 116(1):261–292 (February)

[7] Benartzi, S. (2001), Excessive extrapolation and the allocation of 401(k) accounts to company stock? *Journal of Finance* 56(5):1747–1764

[8] Benartzi, S., Thaler, R. (2007), Heuristics and Biases in Retirement Savings Behavior. *Journal of Economic Perspectives* 21 (3): 81–104.

[9] Berk, J., and Green, R. (2004), Mutual Fund Flows and Performance in Rational Markets, *Journal of Political Economy*, 112, 1269-95.

[10] Bernheim, B. D., Jonathan S., Steven W. (2001), "What Accounts for the Variation in Retirement Wealth among U.S. Households?" *American Economic Review* 91(4): 832-857.

[11] Best, J. W. and Kahn, J. V. (1993), *Research in Education.* 7th Edition, Chicago: Ally and Bacon.

[12] Blake, D. (2007), It's all Back to Front: Critical Issues in the Design of Defined Contribution Pension Plans, Paper presented at the Annual Conference on Frontiers in Pension Finance and Reform 2007, 22-23 March 2007.

[13] Blake, D., Cairns, A., and Dowd, K. (2004), The Impact of Occupation and Gender on Pensions from Defined Contribution Plans, Pensions Institute Paper, Cass Business School.

[14] Blake, D. (1996), Efficiency, Risk Aversion and Portfolio Insurance: An Analysis of Financial Asset Portfolios Held by Investors in the United Kingdom, *Economic Journal, 106, p. 1175-1192*

[15] Blake, D. (2003), Pension Schemes and Pension Funds in the United Kingdom, Oxford, Oxford University Press.

[16] Blake, D. and Timmermann, A. (1998), Mutual Fund Performance: Evidence from the UK, *European Finance Review*, 2, 57-77.

[17] Blake, D., and Board, J. (2000), Measuring Value Added in the Pensions Industry, *Geneva Papers on Risk and Insurance*, 25, October 2000, 539-567.

[18] Blake, D., Cairns, A., and Dowd, K. (2001), Pensionmetrics: Stochastic Pension Plan Design and Value-at-Risk during the Accumulation Phase, *Insurance: Mathematics & Economics*, 29, 187-215.

[19] Blake, D., Cairns, A., and Dowd, K. (2003), Pension Metrics 2: Stochastic Pension Plan Design during the Distribution Phase, *Insurance: Mathematics & Economics*, 33, 29- 47.

[20] Blake, D., Lehmann, B., and Timmermann, A. (1999), Asset Allocation Dynamics and Pension Fund Performance, *Journal of Business*, 72, 429-62.

[21] Blake, D., Lehmann, B., and Timmermann, A. (2002), Performance Clustering and Incentives in the UK Pension Fund Industry, *Journal of Asset Management*, 3, 2002, 173-194.

[22] Bodie, Z. (1990), Pensions as Retirement Income Insurance, *Journal of Economic Literature*, 28, 28 – 49.

[23] Bodie, Z. (1995), On the Risk of Stocks in the Long Run. *Financial Analysts Journal* (51)3: 18-22.

[24] Brown, J., Olivia, S. M., James, P., Mark, W. (1999), Taxing Retirement Income: Nonqualified Annuities and Distributions from Qualified Accounts. *National Tax Journal* LII (3) September: 563-592.

[25] Bryman, A. and Cramer, D. (1997), *Quantitative data analysis for social scientists*. Revised Edition. London and New York: Routledge.

[26] Cairns, A., Blake, D. and Dowd, K. (2006), Stochastic Lifestyling: Optimal Dynamic Asset Allocation for Defined Contribution Pension Plans, *Journal of Economic Dynamics & Control*, 30, 843-877.

[27] Campbell, J.Y. and Luis M.V. (2002), *Strategic Asset Allocation: Portfolio Choice for Long-Term Investors.* Oxford: Oxford University Press.

[28] Chirchir, S. (2010), Conversion of Defined Benefit Schemes to Defined Contribution Schemes. *Retirement Benefits Authority*

[29] Choi, J., Laibson, D., Madrian, B., Metrick, A. (2002), Defined contribution pensions: plan rules, participation decisions and the path of least resistance. In Poterba J (ed*) Tax policy and the economy*. MIT, pp 67–113

[30] Choi, J., Laibson, D., Madrian, B., Metrick, A. (2004), For better and for worse: default effects and 401(k) savings behavior. Perspectives on the Economics of Aging, University of Chicago Press

[31] Chartered Insurance Institute (1998), Pensions Planning and Administration, CII Tuition text: London

[32] Cocco, J.F. and Lopes, P. (2004), Defined Benefit or Defined Contribution? An Empirical Study of Pension Choices.

[33] Cohen, J. (1997), *Statistical power analysis for the behavioural sciences.* (rev. ed.). New York: Academic Press.

[34] Cohen, L. and Manion, L. (1994), *Research methods in education.* (4th ed.). London: Routledge.

[35] Cohen, L., Manion, L. and Morrison, K. (2000), *Research methods in education.* (5th ed.). London: Routledge Falmer.

[36] Cronbach, L. J. (1951), Coefficient alpha and the international structure of tests. *Psychometrica*, 16, 297-334.

[37] Davis, E.P. (1988), Financial Market Activity of Life Insurance Companies and Pension Funds, Economic Paper No.21, Bank for International Settlements, Basle.

[38] Davis, S.J. and Paul W.(2002), "Income Shocks, Asset Returns, and Portfolio Choice." In *Innovations in Retirement Financing*, eds. Zvi Bodie, Brett Hammond, Olivia Mitchell and

[39] Dillman, D. A. (2000), *Mail and internet surveys: the tailored design method.* New York: Wiley & Sons.

[40] Durhan, D. F. and Wilson, R. D. (1990), Prenotification and Industrial Survey Responses. *Industrial Marketing Management,* 2, 95-105.

[41] Dynan, K.E., Skinner, J. and Zeldes, S.P (2004), Do the rich save more? *Journal of Political Economy* 112(2):397–444 (April)

[42] Employee Benefits Research Institute (2003), 2003 Retirement Confidence Survey Summary of Findings, Employee Benefits Research Institute, Washington DC, September 2003

[43] Fabozzi, F. and Konishi, A. (eds)(1991), *Asset-Liability Management*, Probus, Chicago.

[44] Financial Services Authority (2005), United Kingdom Annual Report

[45] Fink, D. (1998), Guidelines for the Successful Adoption of Information Technology in Small and Medium Enterprises. *International Journal of Information Management,* 18 (4), 243-253.

[46] Frankfort-Nachmias, C. and Nachmias, D. (1992), *Research Methods in the Social Sciences.* 4th edition. London: St. Martin's Press, Inc.

[47] Friedman, M. (1957), *A Theory of the Consumption Function.* Chicago: Princeton University Press, Princeton

[48] Garrett, T.A. (2003), Aggregated vs. Disaggregated Data in Regression Analysis: *Implications for inference*. Economics Letters 81(1):61–65 (October)

[49] Grinblatt, M., and Titman, S. (1992), The Persistence of Mutual Fund Performance, *Journal of Finance* 47, 1997-84.

[50] Government of United Kingdom. (2006), The Annuities Market, H M Treasury, London.

[51] Haberman, S., and Sung, J.H. (1994), Dynamic Approaches to Pension Funding, *Insurance: Mathematics & Economics* 15, 151-62.

[52] Hair, J. F., Anderson, R. E., Tatham, R. L. and Black, W. C. (1998). *Multivariate Data Analysis* (5th ed.). Chicago: NJ: Prentice Hall.

[53] Hoinville, G. and Jowell, R. (1987), In association with Airey, C., Brook, L., et. al. *Survey Research Practice.* London: Heinemann.

[54] Holden, S. and VanDerhei, J. (2003), 401(k) Plan Asset Allocation, Account Balances and Loan Activity in 2001. Investment Company Institute Perspective 9(2) (March)

[55] Horneff, W., Maurer, R. and Stamos, M. (2006), Optimal Gradual Annuitization: Quantifying the Costs of Switching to Annuities, Working Paper, Goethe University, Frankfurt, April. *Journal of Risk and Insurance*, 106, 1175-92.

[56] Huberman, G. (2001), Familiarity breeds investment. *Review of Financial Studies* 14(3):161–178, Fall

[57] Huberman, G. and Jiang, W. (2006), Offering vs. choices in 401(k) plans: equity exposure and number of funds. *Journal of Finance* XLI(2):763–801

[58] Huberman, G. and Sengmuller, P. (2004), Performance Predicts Asset Allocation: Company Stock in 401(k) plans.*Review of Finance* 8(3):403–443 (September)

[59] Igbaria, M., Zinatelli, N. and Cavalye, A.L.M. (1998), Analysis of Information Technology Success in Small Firms in New Zealan. *International Journal of Information Management*, 2, 103-119.

[60] Iyengar, S., Huberman, G. and Jiang, W. (2004), How Much Choice is too Much?: Contributions to 401(k) Retirement Plans. In: Mitchell Utkus S (ed) Pension Design and Structure: New Lessons from Behavioral Finance. Oxford University Press, pp 83–96

[61] Iyengar, S. and Kamenica, E. (2006), Choice Overload and Asset Allocation: Evidence from 401(k) Plans, Working Paper, Columbia Business School and GSB University of Chicago

[62] Kahneman, D. (2003), "The Psychology of Risky Choices." Address before the Investment Company Institute, May, Washington DC.

[63] Kidder, L. (1981), *Research methods in social relations.* (4th ed.) New York: Holt-Saunders.

[64] Knupp, E. (2010), The Path Forward: Designing the Ideal Defined Contribution Plan, *Line of Sight*, October, 2010

[65] Kochugovidan S. (2006), Implications and Limitations of Hedge Fund Returns, Barclays Capital Equity Guilt Study, London

[66] Laibson, D.I., Andrea, R. and Jeremy, T. (1998)," Self Control and Saving for Retirement." *Brookings Papers on Economic Activity* I: 91-196.

[67] Liang, N. and Weisbenner, S. (2002) Investor Behavior and the Purchase of Company Stock in 401 (k) plans—the Importance of Plan design, NBER Working paper 9131 (August)

[68] Lunde, A., Timmermann, A., and Blake, D. (1999), The Hazards of Mutual Fund Underperformance, *Journal of Empirical Finance*, 6, 121-52.

[69] Lusardi, A. (2003), Planning and the Effectiveness of Retirement Seminars, *National Tax Association Proceedings*, Dartmouth College.

[70] MacDonald, A. (1996), United Kingdom, in A. MacDonald (ed.) *The Second Actuarial Study of Mortality in Europe*, Groupe Consultatif des Associations D'Actuaires des Pays des Communautes Europeennes, Br