

Impact of Financial Literacy on Access to Financial Services in Kenya

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Abstract

The main thrust of this study is to establish the impact of financial literacy on access to financial services in Kenya using the 2009 National Financial Access (FinAccess) survey data. Using a multinomial logit approach to explain access to the four major financial service access strands, the study found that financial literacy remains low in Kenya. Besides, regression results indicate that households' access to financial services is not based on levels of financial literacy but rather on factors such as income levels, distance from banks, age, marital status, gender, household size and level of education. However, the study established that the probability of a financially illiterate person remaining financially excluded is significantly high calling for increased investment in financial literacy programs to reverse the trend. The study recommends the development of a curriculum on financial education and administer it in local, middle level and higher learning institutions.

Key words: Financial education, multinomial logit, Fin Access

1.0 Introduction

Financial literacy remains an interesting issue in both developed and developing economies, and has elicited much interest in the recent past with the rapid change in the finance landscape. OECD (2005), defines financial literacy as the combination of consumers'/investors' understanding of financial products and concepts and their ability and confidence to appreciate financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being (Miller *et al.*, 2009). Financial literacy helps in empowering and educating consumers so that they are knowledgeable about finance in a way that is relevant to their lives and enables them to use this knowledge to evaluate products and make informed decisions. It is widely expected that greater financial knowledge would help overcome recent difficulties in advanced credit markets. Financial literacy prepares consumers for tough financial times, through strategies that mitigate risk such as accumulating savings, diversifying assets, and purchasing insurance.

Financial literacy facilitates the decision making processes such as payment of bills on time, proper debt management which improve the credit worthiness of potential borrowers to support livelihoods, economic growth, sound financial systems, and poverty reduction. It also provides greater control of one's financial future, more effective use of financial products and services, and reduced vulnerability to overzealous retailers or fraudulent schemes. Facing an educated lot, financial regulators are forced to improve the efficiency and quality of financial services. This is because financially literate consumers create competitive pressures on financial institutions to offer more appropriately priced and transparent services, by comparing options, asking the right questions, and negotiating more effectively. Consumers on their part are able to evaluate and compare financial products, such as bank accounts, saving products, credit and loan options, payment instruments, investments, insurance coverage, so as to make optimal decisions.

Greenspan (2002) argues that financial literacy helps to inculcate individuals with the financial knowledge necessary to create household budgets, initiate savings plans, and make strategic investment decisions. Proper application of that knowledge helps households to meet their financial obligations through wise planning, and resource allocation so as to derive maximum utility. (Hilgert, Hogarth, & Beverly, 2003) asserts that financial knowledge appears to be directly correlated with self-beneficial financial behavior. However, Sceptics (Lyons, Palmer, Jayaratne, & Scherpf, 2006) question the effectiveness of financial education in improving financial literacy. Van Rooij, Lusardi, and Alessie, (2007) in a study of Dutch adults, established that households with low levels of financial literacy are more likely than others to base their behavior on financial advice from friends and are less likely to invest in stocks.

Mounting evidence shows that those who are less financially literate are likely to face more challenges with regard to debt management, savings and credit, and are less likely to plan for the future. Regulators of financial services, have a responsibility to help consumers of financial services in making informed financial decisions so as to promote consumer protection, public awareness, and maintenance of market confidence. On the other hand, information asymmetry between financial service providers (FSPs) and potential users leads to weakened financial markets. It also denies consumers an opportunity to fully appreciate their rights and responsibilities, the financial risks they may be exposed to, and any other information related to the financial products.

Financial literacy not only benefits consumers but also FSPs. Financially literate consumers pose less risk to the financial system due to their responsible use of financial services which help to underpin financial market stability, and contribute to increased savings, wider economic growth and development.

1.1 Problem Statement

For most families, decision making processes are mainly informed by the household heads most of whom are men. The question posed however, is whether the decisions and choices made are guided by financial literacy or other factors. Of interest to this study is to establish the decision making process of households, whether the wife, husband, children or any other channel makes the decisions. Literature on the linkage between household behavior and the potential effect of financial education efforts on that behavior remains scanty. Campbell (2006) argues that decisions to increase human capital by undertaking higher levels of education, for example, are subject to varying rates of return due to a number of factors, including one's expected lifespan upon completion of a degree program. In order to understand the link between household financial decisions and financial literacy, there is need to understand households effective numeracy strength, as well as the connection between financial literacy and access to credit services.

1.2 General Objectives

This study seeks to establish the level of financial literacy in Kenya and its impact on access to credit

1.2.1 Specific Objectives

- i) To determine the level of effective literacy and numeracy in Kenya
- ii) To determine the source of financial advice among households with access to credit services
- iii) To measure the impact of financial literacy on access to credit in Kenya especially with respect to the decision making process

2.0 Literature Review

Financial literacy is yet to receive enough attention although there has been growing attention in the recent past. Levels of financial literacy across the world remains very low, although there is not much literature to support this assertion. However, OECD countrylevel survey data confirms this view, with consumers consistently performing poorly on tests of financial literacy. Bernheim and Garrett (2003) and Vitt, et al. (2000) established that 75 percent of consumer financial literacy programs started in the late 1990s or 2000. Campbell (2006) argues that with financial education poor financial decisions are likely to be reconciled with economic theory given that households have been found to make sub optimal decisions which deviate from what economic theory suggests.

Campbell posits that households with higher education levels (high school, college, graduate school) are likely to be more active in capital markets due to reduced information asymmetry.

Through regression evidence, higher education levels were found to be significantly related to equity ownership by households. Educated Swedish households were found to diversify their portfolios more efficiently than less educated households. In conclusion, poorer and less educated households were found to have a higher probability of making mistakes than wealthier and better educated households.

Hilgert, Hogarth and Beverly (2003) in a Federal Reserve Bulletin for cash-flow management, credit management, savings, and investment found a very strong and significant link between knowledge and behavior across the range of personal finance activities. The Survey of Consumers results on 18 financial management behaviors was used to construct a financial practice index for each of the four areas of financial activity. In regard to learning experiences and effective ways to learn personal financial management skills media and video presentations were rated highest, while informational seminars and formal courses were rated lowest. Personal experience, friends and family were the main sources of knowledge while formal education like high school education and educational sessions either on the job or outside of a school environment was rated lower across all financial practices and skill levels. Unfortunately, the study does not provide conclusive evidence that financial literacy leads to sound personal finance decisions.

Using a recursive model with links from financial knowledge to financial behaviors to credit outcomes, Courchane and Zorn (2005) established that behavior which is influenced by knowledge had a direct positive relationship with credit outcomes. While mistakes in making personal finance decisions is considered real, the study argued that lack of knowledge about key personal finance issues contributes to these mistakes, calling for knowledge acquisition to counter this.

Bayer, Bernheim and Scholz (1996) commenting on the KPMG retirement benefits survey conducted in 1993 and 1994 concluded that employers tend to offer training on a “remedial” basis when participation is considered to be too low.

Bernheim and Garrett (1996), in a survey sponsored by Merrill Lynch in 1994 on the impact of employer-provided education on stock variables (total net worth and total value of retirement assets) and flow variables (total savings and savings for retirement purposes) found financial education to have less impact on both the stock and the flow variables given that employers tend to provide financial education in remedial situations. Regression analysis where each of the four variables listed above entered the equation as a dependent variable, revealed a strong positive and significant impact of employer-provided financial education and retirement wealth, total savings and retirement savings. Whereas the relationship between financial education and total wealth was positive, the coefficient was not significant. Workplace financial education was found to be an important factor for the total savings rate, but not total wealth. Hira and Loibl (2005) in a sample of employees of a large insurance company established that financial literacy improves workers’ expectations about their future financial situation.

Muller (2002) on the 1992 Health and Retirement Survey established that retirement education increases the probability of a 40 year old to save a lump sum distribution from a retirement account by 27% though it does not increase the likelihood of financially vulnerable groups (women, non-college grads and those with lower incomes) saving their distributions. In any case, these groups are significantly less likely to save a lump sum distribution once exposed to retirement education. Clancy, Weiss and Schreiner (2001) on the impact of financial education on the use of Individual Development Accounts (IDAs) established that each additional hour of financial education in the range of 1-6 hours led to an increase in monthly deposits in an IDA account of \$1.24 and an increase of \$0.56 for each additional hour in the 15 range of 7-12 total hours of education.

Still on the Health and Retirement Survey (HRS), Lusardi (2003) investigated the effect of retirement seminars on savings and wealth. A direct positive link was found between education level and permanent income. Retirement education was found to increase liquid wealth (savings) by approximately 18 percent overall. The seminal work on the impact of financial education by Bernheim et al. (2001) revealed that middle age individuals who took a personal financial management course in high school saved more than those who didn’t pursue the course. (Lusardi and Mitchell (2007a) observed that households with low levels of financial literacy tend not to plan for retirement, acquire fewer assets, borrow at higher interest rates (Lusardi and Tufano (2008); Stango and Zinman (2006), and participate less in the formal financial system relative to their more financially literate counterparts (Alessie et al., (2007); Hogarth and O’Donnell (1999).

3.0 Conceptual Framework and Data analysis

Access to financial services which forms our outcome variable takes the value of 1, 2, 3 or 4 if the choice formal (banks), semi formal SACCOs and MFIs), informal (informal lenders, employer, buyer of harvest, ASCAs, ROSCAs excluding friends and family) or no strand is taken, respectively to capture the multiple outcomes. Predicting the probability that any of the alternative strands, j is chosen, however, depends on a vector of explanatory variables X_i , and a vector of unknown parameters β_i . This study is motivated by McFadden's random utility model (RUM). The utility function is expressed as follows;

$$U_{ij} = U_j(x_{ij}, z_{ij})$$

An individual faced with two or more choices will compare the differences in utility of the available alternatives so as to choose that which yields the highest difference in utility. An Individual i is assumed to choose alternative A if $U_A > U_B$;

$$V_A(x_{iA}; \beta) + \varepsilon_{iA} > V_B(x_{iB}; \beta) + \varepsilon_{iB}$$

$$V_A(x_{iA}; \beta) - V_B(x_{iB}; \beta) - (\varepsilon_{iB} - \varepsilon_{iA})$$

let

$$g(x_i, \beta) = V_A(x_{iA}; \beta) - V_B(x_{iB}; \beta)$$

$$\eta = (\varepsilon_{iB} - \varepsilon_{iA}) = [U_{iB}(x_{iB}, z_{iB}) - V_B(x_{iA}; \beta)] - [U_{iA}(x_{iA}, z_{iA}) - V_A(x_{iA}; \beta)]$$

$$C_i^* = g(x_i, \beta) - \eta_i$$

Where:

U_{ij} represents the utility derived by individual i , from choice of alternative j

x_{ij} represents the observed characteristics of individual i and alternative j chosen

z_{ij} represents the unobserved characteristics of individual i and alternative j chosen

C_i^* is the latent variable which incorporates both the observable $g(x_i, \beta)$ and the unobservable (η_i) differences in utility.

β represents the estimated coefficients of the explanatory variables

$V_A(x_{iA}; \beta) + \varepsilon_{iA}$ is the utility derived from choice of alternative A where $V_A(x_{iA}; \beta)$ is the observable or deterministic portion of the utility estimated while ε_{iA} is the unknown utility.

$V_B(x_{iB}; \beta) + \varepsilon_{iB}$ is the utility derived from choice of alternative B where $V_B(x_{iB}; \beta)$ is the observable or deterministic portion of the utility estimated while ε_{iB} is the unknown utility.

$g(x_i, \beta)$ is the observable difference in utilities from choice of alternative A and not B.

η (η_i) is the unobservable difference arising from the omission of other variables.

The errors ε_{iA} and ε_{iB} arise from omitted variables, measurement errors and specification errors arising from the functional choice.

3.1 Multinomial logit model

The financial services seeking behaviour of an individual is captured as a multiple choice problem and estimated using multinomial logit. The multinomial logistic regression model has been used to estimate the significance factors that determine the probability of an individuals' choice of financial service access strand. The errors in this model are assumed to be identically and independently distributed (iid) across both alternatives and individuals. The assumption that error terms are extreme value or Gumbel distributed closely approximates the normal distribution hence producing closed form solutions (Greene, 2003). In addition, the model ensures that the estimated probabilities lie between 0 and 1 (Menard, S. 1995, p.13), unlike the linear probability model. In discrete choice models which include multinomial logit, estimated probabilities are considered to be linear in their parameters, ensuring that an increase in magnitude of an independent variable, will increase or decrease the probability of choosing any of the options or not.

$$C^* = \beta_0 + \beta_1 r_i + \beta_2 Y_i + \beta_3 A_i + \beta_4 G_i + \beta_5 A - G + \beta_6 M_i + \beta_7 E_i + \beta_8 D_i + \beta_9 HH_i \varepsilon_i$$

C^* is the latent variable on the observed choice and ranges between 1 to 4.

Where; 1- formal strand, 2-semi formal strand and 3-informal strand. Excluded category is used as the base category.

The likelihood function will be specified as follows

$$L = \prod_{i=1}^{4420} \prod_{j=1}^3 p_{ij}^{y_{ij}}$$

$$\text{where; } p_{ij} = \frac{e^{\beta_j x_i}}{\sum_j e^{\beta_j x_i}}$$

Where;

p_{ij} is the probability that the i^{th} individual chooses alternative j .

y_{ij} is the choice of alternative j by the i^{th} individual.

Maximizing the log likelihood function yields the multinomial density function expressed below. This function gives the predicted probabilities for each outcome.

$$f(y) = p_1^{y_1} \times p_2^{y_2} \times p_3^{y_3} = \prod_{j=1}^3 p_j^{y_j}$$

4.0 Findings and Conclusions

The study established that access to financial services varies across the various access strands. The empirical results of this study are represented in Table 1 below. A strong relationship between the endogenous and exogenous variables was established going by the Pseudo- R^2 statistic (19.49%) which indicates a strong relationship whenever it falls above 20%. Discrete choice models rarely achieves a maximum value of 1. In particular the probability of an adult Kenyan accessing formal and semi formal financial services which are relatively cheaper and more sustainable compared to the usurious and frequently resource starved services of the informal sector stood at 6.24% and 39.35% respectively in 2009. For the informal strand, the probability stood at 27.72% in 2009 down from 35.7% in 2006 while for those who are totally excluded from any form of financial service, the probability stands at 26.69%. Rising figures of people included in the formal and semi formal strands could also be explained by the increase in mobile banking services like MPESA which uses the banking platform to operate.

4.1 Econometric Analysis

Analysis of the impact of financial literacy on access to financial services assumes a discrete choice approach given the discreteness of the access outcomes. Given that the estimated coefficients in such models cannot be used in drawing inference except for the signs, the study focuses on the marginal effects to explain change in probabilities. The analysis is based on the four main access strands namely; formal, semi formal, informal, and excluded category. Solutions were arrived at after 17 iterations with a log likelihood statistic of -6146.8656 and a likelihood ratio statistic with 30 degrees of freedom of 3071.86. Pseud R^2 (0.1999) shows that the explanatory power of the included variables is 20% of the variations in access to financial services.

4.2 Changes in Probability

Varying probabilities on access to financial services were observed for each access strand. The study established that probability of accessing financial services from the semi formal strand takes the lions share (39.35%) followed by excluded strand (26.69%), informal strand (27.72%) and formal strand (6.24%). This shows that the wider population is yet to embrace the immense role played by formal financial service providers (commercial banks) which could be explained by various factors ranging from financial illiteracy, poor perception about the cost of accessing financial services among others. Interesting enough semi formal strand (SACCOs, MFIs, Government, Hire Purchase) attracts the biggest percentage of the population, an indication that seekers of financial services still value the organizational structures put in place given that SACCOs and MFIs apply more relaxed rules and requirements as compared to banks.

Interesting enough, financial literacy which formed the main thrust of this paper emerged overwhelmingly insignificant in explaining access to financial services across the formal, semi formal and informal strands. All that can be said about financial literacy is that it is positively related to access to financial services. The message coming out of this analysis is that whereas educating the public on the various financial services, decision making among households appear not to factor in the role of information. Households appear to rely on other factors other than information in making their choices. Interesting enough, financial literacy was significant at 90% confidence level in explaining exclusion from the financial services market. Results indicate that knowledge about financial services reduces the probability of an individual remaining excluded by 2.24% an indication that with increased sensitization, more people can be pulled out of the excluded strand.

In line with CAMPARI framework used by banks to determine credit worthiness of potential borrowers, age exhibited a quadratic relationship in the formal, semi formal and informal strands, rising fast initially before starting to increase at a decreasing rate and finally the slope turning negative. This shows that financial services providers consider the elderly people to be less credit worthy. The reverse is true for the excluded category who appear to be locked out from the financial markets at middle age after which they are exposed to financial services at advanced age. However, their access is still limited by their dwindling incomes and strength and any further increase in age only increases their access by a mere 0.02%.

Increase in income lowers the probability of accessing financial services from the informal strand by 0.1% and increases probability for semi formal strand by the same margin. For the formal strand the probability increases by 0.09%. On the other hand increase in income by Ksh. 1 lowers the probability of remaining excluded by 0.03% a sign that income plays a crucial role in enhancing access to financial services. The same applies to increase in education levels where where increase by one level higher raises access to semi formal services by 14.1% and 0.9% for formal, while access to informal strand reduces by 6.6%. Education serves to enlighten people on the various financial services available while at the same time creating awareness on how best to manage the available services. Increase in education by one level lowers the probability of remaining excluded by 8.5%.

The 2009 survey revealed that an increase in household size by one person increases the probability of accessing loan from the informal strand or remaining excluded by 0.6% and 1.4% respectively. On the other hand, probability of access to formal or semi formal financial services by 0.12% and 1.8% respectively. Most people prefer smaller families due to resource constraints which limit their access to vital services when the family is large given that they have to first strive to raise the basic necessities before considering other engagements like investments.

Men appeared to have a 5.4% and 0.3% higher probability of accessing financial services from semi formal and formal strands respectively as compared to women. On the contrary, women had a 10.7% higher probability of accessing informal financial services than men. This could be rationalised by the many programs by informal service providers that target women. Most men are not actively involved in such activities and therefore rely heavily on formal and semi formal financial services. The probability of men coming out of the excluded category is considered to be higher than that of women. Results indicate that women have a 4.9% lower probability of pulling out of the excluded category compared to men. Marital status was found to be insignificant in explaining access to formal and semi-formal financial services. Informal service providers prefer lending to married persons or non single persons something which could be attributed to increased level of trust as one moves from one stage of life to another. However, the probability of pulling out of the excluded category reduced by 4.5%. Distance from or nearness to a bank continues to pose a major challenge on access to financial services. Findings revealed that increase in the distance from a bank lower the probability of accessing financial services by 6.7% and 0.6% for semi formal and formal strands respectively.

However, such distance lengths makes it necessary for seekers of financial services to go for informal alternatives which are nearer than commercial banks. It only increases the probability of one remaining financially excluded by 5.9%.

4.3 Conclusions

Whereas there are claims that exposing the public to financial literacy skills serves to create awareness on the usefulness of various financial services and ways as to how they can be managed to yield optimal results, little success has been registered.

This is similar to sentiments echoed in OECD studies which have concluded that financial literacy remains low in most countries. This study has established that financial inclusion among the financially literate lot remains low implying that financial literacy is yet to achieve its intended objectives. However, except for the coefficients remaining non significant, there is a positive link between financial literacy and access to financial services among the formal, informal and semi formal strands. This was contrary to findings by Hilgert, Hogarth and Beverly (2003) who found the link between financial education and household behaviour being not only positive but also significant. Households choice of financial services appear to be motivated by factors other than financial literacy. There is need to change the perception of households that informal financial services are cheaper compared to formal ones. The study revealed that households perceptions about interest rates are misinformed and wrong. Most of them think that interest rates charged in the informal strand are lower than those charged in the formal and semi formal strand which is not the case in the Kenyan context. Informal lenders charge higher interest rates to cover the costs they incur to reduce the distance between them and potential clients. They also charge more to cushion themselves against default risks especially when it comes to lending given that most of them rely on guarantors and dont often ask for collateral.

The study further established that distance of separation from a bank continues to pose a big challenge on access to formal financial services. Households have been observed to shift their preference for formal and semi formal financial services towards informal services. Age exhibits a quadratic relationship on access to financial services in all strands except in the excluded category where at advanced age, access to financial services appear to start gaining momentum.

Formal and semi formal institutions dont appear to factor in marital status when designing their financial services. Lack of significance of this variable in explaining access explains this fact. However, informal service providers rely heavily on this given that married persons appear to have higher levels of responsibility hence are more trusted. This is explained by the positive coefficient which implies that a married person has a 3.48% higher probability of accessing financial services than a non married person. On the same note, the probability of a married person remaining financially excluded reduces by 4.40%.

In terms of gender, women appear to have a 10.09% higher probability and a 5.08% lower probability of accessing financial services from the informal and semi formal strands respectively compared to their male counterparts.

Increase in household size has a tendency of locking households from access to financial services. This is rationalised by the reduced probability when household size increases by one person of 1.8% and 0.18% in semi formal and informal strands respectively. Having a large family increases the probability of a household remaining financially excluded by 1.40% while probability of seeking financial services from the informal strand increases by 0.60%.

Increase in income is highly significant in explaining access to financial services in all strands. Regression results portray a positive relationship between increase in income and formal and semi formal access to financial services while a negative relationship exists for informal access and the excluded category. Someone whose income increases by Ksh. 1 is highly likely to substitute informal services with formal or semi formal services given that they are in a better position to raise any collateral that may be required. A shilling increase in income reduces the probability of an individual remaining financially excluded by 0.03%.

4.4 Recommendations

Financial literacy is one term that has received much attention in the recent past due to the wide publicity it has been receiving both locally and internationally.

Its widely believed that increase in financial literacy would help individuals make informed decisions regarding financial services. Given its low impact in Kenya, this study recommends that more investments be pumped towards financial literacy programs so as to increase its effectiveness which can only be measured through its impact on access to financial services. The government should be in the forefront in developing a curriculum on financial education at local, middle and higher learning institutions. It should also launch campaigns to create awareness.

Given the critical role that income continues to play in raising access to financial services, the government must ensure that a conducive environment exists for people to carry on with income generating activities without interference. This will also help pull more people from the excluded category and the informal strand towards the formal and semi formal strands. While we continue to appreciate various initiatives like agency banking towards reducing the distance from financial service providers, the government should ensure that the campaign is strengthened to bring more people towards formal and semi formal strands. This will also help in increasing financial inclusion in the country.

4.5 Areas for further Research

More studies on financial literacy should be encouraged so as to establish the dynamics about financial education and its outcomes. This will also help to state the depth to which financial service providers should Miller *et al* (2009)

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Table 1: Correlation Coefficients

age	1.000									
income	-0.009	1								
gender	-0.096	-0.047	1							
education	-0.316	0.347	-0.134	1						
finexp2	-0.026	0.060	-0.036	0.182	1					
maritalstat	0.323	0.010	0.038	-0.172	0.026	1				
hhsiz	-0.072	-0.016	0.053	-0.145	-0.047	0.180	1			
bnktrans_l~h	0.077	-0.166	0.004	-0.331	-0.111	0.087	0.269	1		
agesq	0.979	-0.026	-0.094	-0.320	-0.041	0.248	-0.109	0.065	1	
finperc_in~w	0.095	-0.172	0.155	-0.396	-0.146	0.034	0.095	0.218	0.110	1

Table 2: Multinomial Logit Regression Results

Variable	Semi-formal (0.3935)		Formal(0.0624)		Informal(0.2772)		Excluded(0.2669)		Mean
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z	
Age	0.015001	5.59	0.003779	3.54	0.001579	0.72	-0.02036	-9.94	39.2463
Income	7.34E-06	9.68	1.38E-06	8.54	-5.53E-06	-7.06	-3.20E-06	-4.22	14880.5
Gender	-0.05082	-3.22	0.00069	0.11	0.100871	7.48	-0.05074	-3.82	1.58152
Education	0.137597	21.87	0.011868	5.11	-0.06182	-10.81	-0.08765	-15.01	3.16615
Finlit*	0.012686	0.79	0.000236	0.04	0.009469	0.72	-0.02239	-1.72	0.364247
Maritalstat	0.009631	1.34	-0.00046	-0.15	0.034792	5.59	-0.04396	-7.33	3.16959
Hhsiz	-0.01806	-5.5	-0.00188	-1.38	0.006032	2.26	0.01391	5.37	4.89923
Distance	-0.06398	-8.63	-0.00853	-2.73	0.015652	2.97	0.056858	10.92	2.89415
Agesq	-0.00012	-4.3	-2E-05	-1.84	-4.2E-05	-1.83	0.000182	8.76	1799.96
Bankrate_low*	0.190513	12.22	0.074839	10.2	-0.07358	-5.39	-0.19177	-13.55	0.572505