THE IMPACT OF FINANCIAL LITERACY ON USE OF FINANCIAL SERVICES IN RUSSIA

by

IRINA KUNOVSKAYA

(Under the Direction of Brenda J. Cude)

ABSTRACT

The primary purpose of this study was to examine the influence of financial literacy as well as other relevant factors on current use of financial services as well as future demand fro financial services in Russia. The levels of financial literacy throughout Russia were also examined and compared to financial behaviors. The conceptual framework underlying the study was the Andersen Behavioral Model adapted to financial services. The model suggests that use of financial services is a function of an individual's predisposing, enabling, and need characteristics. Data for this study came from the 2008 Nationwide Financial Literacy Survey (NFLS) conducted by the World Bank in Russia. The NFLS sample was 1,600 adults age 18 and older across 40 Russian regions who provided answers to 50 survey questions. Chi-square tests were applied to test the relationship between financial literacy and the variables previously identified in the literature as relevant. Then logistic regression was used to predict consumers' use of financial services now and in the future based on the sets of predisposing, enabling, and need variables. The similarity of the questions in the 2008 NFLS used to assess basic financial literacy to questions used by other researchers revealed that Russian respondents demonstrated a much lower level of basic financial knowledge than American, Dutch, and Indonesian consumers on all questions where comparison was possible. Only when compared to Indian respondents' understanding of inflation and Italian respondents' understanding of percent calculation were Russian respondents more knowledgeable. Results also demonstrated that the Russian population lacks awareness of their rights as financial services consumers. An important conclusion from the analyses regarding current use of

financial services confirms that financial literacy does affect use of financial services and the relationship persists regardless of the specific measure of literacy (objective or subjective). The results did not provide evidence that the basic financial literacy of respondents affected their plans to use financial services in the next two years.

INDEX WORDS: Financial exclusion, Use of financial services, Financial literacy, Financial literacy education in Russia

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A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial

Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GA

2010

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DEDICATION

I would like to dedicate this dissertation to my parents for teaching me the value of perseverance and hard work, and to my children – it's never too late to achieve your goals in life.

ACKNOWLEDGMENT

I give particular heartfelt thanks to Dr. Brenda Cude for being such an understanding and remarkable mentor who has guided me with patience and confidence in my abilities. I could never accomplish this dissertation without her advice and continual support.

I also would like to thank my committee for their support, direction and encouragement. Dr. Anne Sweaney and Dr. Lance Palmer were always willing to help and gave me invaluable comments through all stages of this dissertation. I would like to thank the Department of Housing and Consumer Economics for providing financial support and wonderful research environment during my Ph.D. study in the University of Georgia.

A big thank you goes to Dr. Yoko Mimura for her suggestions with statistical procedure. Thank you to Ms. Nikki Williams for all of your guidance in this new adventure and environment. Dr. Lewis Mandell and his wife Nancy who met me in Russia and led me to the world of financial literacy research, without you, none of this would be possible. I would also like to especially thank you, Nancy, for being such a good friend. Thank you, Dr. Jean Hogarth, for encouraging me to go to the United States and pursue this course of study. I extend my appreciation to Dr. Andrey Markov for giving me opportunity to use the World Bank data.

Thank you most to my dear husband; without your patience and encouragement, none of this would be possible.

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CHAPTER 1

INTRODUCTION

Use of financial services is widely recognized as a contributing factor to a country's financial stability, efficiency, and economic growth. Broadly speaking it is an issue of great importance whether people encounter difficulties accessing and/or using financial services in the mainstream market. Although its social and political significance is widely acknowledged, financial access and use of financial services remains low in many countries including Russia.

Intense financial sector reforms have been undertaken in Russia over the past decade, with extensive growth of household lending represented in banks' total loan portfolios and financial investments, led by deposits in banks. However, Honohan (2008) estimated the percentage of the adult Russian population using formal financial intermediaries to be only 69%. The situation in Russia is different from the industrialized world, where over 90% of the population has access to financial services.[1]

[1] In Denmark, the Netherlands, and Scandinavian countries, the corresponding rates of access to financial services are close to 98-99%; in France and Germany, the percentages of people with current bank accounts run upwards of 95%. They are equal to 91% and 87.7% in the U.S. and the UK, respectively. Below the average are Ireland and some more southerly EN countries (Greece, Italy). Other countries which are new members of the EN have a high proportion of individuals without a transaction account: Latvia and Lithuania, 65%; Poland, 58%; Slovakia, 48% (Andreloni, Bayot, Bledowski, & Kempson, 2008). Even the more advanced transition economies of Central and Eastern Europe have progressed well in rebuilding their financial systems and access to financial services; most of the CIS countries, including Russia, lag behind. In some developing countries it is pretty normal to live without a bank account. About 91.1% of households in Armenia lack an account (Beck, Demirgüç-Kunt, & Martinez Peria, 2007). Saharan Africa is an extreme situation: it is far behind all other countries in the world (Peachey & Roe, 2004).

According to the World Bank's most recent Diagnostic Review of Consumer Protection in Financial Services, the deposit-income ratio in Russia is equal to 0.07. The authors (International Bank for Reconstruction and Development/The World Bank, 2009b, p. 3) described the situation by saying, "the actual amount of household savings channeled through the financial system in Russia is very low." Research also confirms the lack of development of the household credit market in Russia despite its fast rate of growth and increasing competitiveness during the last decade. Still 0.4 bank cards per capita in Russia "is a far cry from the four bank cards plus an assortment of department store, gas and travel-and-entertainment cards owned by an average American household" (Guseva, 2008, p. 27). Russia ranks in the lower third in terms of loan accounts per capita. The level of household credit per capita in 2007 was equivalent to U.S.$878 in Russia and roughly 50 times less than in the mature U.S. credit market (International Bank for Reconstruction and Development/The World Bank, 2009b, p. 2). Thus, the use of formal financial services is restricted to a small number of firms and households in Russia as it is in many other emerging economies.

The extant literature has described numerous dimensions emanating from both demand side and supply side factors that prevent some population groups from gaining access to mainstream financial services. This study will build on existing research to ask: why, despite the policy push toward an inclusive financial system, are so many bankable people in Russia still unbanked? Particularly this study will evaluate the importance of financial literacy as regards to access: Are more financially knowledgeable Russian individuals more likely to use financial services? This research will be situated within a country-specific financial development context.

Research Problem

It is the unbanked or underbanked portion of the population that often captures the attention of researchers and policy makers. There is considerable empirical evidence today that financial development is an important and robust determinant of economic growth (Andersen & Newman, 1973; Claessens, 2006). Several studies have identified a strong correlation between the development of a banking system and a nation's economic development (Levine, 2004; Levine & Zervos, 1998).

There are important benefits of a more inclusive financial system at the aggregate level for banks. A more inclusive financial system provides an opportunity to bring savings into the formal financial system and channel them into investments. It also helps to reduce banks' dependence on bulk deposits and to better manage liquidity risks and asset-liability mismatches (Subbarao, 2009).

In addition, financial markets provide opportunities for enhancing the welfare of individuals by providing tools for making payments, transferring resources, and getting loans. Importantly, access to financial services helps individuals to insure themselves against income shocks and equips them to meet emergencies such as illness or loss of employment. According to Peachey and Roe (2004), use of financial services can be seen as a public good that is essential to enable participation in the benefits of a modern, market-based economy, analogous to access to safe water, basic health services, and primary education.

Barriers to the availability and use of financial services can be a critical explanation for income inequality and poverty in a society (Beck, Levine, & Loayza, 2000). Movement out of financial hardship usually is severely hindered without participation in mainstream financial services. This explains a growing interest in understanding what determines use of financial services in developing and developed countries.

Interest in those not using financial services has recently increased in Russia. In part the interest is due to the recent world economic downturn which has hit Russia, a major energy exporter, particularly hard. A recent World Bank report on Russia warned that the current financial crisis will lead to growing social unrest. This appears to be true. According to the State Statistics Service, 9.5% of the labor force is now officially unemployed (Federal State Statistics Service, 2010) and unofficial estimates are even higher. The Russian people are heavily affected by inflation; increases in commodity prices, electricity, and heating costs compounded by wage increase delays; actual and threatened lay-offs; and the loss of

important social benefits.[2] The economic conditions have led to growing popular discontent. Exclusion from using financial services appropriate to their needs and particular situations reinforces the risk that many Russians will face exclusion from a mainstream financial sector and from normal social life. They must rely on their own limited savings and earnings. For example, until recently, those Russians who needed to borrow money were forced to rely on relatives and friends (with limited resources) rather than the formal financial system (Clarke, 2002).

A relatively new and more subtle factor explaining financial services use is the financial literacy of the population. Of particular concern to many is that the rapidly growing financial system and numerous other factors have come together to create more complex financial markets. The main factors are mostly similar to those in other countries: deregulation of financial markets and competition between financial institutions for market share (Beal & Delpachitra, 2003), innovations in marketing, improvements in infrastructure, and technological changes. Due to the rapid growth in financial services, individuals face a proliferation of financial products as well as opportunities to invest in a broad range of assets and currencies (Lusardi, Tufano, & Field, 2009). Moreover, as financial markets become increasingly complex with serious problems of information asymmetry, the need for financial literacy and a range of consumer skills has become even more acute. Government authorities and researchers all around the world have drawn attention to the "widening gap between an abundance of ever more diversified and sophisticated financial services on the one hand, and the intellectual capacity of the mass market to fully understand and make good use of these" (Peachey & Roe, 2004, p. 12).

Inadequate financial knowledge and skills may result in wrong and costly financial decisions and expose consumers to the risk of fraud and theft. One such example is the rapid debt accumulation by Russian consumers resulting from the unprecedented development of the consumer credit market over the

[2] For example, in October 2008 thousands of pensioners protested in Barnaul against the loss of their discounted public-transport tickets. It happened when authorities revoked subsidized transport tickets for more than 200,000 pensioners in Barnaul without any explanation.

last decade. According to a draft report of the Diagnostic Review of Consumer Protection in Financial Services, household lending in Russia has grown dramatically from 3.3% of households in 2000 to 20.7% in 2007 (International Bank for Reconstruction and Development/The World Bank, 2009a, p.12). Lack of previous experience and difficulties in understanding the risks and obligations of credit lending expose Russian consumers to unfair practices, debt accumulation, and even poverty.

If individuals are not familiar with the products available from a formal financial services sector, they are denied opportunities to save and benefit from them and they will not demand them. Lack of financial literacy will lead to self-exclusion. Surveys of financial literacy in Russia suggest a nation that is poorly informed about financial issues. Moreover, Russian consumers as well as consumers from other post-transition countries in Europe and Central Asia lack "a history of using sophisticated financial services" (International Bank for Reconstruction and Development/The World Bank, 2009a, p. 7). The World Bank research also found that an undeveloped consumer protection framework places Russian consumers at a further disadvantage and is in need of strengthening.

The Russian Government recently announced its intention to implement a Financial Literacy Program to educate consumers, and in the long run, to reduce the share of the unbanked population, strengthen the retail financial market, and increase the social well-being of the Russian people. It is assumed that financial literacy education will bring greater financial rewards for both consumers and financial institutions. Their logic is that better-educated consumers will have a better understanding of financial products and services and their effective use. Increased understanding will allow the introduction of new and more complex financial services and creation of a wider client base and a better developed retail financial market. It is hoped that the implementation of a Financial Literacy Program would explicitly link financial literacy with financial behavior, resulting in improved financial services utilization and sustainable financial success among consumers. The increasing emphasis by policy makers in recent years on improving financial literacy and building an inclusive financial system highlights the main interest of this research: financial literacy as an influence on Russian individual and family usage of financial services.

Overview of the Research

The general goal of this study is to use data from a nationwide financial literacy survey conducted in Russia in June 2008 by the World Bank to achieve three objectives: 1) to advance understanding of financial literacy and financial exclusion; 2) to examine levels of financial literacy throughout Russia and compare them to financial behaviors; and 3) to understand the influence of financial literacy as well as other relevant factors on current use of financial services as well as future demand.

The first objective focuses on defining the concepts of financial exclusion and financial literacy that will be used in the study. The second objective involves calculating financial literacy scores, comparing them to scores in other countries, and comparing the financial behaviors of Russian consumers who have higher levels of financial literacy with those who have lower levels of financial literacy. Lusardi and Mitchell's (2006) approach was adopted to measure financial knowledge with two sets of questions. The first set captures people's capacity to handle the basic financial literacy concepts of numeracy, compound interest, inflation, time value of money, and percentages. However, the competent use of financial services requires additional knowledge, including awareness of consumer rights and understanding the functions of financial institutions. Therefore, a second set of questions was added to the first set.

The third objective involves assessing differences in financial services utilization that may result from differences in financial literacy. The literature shows that various factors determine why potential users voluntarily avoid using existing financial institutions (Djankov, Miranda, Seira, & Sharma, 2008; Hogarth, Anguelov, & Lee, 2004; Kempson, Whyley, Caskey, & Collard, 2000). For example, people may not have any savings or may think it is too expensive to use the services (financial resources) or may not "see a point" (financial belief). It is also possible that an individual wants to use financial services and has access to them but is prevented from doing so by a lack of knowledge or expertise. This lack of participation may result from a fear of being asked to fill out different forms and sign them, a lack of awareness of how charges for services are calculated, an inability to understand differences between various products and services, and the inability to estimate possible risks. Widely available opportunities

to use online banking, mobile banking, or online investing punish even more people outside the financial system because they are either not aware of the benefits and disadvantages of these services (Mols, Bukh, & Nielsen, 1999) or have unwarranted concerns about security and privacy issues (Howcroft, Hamilton, & Hewer, 2002; Sathye, 1999). Non-participating consumers find themselves left behind whenever services, products, or technologies improve.

Our data allow us to analyze the differences in terms of demographic, social, and economic characteristics between people who are currently engaged in financial services and those who do not use and do not plan to use financial services in the future. To achieve this analysis, a multidisciplinary theoretical model will be employed. This study extends the applicability of the Andersen Behavioral Model to the financial services context. It integrates the literature relating to the behavioral model of medical and social services utilization developed by Andersen and his colleagues (Aday & Andersen, 1974; Andersen, 1968, 1995; Andersen & Newman, 1973) with the literature on financial exclusion, financial behavior, and financial literacy. The Andersen Behavioral Model was initially developed in the late 1960s "to assist the understanding of why families use health services" (Andersen, 1995, p. 1). It was revisited in 1995 and has been used in a wide variety of contexts, mostly related to health services.

The original behavioral model identified three types of variables as primary determinants of service use. They are predisposing, enabling, and need variables. Our study will employ this model to analyze use of financial services as a function of consumers' predisposition to use financial services, the resources that enable them to consume the services, and their need for services. Predisposing variables do not cause service use directly but execute their effects prior to an actual behavior occurring. These variables explain why some individuals have a greater propensity to use services than others. According to Andersen's (1995) understanding of enabling resources, "they must be present for use to take place" (p. 3) Need is clearly another factor that ought to be included in a behavioral model that attempts to account for differential use of financial services.

The next chapter presents a review of literature and includes a discussion regarding the general correlates of financial exclusion as well as the specific relationship between use of financial services and financial literacy. Additionally, the correlates of financial literacy are addressed.

Purpose of the Study

Identifying factors that affect in a positive or negative way intentions to use financial services may have important implications for academics and financial practitioners as well as lead to better policy interventions by government and any kind of organization responsible for financial literacy education. Research findings will provide meaningful information that can serve as a basis for developing educational programs and identifying the best ways to deliver financial knowledge to consumers that can foster trust and confidence in financial institutions and greater and more efficient use of financial services in Russia.

CHAPTER 2

LITERATURE REVIEW

Understanding the factors, including financial literacy, that drive access to and use of financial services, is a vital issue for researchers and policymakers. This is complicated by the increasing importance of an inclusive financial system for economic development from the social and political viewpoints. This chapter draws upon literature that addresses three broad areas of research. The first area focuses on the concept of financial exclusion from the financial services market. This literature is primarily based on the work of economists and concentrates on the demand-side factors for financial services, including market and non-market the reasons for self-exclusion. The second part of this chapter reviews a literature that investigates the importance of financial literacy and how it affects financial decision-making in general. This body of research is based on the literature that addresses conceptual and operational definitions of financial literacy and its implications for household behavior. The final section describes a theoretical model that integrates the factors associated with financial market participation, including financial literacy.

Financial Exclusion

Definitions and Typologies

This section of the literature review is focused on financial exclusion. It discusses the various definitions and types of financial exclusion; economic and noneconomic barriers to financial market participation, including the concept of voluntary financial exclusion; an access possibility frontier as an approach to analyzing financial market participation; and the role of financial literacy.

There has been a growing interest in what is termed financial exclusion across developing countries as well as in the most developed nations during the last decades. Major studies of financial exclusion prepared by the World Bank (Demirgüç-Kunt, Beck, & Honohan, 2007), the European

Commission (Andreloni et al., 2008), the Financial Services Authority (UK) (Kempson et al., 2000), and the Australia and New Zealand Banking Group (Chant Link & Associates, 2004) that discussed government and industry policies have also given new insights into the definition of financial exclusion, its underlying macroeconomic causes, and country-specific levels of exclusion and experiences.

Research on financial exclusion initially was specific to the United Kingdom and appeared in the academic literature in the early 1990s. Geographers Leyshon and Thrift (1993) described the situation in the financial industry during the recession as "restructure for profit" resulting in bank branch closures and limitations in access to banking services. In their groundbreaking work, they defined financial exclusion as processes that may prevent poor and disadvantaged social groups from gaining access to financial systems (Leyshon & Thrift, 1995).

Later the focus of the financial exclusion discussion moved from location-based exclusion to a more comprehensive analysis of the levels, barriers, and consequences of financial exclusion as well as who is excluded and why. Different from definitions focused on exclusion from the financial system as a whole, some authors narrowed the definition to focus only on exclusion from "mainstream" financial services (Kempson & Whyley, 1999; Meadows, Ormerod, & Cook, 2004). Still others defined it as lack of access to affordable credit, savings, and insurance (Devlin, 2005).

In addition to differences in their breadth, definitions also have varied broadly in their focus depending on who is excluded, i.e., individuals, households, businesses or geographic areas (Chant Link & Associates, 2004).[3] During the past decades a number of additions were made in the understanding of financial exclusion to reflect particular circumstances or different research purposes. For example, Kempson and Whyley (1999) made the point that financial exclusion is a relative concept because financial exclusion results from the increased inclusion of the majority of consumers in the financial services market.[4] Kempson and Whyley (1999), Kempson et al. (2000), and Sinclair (2001)

[3] This distinction is important for the purposes of assessment of access to financial services.

[4] This is true only for developed economies where financial product ownership has grown markedly amongst most consumers over the past 30 years and left a small minority of individuals behind.

acknowledged that financial exclusion is a complex and multi-dimensional concept which results from a range of barriers.

The literature also describes "dimensions" or "forms" of financial exclusion, which have also been called "critical dimensions" (Connolly & Hajaj, 2001). Access exclusion means the limited availability of services due to bank closures or unfavorable risk assessment. Condition exclusion relates to some conditions (for example, identity requirements and deposit levels) attached to products or services and people are not meeting those conditions. Price exclusion happens when people are not able to pay charges attached to services or penalties. Marketing exclusion means that some social groups are overlooked in the way new products are promoted or delivered.

Researchers also have made an important distinction between financial exclusion and the much broader concept "non-use of financial services" (Kempson & Whyley, 1999). The various dimensions of exclusion described earlier may result in non-use of financial services. But non-use may also occur due to the lack of need for a particular type of product or service. Disengagement as a result of negative experiences, discouragement, or because of the belief that banks "don't accept the people who live round here" (Kempson et al., 2000, p. 9) is also possible.

Additional dimensions of financial exclusion were added by other researchers. For example, some people may not have the discretionary income to save for the future even if they have the need and desire to do so. Devlin (2005) described this situation as an example of resource exclusion. Corr (2006) highlighted the importance of electronic exclusion. He described how technology continues to make a profound impact in the financial services industry, dramatically shaping how and what kinds of services are delivered. Even earlier, Pahl (1999) described an increasing polarization in terms of access to the electronic economy. Bridgeman (1999) also stressed that among vulnerable groups there is a lack of educational and technological skills necessary to gain any benefits from new facilities and new financial products.

Although many of the dimensions of financial exclusion mentioned above have been widely used by researchers, more recent literature criticizes previous approaches and introduces different ones. A

report from Chant Link & Associates provides a number of grounds for criticism. The main concern they identify is that each "dimension" of financial exclusion is a mixture of different causes and contributors (Chant Link & Associates, 2004). Thus, it is possible that some types of financial exclusion are the direct result of actions of financial services providers while others are related to consumers themselves. It was specifically emphasized that "financial knowledge and literacy as a contributor… is not acknowledged at all" (Chant Link & Associates, 2004, p. 38).

In regards to self-exclusion, some commentators have argued that "certain people may simply have no need for, say, a personal loan and cannot be considered as excluded from such a market if not using that product type" (Devlin, 2005, p. 77). In other words, if people are voluntarily excluding themselves they are not "financially excluded" (Corr, 2006). In this argument, financial literacy and skills are important. As an example, lack of knowledge may contribute to consumers' perceptions of the importance and value of different financial products and may prevent them from buying the products. The same conclusion is found in Beck and De la Torre (2007, p.81): "It would be wrong to argue that voluntary self-exclusion constitutes a "problem of access," except in the case where self-exclusion reflects unduly low levels of financial literacy or is a psychological response to past systematic discrimination." Financial literacy is also an important contributor from the point of actual "use" of financial services. This argument is consistent with Gloukoviezoff's (2007) research where he argued that a difficulty in "using financial services" is the greatest challenge financially excluded people face. It seems logical that use difficulties which may be partly based on low financial literacy produce their own negative consequences and reinforce both financial exclusion and self-exclusion.

A different typology for financial exclusion was applied by Chant Link & Associates (2004): access exclusion and utility exclusion. The first broad type includes barriers of various types (physical, social, communicational, etc.) which prevent some individuals from accessing financial services or make access difficult. Utility means "the perceived benefits of a product or service weighted against its costs (monetary and non-monetary) and the trade-offs the consumer must make in order to enjoy those benefits" (Chant Link & Associates, 2004, p. 42). Thus, some products based on the consumers'

particular circumstances may be more valuable to one individual than to another. For example, the fact that people with low income prefer cash for daily money management instead of bank accounts may be explained by the fact that a cash budget allows more financial control.

Important for this study is the connection between financial literacy and financial exclusion. Chant Link & Associates (2004) identified financial literacy as a contributor to financial exclusion through access exclusion ("education and information" barriers). Some authors have placed financial literacy in the group of individual factors that play the role of antecedents to lack of access. Research suggests, "Lack of understanding of products owned, or products available, was seen as the result of a poor education or more general failing of the education system, often exacerbated by lack of employment and social exclusion due to poverty. Financial literacy was seen as a contributor to, and in part a result of financial exclusion; however it was not as important in driving exclusion as low income, low savings, excessive debt (informal or formal) and credit abuse" (Chant Link & Associates, 2004, p. 88).

Economic Approach to Define Financial Exclusion

A step forward from the "typology" approach described above is an economic approach to financial exclusion (Bridgeman, 1999; Buckland & Simpson, 2008; Claessens, 2006; Demirgüç-Kunt et al., 2007; Jappelli, 1990; Osei-Assibey, 2009). This approach places constraints affecting access to financial services into the economic theory framework that suggests developing adequate policies to expand financial inclusion.

One line of research from the economic perspective interprets the inability to access mainstream financial services as mostly a microeconomic problem. These studies relate financial exclusion to the economic theory of consumer savings, and specifically, to the credit or liquidity constraint concept (Buckland & Simpson, 2008; Jappelli, 1990). For example, Jappelli (1990) has used the model of consumption over the life cycle to provide a framework for the analysis of credit constraint. Potentially this model also could be used for other aspects of financial exclusion. A key finding from this study suggests that "current income, age and wealth are the most important determinants of the probability that a consumer is denied loans" (Jappelli, 1990, p. 230).

Economist Richard Vaughan[5] has explained financial exclusion through the concept of an "exclusion curve" (Bridgeman, 1999). This curve reflects the proportion of the population in a particular income range that uses a specific financial service and makes the distinction between income exclusion and price exclusion. Although an economic concept is useful for showing how the different types of financial services may demonstrate income or price exclusion,[6] and is simple and very visual, it does not add enough to the body of knowledge to explain financial exclusion on its own.

Voluntary Financial Exclusion

Another line of research has used a standard demand-supply framework. Claessens (2006) addressed the issue of the difference between access and use of financial services from the demand-supply perspective. He suggests that access "refers to supply, whereas use is the intersection of the supply and demand schedules" (Claessens, 2006, p. 210). Importantly, that research has substantially contributed to the dimension of financial self-exclusion discussed in the previous studies and to the distinction between "voluntary exclusion" and "involuntary exclusion." Later in a World Bank's policy research report *"Finance for all?"* this distinction has found even further support. Particularly the report stressed that "even wealthy customers in advanced financial systems will choose not to use some financial services. Some moderately prosperous customers, especially older individuals or households, may not have any wish to borrow money, even if offered a loan at a favorable interest rate" (Demirgüç-Kunt et al., 2007, p. 28).

Research suggests that voluntary exclusion is a market response on the demand side and explains why availability of financial services is a necessary but not sufficient condition for use. On the contrary, involuntary exclusion of consumers has its roots in the supply side of financial services and finds a

[5] Richard Vaughan is an economist in the University College, London and his research *Distributional Issues in Welfare Assessment and Consumer Affairs Policy* became part of the analysis commissioned by the UK Office of Fair Trade (Bridgeman, 1999).

[6] Chant Link & Associates applied the "exclusion curve" concept to analyze 15 Australian products (Chant Link & Associates, 2004).

compelling explanation based on Stiglitz and Weiss' (1981) seminal paper. They showed that imperfect and costly information that causes adverse selection and moral hazard problems can lead to credit rationing even in equilibrium (the supply curve is backward bending).

Another key finding of Claessens' (2006) research suggests that nonprice barriers have an impact on use of financial services. Indeed, in the early stage of the credit market in Russia, poorly functioning credit information bureaus led to a lack of credit history for most Russians. Thus, the strategy at that time was "to issue cards, after an exhaustive analysis of each case, to applicants who had a direct or indirect social tie to the bank, who were visible politically or socially, or who were anchored in some other way…" (Guseva, 2008, p. 16). Control for uncertainty raised the costs of financing for ordinary Russians. Moreover, it deterred many of them from demanding financing or it rationed them out of the credit market.

In addition, some consumers do not want to use financial services based on ethical or religious grounds (Demirgüç-Kunt et al., 2007). Claessens (2006) also suggested that some people do not try to use financial services because they assume they will be rejected. No awareness, according to Claessens (2006), may be another reason for financial exclusion. In other words, Claessens (2006) recognized that financial knowledge and attitudes are likely to have an impact on a consumer's decision to use or not to use financial services.

The Access Possibility Frontier

A more recent line of research has applied a more rigorous analysis to financial exclusion and examined demand and supply factors associated with access and use of financial services. This includes a large body of the institutional analysis literature that under the assumption of consumer rationality places the consumer within a dynamic institutional context. According to Beck, Demirgüç-Kunt, and Martinez Peria's (2008) findings, barriers to banking services are associated with the macroeconomic environment, market structure, and the contractual and informational environment of the country. The efficiency with which financial markets and institutions overcome real-world "frictions" such as transaction costs, uncertainty, and asymmetry varies across countries (Beck & De la Torre, 2007) and is reflected by

different levels of financial exclusion. Based on this theoretical foundation, Beck and De la Torre (2007) presented a new approach to the "problem of access" in terms of an "access possibility frontier" and a given set of "state variables" such as the contractual and informational frameworks, the macroeconomic environment, technology, and other country characteristics. This specific approach allowed researchers to distinguish between potential supply and actual supply, and between potential demand and actual demand in the financial services market. If potential supply describes the maximum quantity of services a financial system is willing to provide, then an actual supply takes into account market structure and the competitive environment. If potential demand is predicted by economic factors, then actual demand takes into account customers who voluntarily have excluded themselves from the use of financial services. In other words, actual demand is predicted by economic (price, income) and non-economic factors and self-inclusion is one of those factors.

Key findings from this study suggest that there are three different types of access problems: "first, the lack of demand due to voluntary self-exclusion; second, supply of financial services below the potential due to lack of competition or other supply side constraints; and third, a frontier that is too low in international comparisons and explained by the state variables" (Beck & De la Torre, 2007, p. 111). The researchers also suggest that it is important for policy makers to make a distinction between the different types of access problems and address them accordingly through market-developing policies, which help to move the access possibility frontier outwards, or through market-enabling policies. Structural reforms that improve institutions and other state variables may be considered as market-developing policies. Market-enabling policies on the supply side provide incentives to financial institutions to operate more efficiently through regulatory policies and actions, as well as through enhancing market contestability. Importantly, the research stressed the role of financial literacy education as an important market-enabling policy tool on the demand side which "can increase access to and use of financial services by bringing actual demand closer to potential demand and move a financial system closer to the frontier" (Beck & De la Torre, 2007, p. 92).

An economist from the University of Ghana applied the concept of an Access Possibility Frontier to examine factors that drive supply and demand for financial services in Ghana. To explain self-exclusion he referred to non-market factors such as socio-cultural, religion, and financial literacy (Osei-Assibey, 2009). In the econometric model household educational endowment was used as a proxy for the level of financial literacy. This education variable appeared to be positive and robustly significant in explaining self-exclusion from using financial services.

Overall the findings of the above studies demonstrate that to provide a precise definition of financial exclusion is a somewhat problematic task. However, it should be noted that the debate about financial exclusion has moved on from a focus on "access" only to focus on "access" and "use" as well as associated factors and consequences. Non-economic factors, including financial literacy, are recognized as important contributors to access and use of financial services. Specifically, individuals who do not know the benefits or understand the workings of the financial system may demand less or none of its services.

Financial Literacy and Its Impact on Financial Decision-Making

This section of the literature review discusses the development and measurement of the concept of financial literacy and its impact on financial decision-making and behaviors. It concludes with a discussion of the impact of behavioral economics on financial behaviors.

Definitions and Measurement of Financial Literacy

Financial literacy is not a new topic. Over the past 15 years, a substantial body of financial literacy research has developed around the world. A great deal of the interest in the financial literacy of individuals is based on a concern about their lack of financial literacy and inability to make effective decisions (Schagen & Lines, 1996).

This concern, which is international, is exemplified by the numerous surveys of financial literacy. The Organization for Economic Co-operation and Development (OECD) made considerable impact with their landmark study (Organization for Economic Co-operation and Development, 2005) that summarized the available results of surveys conducted in Australia, Japan, Korea, the United Kingdom, and the United

States. The surveys they summarized used two different approaches to financial literacy and its measurement. The surveys conducted in the U.S. and Korea used the first approach, testing knowledge and understanding of financial terms in four areas: income, money management, savings and investments (Mandell, 2008). The surveys in both countries targeted high school students using a questionnaire designed by the Jump$tart Coalition for Personal Financial Literacy six times in the U.S. (between 1997 and 2008) and once (2003) in Korea. The latest use of that survey, the 2008 National Jump$tart survey of high school seniors, showed that the financial literacy scores of U.S. high school students have fallen to their lowest level ever (48.3%) (Mandell, 2009). According to a survey conducted by the Korean Financial Supervisory Service (FSS), the financial literacy scores of Korean students from elementary school to high school are about 40.1%. The Korean students' scores indicate relatively low financial knowledge compared to their counterparts in Britain, the United States, and other countries (Young-sook, 2008).

Surveys conducted in the United Kingdom, Japan, and Australia represent a second approach to measuring financial literacy. These surveys asked respondents for self-assessments and about their attitudes toward different financial services, decisions, and information. For example, the Japanese Consumer Survey of Finance revealed that a significant proportion of consumers admitted limited understanding of interest rates, risks related to investment, and consumer protection regulations (Organization for Economics Co-operation and Development, 2005).

A common theme from the survey results suggests that consumers make financial decisions based on little understanding, have difficulties finding easy-to-understand information or do not actively seek information at all, and think they know more than they do (Smith & Stewart, 2009). For example, an Australian telephone survey of 3,548 adults conducted in 2002-2003 not only asked respondents for their subjective assessment of their financial literacy but also included questions that tested their actual knowledge. This gave the researchers the opportunity to compare perceptions with objective measures. While 67% of people reported that they understood the term "Compound Interest," the researchers

described only 28% as having a "good level" of comprehension of a given practical example (Roy Morgan Research, 2003).

Whatever the approach taken, and whatever the country, financial understanding is low among consumers and particularly among the less educated, minorities, and those at the lower end of the income distribution (Organization for Economics Co-operation and Development, 2005). These findings are similar to those of Christelis, Jappelli, and Padula (2009) which were based on data from the Survey of Health, Aging and Retirement in Europe (SHARE). Their data were from surveys of people aged 50 and older in 11 European countries and revealed that most respondents had low scores on numeracy scales.

Research on levels of financial literacy in emerging and developing countries is not widespread. However, the available research has demonstrated even lower levels of financial literacy than reported for other countries and very low levels of market participation. For example in South Africa, a recent survey revealed that 60% of the respondents did not understand the meaning of "interest." In India another survey indicated that more than half of laborers store cash at home, while borrowing from moneylenders at high rates of interest (Miller, Godfrey, Levesque, & Stark, 2009).

The Importance of Financial Literacy

The bulk of the literature has posited a number of reasons why financial literacy is important. These reasons include changes in the environment in which financial decisions are made; increased competition between financial services providers; changes in geographic boundaries; an increasingly complex financial services marketplace; changing demographics; changes in pension arrangements; emerging capital markets; and the political ideology of deregulation (Braunstein & Welch, 2002; Cole & Fernando, 2008; Greenspan, 2003; Hornburg, 2004; Kozup & Hogarth, 2008; Lusardi, 2008b; Widdowson & Hailwood, 2007; Willis, 2008; Yubero, 2008).

The "consumer finance revolution," as it has been described by Willis (2008), has led to more choices for consumers and more formal control and responsibility over their own financial decisions. Some authors stress that technological advances, telecommunications technologies, and new electronic distribution channels have lowered costs and resulted in a proliferation of financial products and services

(Greenspan, 2003; Yubero, 2008). In the U.S., for example, consumers may choose from numerous mortgage options (Woodward, 2003) and thousands of investment options and insurance plans. Other authors emphasize that governments of many countries now encourage their citizens to take more self-responsibility for their incomes and to decide how much they need to save and allocate to pension savings (Beal & Delpachitra, 2003; Lusardi & Mitchell, 2007b). People need to understand the many options available to them and how they operate (Marcolin & Abraham, 2006). For example, the Australian survey noted that of those who received and read their superannuation (retirement) statement, 21% reported that they did not understand it (Roy Morgan Research, 2003).

What makes the situation even worse is the difficulty in assessing product risks and returns even if relevant information is disclosed. This is particularly true for financial products which are purchased infrequently and when "customers may not receive useful feedback about the value of the product they purchased" (Cole & Fernando, 2008, p. 1). Some new products, such as structured instruments, hedge funds, or reverse mortgages, present serious difficulties for the general public to understand (Yubero, 2008). Clearly, a topic of great interest for researchers and government officials, as well as the financial services industry, is if the consumers are "well equipped to make financial decisions" (Lusardi, 2008a). Importantly, this concern does not apply only to decisions about use of individual products such as personal credit, insurance, investments, or retirement planning. Sometimes it refers to a very primary decision – to use or not to use any financial services. As discussed in the previous section, this decision is at the heart of "self-exclusion" research.

As has been noted in the literature, the "self-evident" importance of financial literacy has resulted in very little attention to its adequate conceptualization, and debate around the perfect conceptual and operational definitions remains active (Mason & Wilson, 2000). David Remund (2010) used 100 resources including research studies, expert insights, and intervention programs since 2000 to examine existing conceptual and operational definitions of financial literacy. His work clearly revealed that the regulatory, research, and practitioners' communities have not reached an agreement on what financial literacy is.

With due respect to the fruitfulness of this debate and the soundness of some of the proposed definitions, as a starting point for this research we use the conceptual approach to financial literacy developed by Carolynne Mason and Richard Wilson (2000). In particular, the researchers were exploring the importance of literacy itself and its key characteristics as the basis for their suggested conceptualization of financial literacy. This approach seems meaningful and logical because (1) the term literacy is used in conjunction with other words; for example, there is computer literacy, information literacy, Internet literacy, political literacy, and economic literacy, and (2) literacy is a well-developed area of research and practice. Briefly a summary of Mason and Wilson's most important conclusions about literacy follows. First, referring to Burnet (1965) and Jackson (1993), they emphasized the functional nature of literacy because it enables individuals to make meaning, to learn, and to achieve objectives. In other words, the individual should be pro-active to derive the benefits from literacy, which are only possibilities and not guaranteed consequences. Thus, the likelihood of positive outcomes is enhanced by an individual's being literate but is not certain. Second, literacy is deeply rooted in a society's culture and varies from culture to culture. Third, over time literacy becomes more complex, but there are some basic skills which are considered a fundamental part of literacy. The authors incorporated these conclusions into their proposed definition of financial literacy: "an individual's ability to obtain, understand and evaluate the relevant information necessary to make decisions with an awareness of the likely financial consequences" (Mason & Wilson, 2000, p. 31).[7]

Thus far, the proposed definition suggests that (1) information relevant to decision making may not be necessarily strictly financial, (2) informed decision-making is an important tool to achieve desirable outcomes, and (3) financial literacy can only ensure individuals are informed to make decisions

[7] There is a similarity between the proposed definition and one which is widely accepted internationally and which originally was formulated by the U.K. National Foundation for Education Research. This definition describes financial literacy as "the ability to make informed judgments and to make effective decisions regarding the use and management of money." One opinion of this definition is that it is" firmly placing the horse before the cart… also provides a solid foundation for considering the full logistics required for a successful journey forward" (Akshaya, 2008, p.1).

but it cannot guarantee they actually make 'right' decisions. There are additional factors that influence the economic rationality of consumers. A shortcoming of Mason and Wilson's (2000) conceptualization of financial literacy is the lack of discussion of the possible operationalization of the proposed definition.

One possible way to translate the conceptual definition of financial literacy into measurable criteria is to specify two dimensions: knowledge or financial awareness and action upon knowledge. The "knowledge" or "awareness" dimension is a measure of people's understanding of common financial concepts and products. The "actions" dimension describes consumers' ability to make informed financial decisions in managing their finances in the areas of basic money management, financial planning, and investments. A similar approach has been successfully applied in financial literacy measurement research in Singapore (Lau, Chung, & Hui, 2005).

Using knowledge or awareness as an important component of financial literacy also justifies why surveys and polls are preferred methods among researchers to measure financial literacy (Hilgert, Hogarth, & Beverly, 2003; Jones & Newport, 2006; Lusardi & Mitchell, 2006; Mandell, 2008). Survey questions are usually designed according to the particular research interest areas and cover broad areas such as budgeting, saving, borrowing, and investing or specific interests such as retirement, health insurance, and estate planning. The number of questions used to assess financial knowledge also has varied substantially from one to 58 (Huston, 2010).

Measuring financial literacy is a difficult task. It is not obvious how many questions a researcher should use to get an adequate measure. Nor is there consensus on a set of questions that all researchers measuring financial literacy should use. Another concern is the impact if a researcher uses questions which are focused on a particular financial service or product instead of questions testing financial knowledge in general.

The Impact of Financial Literacy on Financial Decision-Making

This approach to financial literacy also explains why inadequate financial knowledge may translate into financial insecurity represented as excess debt, insufficient savings, poor retirement planning, and suboptimal investment behavior for some consumers (Cude, Lawrence, Lyons, Metzger,

LeJeune, Marks & Machtmes, 2006; Kozup & Hogarth, 2008). It explains why some consumers may decide not to purchase any financial products at all. Those who have no formal relationship with financial institutions risk becoming even further isolated and emotionally stressed (Wolcott & Hughes, 1999). In other words, financial literacy drives the composition and direction of demand for financial products and services in the competitive reality. The OECD report states that because of the "financial decisions facing consumers and with an increased number of financial transactions assuming the existence or ownership of a bank account, those individuals without one or with limited use of one are increasingly at a disadvantage" (Organization for Economics Co-operation and Development, 2005, p. 29). It is essential that individuals understand and know how to communicate effectively when it comes to making financial decisions (Lusardi, 2008a).

Recognizing that financial decisions can be difficult, a series of studies appear to demonstrate that financial knowledge is correlated with self-beneficial financial behavior. Specifically, knowledge regarding credit, savings, and investments was statistically significantly correlated to improved credit management, savings, and investment practices in Hilgert, Hogarth, and Beverly's (2003) work. To reach this conclusion, the researchers used monthly survey data from the University of Michigan's Surveys of Consumers with additional financial literacy and financial behavior questions. To measure financial behavior in several areas, a Financial Practices Index was formed and compared with the financial literacy scores. The authors concluded that greater knowledge about credit, saving, and investment practices was correlated with correspondingly higher scores on the Financial Practices Index, indicating greater participation in these behaviors. Lusardi and Mitchell (2007b), using the Health and Retirement Study (HRS), examined whether financial literacy is associated with better retirement planning and found that respondents with low levels of financial literacy tended not to plan for retirement.

The consequences of financial illiteracy in the context of mutual fund investments were investigated using questionnaire data from more than 3,000 German mutual fund customers (Müller & Weber, 2009). The authors described "the actively managed fund puzzle:" actively managed funds over the past decades appear to be a very popular investment product even though they have underperformed

their benchmark on average after fees. They found a significant and positive relationship between financial literacy and the likelihood of relying on passively managed funds. A low level of financial literacy appears to explain the popularity of actively managed funds most of the time but not always. Overconfidence might prevent sophisticated investors from investing in passively managed funds.

There also have been efforts to find a causal link between financial knowledge, financial behaviors, and financial outcomes. Courchane and Zorn (2005) used data from the extensive consumer credit survey of 12,140 respondents conducted by Freddie Mac and credit bureau information obtained from Experian. In this study the authors estimated a recursive model with credit outcomes as a function of financial behavior. Financial behavior, in turn, was represented as a function of self-assessed or objective financial knowledge. Subjective knowledge was measured based on respondents' answers about what they knew. Objective financial knowledge was measured based on the answers to several questions. Key findings of this research suggested that the single largest predictor of responsible financial behaviors (saving, budgeting, controlling spending, and bill payment habits) was financial knowledge. Interestingly, the estimation results suggested that one's self-assessment of knowledge mattered much more than one's objective knowledge. In addition, there was no additional impact of financial literacy on credit outcomes beyond those through financial behavior. The authors concluded that public policy efforts in financial education are efficient to the extent that financial education increases knowledge which directly impacts financial behavior and indirectly predicts credit outcomes (Courchane & Zorn, 2005). While the overall evidence of this study is in favor of financial literacy, it should be approached cautiously. It is important to stress that the results were based on participants' self-assessments and therefore tend to be biased or unreliable.

There is additional evidence that financial literacy impacts financial behaviors. One use of the data from the Jump$tart Coalition Survey, which is designed to objectively test the financial knowledge of high school seniors, demonstrated that students with higher financial literacy scores were less likely than others to bounce checks and more likely to balance their checkbooks (Mandell, 2006). Van Rooij, Lussardi, and Alessie (2007) found, using a Dutch Household Survey, that those with low financial

literacy were also less likely to invest in the stock market. This study contributed to explaining the so-called "stock-holding" puzzle, attributing low stock market participation to a low level of knowledge about stocks, stock market functioning, and asset pricing. Most important, the authors further developed questions assessing financial literacy knowledge that were previously designed by Lusardi and Mitchell (2006). They added questions to Lusardi and Mitchell's basic module of financial literacy which included only three questions and was aimed at evaluating whether respondents of the 2004 HRS wave understood the important economic concepts of inflation, compound interest, and stock risk and whether they had basic skills in financial numeracy. The questions Van Rooij et al. (2007) added measured more advanced financial knowledge such as the difference between stocks and bonds, the function of the stock market, diversification, and the relationship between bond prices and interest rates. Van Rooij et al. (2007) found that the understanding of basic economic concepts related to inflation and compound interest rates among Dutch respondents was far from perfect but better than their limited knowledge of stocks, bonds, and risk diversification. They also reported that more financially knowledgeable individuals were more likely to invest in stocks.

More directly related to this dissertation's research questions, recent work by Cole, Sampson, and Zia (2009) using original household survey data from India and Indonesia reveals that financial literacy is a powerful predictor of demand for financial services. Financial literacy was measured in a manner consistent with the methodology developed by Lusardi and Mitchell (2006). In addition to their three basic financial literacy questions, the survey also evaluated the cognitive abilities of the respondents through eight mathematics questions. Respondents were asked if they were interested in three financial products that were described as beneficial to increasing household savings. The researchers reported that respondents' interest in all three products was greater if they were more financially literate.

Cole et al. (2009) also conducted a field experiment, in which unbanked households were randomly selected and exposed to a two-day financial education program with a focus on bank accounts. The results demonstrated that the financial literacy training had no effect on the likelihood of opening a savings account, except among uneducated and financially illiterate consumers. Even there, the effects

were small. However, providing small subsidy payments to the participants had a considerable and positive effect on the likelihood of opening a bank account, regardless of the participant's financial literacy.

What is important about this study? First, it speaks directly about financial literacy as an important correlate of household financial behavior and a factor that drives demand for financial services. In addition, it suggests that "financial literacy is a secondary or even tertiary, determinant of demand for financial services" (Cole et al., 2009, p. 21) and explains why financial literacy education may be a relatively expensive way to build an inclusive financial system.

Lessons from Behavioral Economics

Another broad literature category important for the current research is the literature that identified a collection of cognitive biases that influence decisions in both financial and non-financial contexts. This body of literature suggests that while financial behavior seems to be positively affected by financial literacy, financial knowledge itself cannot ensure that actions are appropriate. As mentioned earlier in the discussion of the definitions of financial literacy, there are other factors influencing decision-making. A link between financial awareness and an individual's ability to make sound decisions may be broken when economic rationality is overwritten by psychological attributes (Wilson & Zhang, 1997).

Even highly-educated finance specialists make errors in their financial decisions. Choi et al. (2008) conducted an experiment using index funds and subjects who were very well-equipped to make sophisticated financial decisions. The largest group of participants consisted of the top-ranked students from the Wharton Business School with financial literacy levels higher than the typical American investors sampled in the John Hancock Defined Contribution Plan Survey. The experiment showed that elementary mistakes were made in choosing between the four S&P 500 index funds even though the funds differed only in their administration fees.

This experiment raises some serious questions regarding theories of rational decision-making, which are based on a homo economicus model as an intellectual basis. This model suggests that a rational decision-maker is able to specify the maximization of utility function, to assess the alternative choices

available, and to make the most intelligent choice that best meets the objective. Behavioral research contrasts real people's actual behavior with the norms of rational economic behavior. Herbert Simon (1959) described the boundaries between economics and psychology, emphasizing, "As the complexity of the environment increases, or its speed of change, we need to know more and more about the mechanisms and processes that economic man uses to relate himself to that environment and achieve his goals" (p. 253). Later Tversky and Kahneman (2005) in their paper explored how decisions are actually made based on the insights of behavioral economists.

A growing literature in behavioral economics suggests that consumers consistently make choices that are not rational or optimal for their well-being because psychological biases may influence their decision making (de Meza, Irlenbusch, & Reyniers, 2008; Mandell & Klein, 2009; Mullainathan & Shafir, 2009; Wilson, 2001). Briefly, these biases include, for example, the mistaken belief that one is better off to stay with whatever the status quo is (Tversky, & Kahneman, 2005). This belief explains why some consumers stay with the same health insurance plan even when their personal situation has changed or stay out of the financial services sector. Procrastination may be a result of fear some people have that financial decision-making or planning may be a painful experience (de Meza et al., 2008). As a result of projection bias, individuals often underappreciate the impact of current consumption on future utility and consume too much early in life. This causes savings to fall short of intentions (Loewenstein, O'Donoghue, & Rabin, 2003).

Other consumers fall victim to the effect of framing when the choice of the particular words to present a given set of factors can influence consumer choice and the freedom of choice (Wilson, 2001). The phenomenon of "choice overload" (Schwartz, 2005) describes the situation where inaction is likely because there are too many options to choose from, especially when these options are complex. The tendency to defer choice is greater when the difference among the available alternatives is small than when it is large (Dhar, 1997). Consumers' financial decisions for the future are also likely to be influenced by unrealistic optimism and so consumers are unable to accurately forecast their future financial status. As Weinstein (1980) determined, people consistently claim that they are less likely than

their peers to suffer harm. Another related effect is "mental accounting," when people mentally frame their money as located in different compartments (Thaler, 1999). Finally, hyperbolic discounting or time inconsistency in preferences leads people to assign a high discount rate to future income (for example, the investment never being made despite the returns covering costs many times over).

This literature describes a host of systematic biases; financial decisions are made despite, because of, or accounting for these biases. These biases influence the emerging literature on behaviorally informed policy-making (Barr, Mullainathan, & Shafir, 2008; de Meza et al., 2008), which discusses the design of regulation that takes into account such tools as "the framing of information, the setting of defaults or "opt-out" rules, the provision of warnings, and other strategies to alter individual behavior" (Barr et al., 2008, p. 2)

Overall, there appears to be agreement in the literature that individual financial literacy when clearly defined conceptually and operationally adds to our understanding about financial market participation. Financial literacy enables the informed decisions necessary to use the benefits of financial services and achieve desired outcomes. However, the work of behavioral economists tells us the information does not always lead to communication, and knowledge, understanding, and intention do not necessarily lead to action (Barr et al., 2008).

Theoretical Model to Explain Factors Associated with Financial Market Participation

This section describes the Andersen Behavioral Model as it has been adapted for use in this study. Each of the three categories of variables in the study (predisposing, enabling, and need) are discussed.

Understanding the factors that influence the use of financial services is helpful in identifying reasons for differences in utilization of financial services and for formulating adequate responses by educators, financial institutions, and policy makers. Much of the literature discussed above acknowledges that literally tens of factors have the potential to influence a given financial market participation behavior. In general, categorizing these factors emphasizes the multi-dimensional nature of consumer behavior. Specifically, attempts to predict use of financial services take into account the different demographic, socioeconomic, behavioral, and financial backgrounds of consumers. For example, one study suggested

that the reasons for not having a checking account could be based on economic and psychology frameworks. As for those reasons, product features and characteristics, informational constraints, motivation, and institutional constraints, as well as income, net worth, home ownership status, race, age, education, employment status, and credit history all have been taken into consideration (Hogarth et al., 2004). Another study by the Australian Consumer and Financial Literacy Taskforce (2004) introduced a consumer behavior model. This model hypothesized that the financial decisions consumers make are shaped by the external environment as well as their socioeconomic background and personal characteristics, financial experiences, and financial skills. The external environment is shaped by economic, regulatory, cultural, and political factors. A key assumption of the above studies is that consumers in their decision-making are influenced by numerous environments, but their attitudes and beliefs also influence the outcomes of their decisions.

The framework used in this study was the Andersen Behavioral Model. Initially it was developed by Ronald Andersen (1968) to assist in understanding why families use health services, to measure equitable access to health care, and to assist in developing public policies to promote this access. It is known in the literature as the Andersen Behavioral Model for Health Services Use and has evolved over time in response to critiques and input from colleagues (Aday & Awe, 1997; Andersen, 1995; Andersen & Newman, 1973; Phillips, Morrison, Andersen, & Aday, 1998) and changes in health policy and the health care system. As Pescosolido and Kronenfeld (1995) noted, this theoretical framework has deep roots in the utilization research of medical sociology. Importantly, Andersen, describing the five consecutive developmental stages his model went through over time, emphasized that revision “did not change the fundamental components of the model or their relationship” (Andersen, 2008, p. 651).

The very last phase of the model stressed the importance of contextual and individual determinants for better understanding of the health services utilization (Andersen & Davidson, 2001). The initial behavioral model (Andersen, 1968) included only individual major determinants: predisposing factors; enabling factors; and need factors. The term "predisposing characteristics" in Andersen’s Behavioral Model refers broadly to everything that might predispose a person to need and use a particular

service. In other words, predisposing factors have their effects prior to a behavior occurring and they may increase or decrease an individual's motivation to make a particular decision or to undertake a particular behavior. Among the predisposing exogenous characteristics, demographic factors (age, gender), social structure (education, occupation, ethnicity), and health beliefs (attitudes, values, and knowledge) are the main factors that might influence use of health services (Andersen, 1995).

Enabling characteristics are resources that make it possible (or easier) for individuals to access services. Andersen categorized those resources in two groups: personal/family resources (people must have the means and know-how to receive and use services) and community resources (population density, proximity to and availability of health care facilities, and availability of health personnel) (Aday & Andersen, 1974). Andersen also emphasized that some enabling resources are a necessary but not sufficient condition for use of services (Andersen, 1995).

Finally, the behavioral model suggests that even in the presence of appropriate levels of predisposing and enabling characteristics, individuals must perceive some need for health services use. Andersen made a distinction between perceived need for services, which is largely based on social structure and health beliefs, and evaluated need, which is a result of professional judgments. In other words, need is a basic and direct stimulus for the use of health services when other characteristics are in place (Wolinsky et al., 1983). Later the importance of health behavior such as personal health practices was recognized and included in the model as an important determinant of services usage.

Contextual determinants usually are described by the circumstances and environment of health care access (Andersen & Davidson, 2001). The key characteristics here are the economic climate and the prevailing norms of society, policies, resources, and organizations influencing the accessibility, availability, and use of services (Phillips et al., 1998).

For the purposes of our study, important advantages of Andersen's Behavioral Model as described in the literature should be emphasized. This model represents a comprehensive framework for analysis rather than a mathematical model; it does not dictate the precise variables and methods that must be used. The appropriateness of the inclusion of variables depends on the extent of prior research, the

research questions, the purpose of study, and data availability (Phillips et al., 1998). Pescosolido and Kronenfeld (1995) suggested that the greatest legacy of the behavioral model is its organization of all of the previous, mostly single-factor studies into an overarching frame linked to multivariable analyses.

This suggests that the same theoretical framework may be extended to another type of services – financial services. Really, the process of access to and use of financial services may be viewed as the behavior of consumers interacting with financial services providers and being influenced by sets of other factors. It is parallel to the process of access to and use of medical care, which also may be seen as the behavior of patients interacting with providers in the process of care delivery, and also being influenced by sets of other factors.

Predisposing Characteristics

Although financial services are very different from health services, and determinants of services utilization may be very specific to the types of services, many similar generic issues influence access and use of both services. As in research on medical care, prior studies on financial exclusion stress the importance of the sociodemographic characteristics of the people who are unbanked. Some of those characteristics predispose consumers to avoid financial market participation and influence their interactions with financial institutions and their intermediaries. The literature shows that financial exclusion is overwhelmingly linked to those groups of the population who are most likely to be on the margin of society. These groups include the unemployed, single parents, pensioners, and members of some ethnic minorities (Kempson et al., 2000). Connolly and Hajaj (2001) listed those most likely to fall outside the financial system as elderly people who are a cash-only generation, young people who have not yet made use of financial services, and women who become single mothers at an early age. Hogarth, Anguelov, and Lee (2004) found reasons for not having a checking account that related to consumers' sociodemographic characteristics. In terms of the adapted theoretical framework, family size, gender, marital status, and age are demographic characteristics of consumers that predispose them to participate in the financial market.

Another group of predisposing characteristics, including social structure (e. g., education, occupation, employment status) also has been identified in a number of empirical studies as associated with being unbanked. Cole and Shastry (2009), using U.S. Census data and a very large sample, provided strong support for the hypothesis that education affects financial behavior. They estimated that one year of schooling increased the probability of market participation from 7% to 8% (Cole & Shastry, 2009). They used the existence of investment income as a proxy for market participation. Campbell (2006), using Swedish data, also demonstrated that more educated households may expect to earn higher returns on their investments because they successfuly diversify their portfolios. Research by Benjamin, Brown, and Shapiro (2006) indicated that youth with lower cognitive ability were less likely to participate in financial markets or accumulate assets during their adult life. The cognitive abilities of the Chilean high school students in the above research were tested by a series of standardized tests. Hogarth et al. (2004), using the Surveys of Consumer Finances from 1989 through 2001, explored the reasons people give for not having a checking account. Emphasizing human capital as one of the reasons, they concluded that higher levels of education may indicate receptiveness to new features in accounts such as online access.

The bulk of the literature addressing the correlates of financial market participation, as discussed earlier, widely recognizes the importance of belief attributes about money and finance (e.g., attitudes, beliefs, knowledge), the third component of predisposing characteristics in Andersen's framework. According to Schiffman and Kanuk (2000), attitude reflects a learned predisposition to behave in a consistently favorable or unfavorable way regarding a given object. The "given object" in our study is a financial service or a financial product.

Ajzen (1991) stated that individuals' positive or negative attitudes depend on desirable or undesirable expected outcomes or results associated with an object (financial service or product). If a consumer finds that the benefits of purchasing a financial product do not exceed the costs, she may decide not to own it (Hogarth et al., 2004). Caskey (2002), using data from the 2001 Survey of Consumer Finances, found that common attitudes of people who do not have deposit accounts included not being comfortable dealing with banks or a desire for privacy in financial affairs. Also significant in limiting

access to and use of financial services is a negative attitude toward borrowing and particularly a fear of borrowing. This is especially true for forms of credit where it is easy to lose control over spending (Kempson & Whyley, 1999).

Moreover, attitudes can be learned through personal experience, or experience acquired from peers. The general belief is that people (Hoch & Ha, 1986) learn best from experience. Other researchers (Brehmer, 1980) argue that learning from experience may be difficult. Self-assessed knowledge about financial products is another key determinant of actual use of financial services. Perry and Morris (2005), using data from 1999 Freddie Mac Consumer Credit Survey, found that consumers' propensity to save, budget, and control spending depends partly on their level of perceived control over outcomes as well as their self-assessed knowledge and financial resources.

Enabling Characteristics

The literature on financial exclusion consistently finds that family-specific (e.g., income, financial resources, financial literacy) and community-specific (social capital) resources are enabling characteristics in Andersen's categorization, determining consumers' abilities to access and use financial services. Numerous studies have revealed that within a country or a region poorer individuals are less likely to use any financial services (Beck, Demirgüç-Kunt, & Martinez Peria, 2007; Claessens, 2006; Demirgüç-Kunt et al., 2007; Djankov et al., 2008; Kempson et al., 2000). Caskey (2002) reviewed the results of several surveys and concluded that "the unbanked are disproportionately represented among lower-income households" (p. 2). A study of Hispanic households in Chicago found that those who made more use of banks and less use of loans from friends or relatives also had higher incomes and were homeowners (Bond & Townsend, 1996). Based on nationally representative survey data from Mexico, Djankov et al. (2008) matched banked and unbanked households residing in the same area and facing simular costs and benefits of savings accounts. Thus, focusing only on the household level determinants of being unbanked, the reseachers suggested that the difference in income between banked and unbanked households was smaller than the difference in wealth.

Prior research argues that consumers' ability to use financial services depends partly on financial literacy. In addition to the findings discussed earlier, other research from a supply-demand framework demonstrates the link between financial services utilization and financial literacy (Beck & De la Torre, 2007; Cole et al., 2009; Osei-Assibey, 2009; Van Rooij et al., 2007; Wai, 1972). In theoretical models, financial literacy or an appropriate proxy is usually placed on the demand side along with other important factors that drive households' demand for specific financial services (deposit account, mutual funds, and stocks) or financial services in general.

Osei-Assibey's (2009) study, which was mentioned earlier, used Ghana's Living Standards Survey to investigate the factors influencing demand for a bank deposit account. To distinguish non-market factors (socio-cultural, religious, and financial literacy) that lead to self-exclusion from market forces (price of the service, income of the individual), pure and actual demand were introduced. Estimation results were consistent with the basic law of demand and revealed that price, illiteracy, employment status, physical wealth, and liability of the households as well as proximity to a bank appeared to be very important factors affecting financial exclusion (Osei-Assibey, 2009).

Osei-Assibey's dataset did not include a direct measure of financial literacy but an overall literacy score was considered a proxy for it. Although this study was creative in its attempt to demonstrate that financial literacy is very important in driving financial exclusion, these results should not be taken at face value. Because research suggests that more financially knowledgeable consumers are those with a higher level of education (Cole & Shastry, 2009; Lusardi et al., 2009; Worthington, 2006), an education variable seems to be a very general proxy for financial literacy. However, as discussed earlier, even financially informed consumers can make choices which are neither rational nor optimal. Clearly, education alone is not sufficient to ensure sound financial decision-making.

Van Rooij et al.'s (2007) work challenges the relationship between education and financial literacy, stating that "even those with high levels of schooling did not always score high in financial knowledge" (p. 14). To explain the behavior of the Dutch population toward stock market participation using the 2005 DNB Household Survey, the researchers incorporated in their model not only schooling

itself but also indices for basic and advanced financial knowledge. They also considered demographics such as age, education, gender, marital status, number of children, income, and quartiles of wealth variables as well as a dummy for self-employment (to account for those who were already exposed to high risk). The empirical estimates showed that financial literacy mattered for stock ownership; stock ownership increased by more than eight percentage points for each one-standard deviation increase in the level of advanced financial literacy.

Additionally, their empirical work examined the relationship between financial literacy and owning a savings account and found no relationship. (Van Rooij et al., 2007) explained this result by describing savings accounts as a not very sophisticated financial service with relatively lower information costs required to deal with it. However, the lack of a relationship between financial literacy and owning a savings account may be country-specific. The Netherlands is a developed country with a low level of income inequality (the Gini coefficient is around 30.9) and a relatively lower level of financial exclusion. The proportion of individuals who are completely unbanked is only 1% of the population (Andreloni et al., 2008). Moreover, in the Netherlands, the financial services industry has a long-standing commitment to ensure that financial services are for everyone. These country-specific circumstances probably explain why financial literacy was not correlated with the use of a savings account in the Netherlands. However, these variables may be related in countries with higher levels of financial exclusion.

The bulk of the literature that views the market in social terms studies the effect of social capital on market participation. Social capital is broadly defined as a resource that emerges from social ties (Coleman, 1990) and enables and improves the efficiency of both individual and collective actions. The effect of social capital on several financial choices was demonstrated by Guiso, Sapienza, and Zingales (2004) using data from the Survey of Household Income and Wealth of Italian citizens. They suggested that the higher the level of social capital in a region, the smaller the proportion of households in that region that invested in cash and the larger the proportion that invested in stock (Guiso et al., 2004).

Hong, Kubik, and Stein (2004, 2005) focused on social interaction and its relation to market participation. They found that more socially active households were also more likely to invest in the stock

market (Hong et al., 2004). A second study confirmed that "word-of-mouth" communication also was important for professional investors – mutual fund managers (Hong et al., 2005). Research by Marico Chang (2004) also has demonstrated that social networks are very important channels of financial information for most people. Duflo and Saez (2003), using an experimental design, showed that individuals enrolled and contributed to retirement plans based on the actions of the colleagues or friends around them. Thus, social learning can affect the extent to which individuals are involved in long-term financial contracts.

One of the mechanisms through which social capital impacts market participation is the level of trust in a society since "financial contracts are the ultimate trust-intensive contructs" (Guiso et al., 2004, p. 527). A distrust of financial institutions affects general financial behavior as well as use of particular financial services. Guiso, Sapienza, and Zingales (2008) defined trust as "the subjective probability individuals attribute to the possibility of being cheated" (p. 2557) and used Dutch and Italian micro data to show that differences in trust across individuals and countries helped explain differences in stock market participation. Another study found that trust along with financial literacy appeared to play a critical role in shaping employee savings behavior (Agnew, Szykman, Utkus, & Young, 2007). Using administrative data extracted from Vanguard record-keeping systems from three 401(k) savings plans and survey data, reseachers found that under automatic enrollment, employees with low levels of both trust and literacy were more likely to quit their employers' savings plans. Evidence from the Federal Reserve Board's 2001 Survey of Consumer Finances suggested that unbanked populations in the U.S. often have a cultural distrust of banks (Gambrell, 2003).

Focusing on U.S. immigrants, the phenomenon of cultural distrust was explored further by Osili and Paulson (2008). They studied the role of the environment in the country of origin of immigrants as related to their financial market participation and found evidence that immigrants from countries with weak institutions doubt the trustworthiness of U.S. institutions as well. Claessens' (2006) focus on similarities between the United States and Latin American countries which revealed that convenience, trust, and savings are important reasons why people do not want banking services. Most important is the

role of macroeconomic factors in demand for financial services. Banking and financial crises may influence public confidence in the formal financial system. Claessens (2006) found that the percentage of the unbanked who cited mistrust as a reason for nonparticipation in financial markets was lower in Colombia, a country with fewer banking crises than any other Latin American country. Thus, trust is one of the key enabling characteristics influencing consumers' ability to access and use financial services. This conclusion is important for the current research because the fundamental theme of the Russian financial system's history has been a lack of trust (World Bank, 2002).

A final enabling factor included in the model is proximity to financial services providers. Literature shows that financial exclusion is linked to geographical location (Djankov et al., 2008). Osei-Assibey (2009) in his study of factors driving financial exclusion in Ghana used transaction cost as a function of the proximity to a bank. This factor was named as an opportunity to have a bank deposit account.

Need Characteristics

A number of studies have identified "need" factors associated with being unbanked. Beck and de la Torre (2007) stressed the importance of need for financial services saying that "economic agents, households and enterprises alike might have no impediment to access financial services, but may simply not want to use them" (p. 81). Some people do not feel they "need" financial services because they believe that the features or costs of products and services make them inappropriate for their needs. Perceived need for financial services based on personal or social factors may be different from objective need for services based on the availability or shortage of money people may save or invest or need to borrow. Objectively evaluating a population's need for financial services is almost impossible. As Perry and Morris's (2005) study suggests, individuals may not take full advantage of their financial resources unless they feel they control their own financial destiny. In Osei-Assibey's (2009) research, the ability of a household to demand and hold a bank deposit account was expressed as a function of liability, age of the head of household, physical assets, gender, and employment status.

Currently there is limited research that specifically uses the Andersen Behavioral Model to identify the factors associated with the use of financial services. Chatterjee and Nielsen (2009), recognizing that health insurance is a financial product, used Andersen's Behavioral Model to gain some insight into the role that intelligence and risk tolerance play in consumers' decisions to enroll in employer-provided health insurance or to purchase insurance in the individual market. Another study by Nielsen and Garasky (2008) also adapted the Andersen Behavioral Model and examined the relationship between health insurance coverage and the physical well-being of individual adult family members, controlling for predisposing characteristics and enabling resources.

In summary, prior research on financial exclusion has described various correlates of market participation recognizing the multidimensional nature of consumer behavior. This study will add to the current body of literature by applying an adapted version of the Andersen Behavioral Model to financial services utilization. A functional categorization of the factors associated with the use of financial services will be created and the relationship between use of financial services and the financial literacy of individuals, controlling for predisposing characteristics, enabling resources and need factors, will be investigated. An adapted version of the Andersen Behavioral Model is presented in Figure 1.

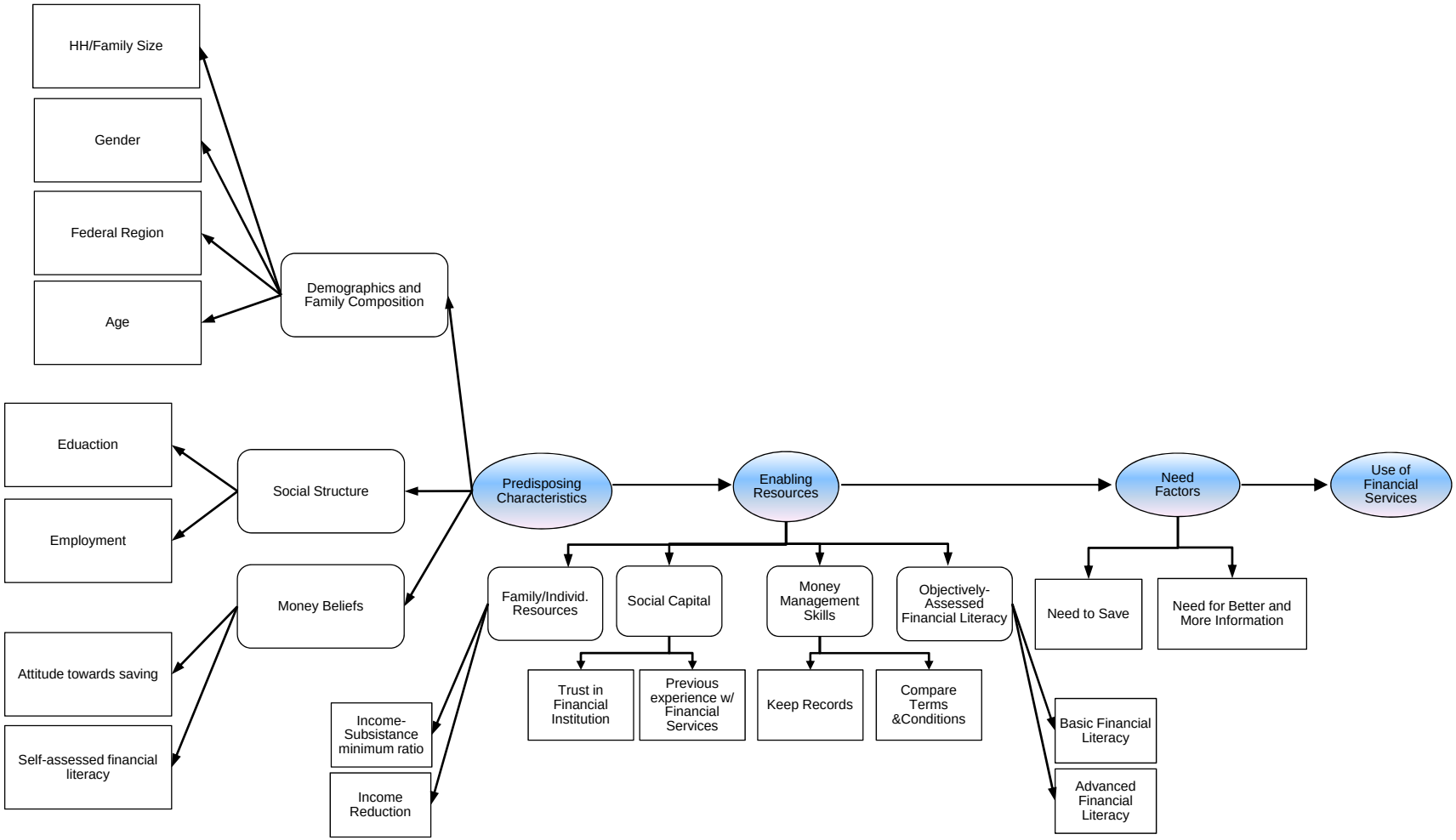

Figure 1

Andersen Behavioral Model: Adapted to Financial Services Utilization

CHAPTER 3

METHODOLOGY

The purpose of this study was to add to the literature on financial exclusion by examining factors associated with the use of financial services in Russia. Specifically, the study examined the relationship between financial literacy and the likelihood of using financial services currently and in the next two years. The relationship was explored using data from the 2008 Nationwide Financial Literacy Survey and a logistic regression. After stating the hypotheses, this chapter describes the data and sample, defines the dependent and independent variables, and explains the models and statistical procedures.

Research Questions and Hypotheses

This research investigated the financial literacy and financial behaviors of Russian consumers to determine whether or not financial literacy is associated with use of financial services in Russia. The empirical analysis was based on the Andersen Behavioral Model with adaptations for application to financial services, and incorporated an existing approach to objectively measure financial literacy (Lusardi & Mitchell, 2007b).

Based on the discussion of the relevant literature in the previous chapter, several research questions were posed. The first research question focuses on financial literacy and its correlates. The second and third research questions examine the relationship between financial literacy and financial market participation.

1. What are the correlates of consumers' financial literacy? To answer this question, the relationship between financial literacy and variables previously identified in the literature as relevant is described. The data include two measures of financial literacy. The first is an objective measure based on answers to knowledge questions. The second is a subjective measure, the respondents' assessment of their own financial literacy. The objective measure of financial literacy is used to answer this question.

2. The second research question builds on the existing evidence suggesting that self-assessed financial knowledge or subjective financial literacy is linked to financial behavior, specifically examining the association between self-assessed knowledge and use of financial services. In particular, how does the financial market participation of Russian consumers with greater self-assessed financial knowledge differ from the rest of consumers? It was expected that consumers with greater self-assessed financial knowledge will have a higher likelihood of using financial services currently as well as in the next two years.
3. The final research question also recognizes the positive relationship between objectively-measured financial literacy and financial market participation demonstrated in previous literature. However, here the specific focus is how the financial market participation of Russian consumers with greater financial literacy differs from the behavior of the rest of the Russian consumers, holding all else constant. Use of financial services was modeled as a function of financial literacy and additional factors that affect financial market participation behavior based on adaptation of the Andersen Behavioral Model described in the previous chapter. It was expected that Russian consumers with higher financial literacy scores would be more likely to use financial services now and in the future than those with lower financial literacy scores, holding all else constant.

The following pairs of hypotheses were derived from the second research question. The first and second pairs of hypotheses describe expectations about the relationship between self-assessed financial literacy of Russian consumers and their use of financial services currently and in the next two years, respectively.

H_{021}: The odds likelihood of use of financial services among consumers with greater self-assessed financial literacy does not differ from that of consumers with lower self-reported financial literacy.

H_{A21}: Russian consumers who have greater self-assessed financial literacy have greater odds of using financial services.

H_{022}: The odds likelihood of use of financial services in the next two years among Russian consumers with greater self-assessed financial literacy does not differ from that of consumers with lower self-assessed financial literacy.

H_{A22}: Russian consumers who have greater self-assessed financial knowledge have greater odds of expecting to use financial services in the next two years.

The third and fourth pairs of the null and alternative hypotheses describe expectations about the association between consumers' financial literacy measured as objective knowledge and their use of financial services currently and in the next two years, correspondently. These hypotheses follow from the third research question.

H_{031}: The odds likelihood of use of financial services among Russian consumers with greater objectively-measured financial literacy does not differ from the use among consumers with lower objectively-measured financial literacy.

H_{A31}: Russian consumers who are more financially literate have greater odds of using financial services currently.

H_{032}: The odds likelihood of use of financial services in the next two years among Russian consumers with greater objectively-measured financial literacy does not differ from the use among consumers with lower objectively-measured financial literacy.

H_{A32}: Russian consumers who are more financially literate have greater odds of expecting to use financial services in the next two years.

Data and Sample

The data for this study came from a Nationwide Financial Literacy Survey (NFLS) conducted in June 2008 in Russia. The NFLS is the only national dataset known to date to provide detailed information regarding the financial literacy of the respondents. The survey was designed by the World Bank in preparation for the Financial Literacy Program in Russia. Polling was conducted by the National Agency for Financial Studies, which is a leading Russian market research company that conducts regular

surveys of consumer behavior across the Russian Federation.[8] The NFLS sample was adults age 18 and older across seven Federal Districts. The study was conducted over two weeks and 1,600 respondents provided answers to 50 survey questions. Among the 1,600 responses, more than 10% were unusable, leaving 1,418 cases for analysis.

Specifically, the NFLS consisted of three survey modules. The first module included questions that asked about money management patterns of behavior including keeping records of income and expenditures, savings and borrowing practices, and having debts. The second module categories included the respondents' understanding of their rights in the financial market, and the system of insurance to safeguard consumers' savings and investments in financial institutions, as well as their experience in the financial market. The third module covered the respondents' understanding of basic financial concepts and calculations such as compound interest, inflation, money illusion, and discounting as well as self-assessed financial knowledge, demand for financial information, current use of financial services, demand for financial services in the next two years, and opinions about the most suitable ways to deliver financial literacy programs. The core demographic and social structure data -- age, gender, household size, education, employment status, and earnings -- were available from the last module of the survey. The dataset itself also included additional information about each respondent's region of residency and the subsistence minimum level, the official poverty threshold used in Russia in each region.

Variables

Dependent Variables

Two dependent variables associated with financial market participation were used to reflect self-reported use of at least one of 12 financial services now and in the next two years.[9] Self-reported use of financial services is a variable included in a variety of studies that have investigated financial exclusion

[8] More information about the National Agency for Financial Studies is available at the following website: http://nacfin.com/.

[9] The complete list of financial services includes consumer credit, bank checking account, bank deposit account, currency exchange, credit card, bank plastic card, mortgage loan, insurance policies, investments in unit funds, investments in companies' stock, private pension fund policies, and other financial services.

and factors associated with it (Agnew et al., 2007; Cole et al., 2009; Osei-Assibey, 2009; Osili & Paulson, 2008).[10] The two measures of financial market participation were coded as binary variables. The variable "current use of financial services" (CURRUSE) was dichotomized to equal "1" if the individual reported current use of at least one of the financial services. Similarly, the variable "intended use of financial services" (INTUSE) was dichotomized to equal "1" if the individual planned to use at least one type of financial services in the next two years. The NFLS also included items reflecting current and intended use of financial services for the respondent's family members. These survey items were not used to be consistent with the choice to use variables that only reflected the survey respondent's answers.

Independent Variables

As mentioned in the previous chapter, our study applies the Andersen Behavioral Model of Health Services Utilization to analyze financial services utilization. This study aimed to apply this model to explain use of financial services (see Figure 1, Chapter 2). The behavioral model suggests that use of financial services is a function of predisposing, enabling, and need characteristics of the individual (Andersen, 1968; 1995). The predisposing characteristics are those that explain why some individuals have a greater propensity to use financial services compared with other individuals. The predisposing characteristics of Russian consumers were classified into three groups: demographic (age of respondents, size of household, federal region of their residency), social structure (education and employment status), and attitudinal characteristics (attitude toward savings, self-assessed financial literacy). Basically, the model of this study asserts that individuals with different demographic characteristics have different life experiences, different abilities and skills to acquire new information, different types and sizes of accumulated wealth and assets, and different options available to them in their local financial services market. The differences result in different patterns of using financial services. Respondents with different social-structural characteristics have different lifestyles, different social environments, and different

[10] Some of these studies have focused only on exclusion from a particular type of financial services, such as checking accounts, deposit accounts, retirement plans, etc.

opportunities to be involved in the financial services market through educational institutions or the work place, also resulting in different patterns of financial services utilization. Similarly, patterns of financial services usage vary with the salience of one's savings beliefs and beliefs in one's own abilities and skills.

Even individuals who are predisposed to use financial services may be not able to do so. The ability to use financial services depends in part on the respondents' financial and non-financial resources. The measures of the respondents' financial resources included in the model were an income-subsistence minimum ratio and a measure indicating whether a respondent had experienced an income reduction. The group of non-financial "enablers" included objective measures of the respondents' basic and advanced financial literacy, two social capital indicators (trust in financial institutions and having had a previous negative experience with financial institutions), and two measures of money management skills (keeping records of all revenues and expenditures and comparing terms and conditions of services provided before buying). It was expected that respondents would be more likely to use financial services when these financial and non-financial resources were sufficient.

Finally, individuals must perceive some need to use financial services even in the presence of sufficient levels of predisposing and enabling factors. Need was measured directly by self-reported information indicating whether respondents had any money to save before the next earnings arrived and indirectly by a self-reported need for better and more information about financial services.

This approach determined the choice of explanatory variables to address the questions; following the model, the explanatory variables were categorized as predisposing, enabling, or need variables. The independent variables were a combination of continuous, dichotomous, and categorical variables.

Predisposing Variables

As originally conceived by Andersen, a person's predisposition to seek services is a function of sociodemographic characteristics (demographic characteristics, social structure and beliefs) (Andersen, 1995). Following the literature on financial services utilization (Kempson et al., 2000; Osei-Assibey, 2009), the following variables were assumed to measure characteristics explaining predisposition of consumers to participate in the financial market: age, gender, size of household, region of residency,

educational attainment, employment status, attitude toward savings, and self-assessed financial literacy. The independent predisposing variables and how they were measured are listed in Table 1.

Table 1

Description of Independent Predisposing Variables

Variable	Variable Description
Demographic Variables	
AGE	A continuous variable reflecting the actual age of the respondent in 2008
MALE	=1, if male, 0 otherwise
HHSIZE	A continuous variable reflecting the total number of people including respondent and all children living in household
Region of Residency	
CENTRAL (reference group)	=1 if the respondent was from Central Federal Region, 0 otherwise
NW	= 1 if the respondent was from North-Western Federal Region, 0 otherwise
SOUTH	=1 if the respondent was from Southern Federal Region, 0 otherwise
VOLGA	=1 if the respondent was from Volga Federal Region, 0 otherwise
URAL	=1 if the respondent was from Ural Federal Region, 0 otherwise
SIBERIA	=1 if the respondent was from Siberian Federal Region, 0 otherwise
FAREAST	=1 if the respondent was from Far Eastern Federal Region, 0 otherwise
Social Structure Variables	
LESSHS	= 1 if the respondent had a primary or lower education, or incomplete high school education, or complete high school, 0 otherwise

Variable	Variable Description
SOMECOLL	=1 if the respondent completed technical college, or some college, 0 otherwise
COLLGR (reference group)	=1 if the highest level of education completed was college, 0 otherwise
Employment Status	
INLF	= 1 if employed, 0 otherwise
Attitudinal Variables	
ATTSAV	= 1 if the respondent reported saving something before spending the rest on everyday needs or reported spending money on everyday needs and then saving the rest, 0 otherwise
NOKN (reference group)	= 1 if the respondent reported "no knowledge and skills " or reported finding it difficult to answer a question, 0 otherwise
UNSATKN	= 1 if the respondent reported "unsatisfactory knowledge and skills," 0 otherwise
SATKN	= 1 if the respondent reported "satisfactory knowledge and skills," 0 otherwise
GOODKN	= 1 if the respondent reported "good knowledge and skills" or "excellent knowledge and skills," 0 otherwise

As shown in Table 1, age (AGE) was a continuous variable reflecting the actual age of the respondent at the time of the survey. Given the gender differences in the banked and unbanked population noted in Chapter 2 (Jappelli, 1990), it is important to control for response differences due to the gender of the respondents. The dummy variable male (MALE) was assigned 1 if the person was male and 0 otherwise.

The next predisposing variable, region of residency of the respondent, is a proxy for the availability of financial services, which is a necessary condition for usage behavior. Individuals will not have access to financial services when there are not enough distribution points of financial institutions in

the area (Claessens, 2006; Beck et al., 2007). According to Bank of Russia statistics, in 2009 56.2% of all credit institutions were located in the Central Federal District, which includes the City of Moscow and the Moscow Region (The Central Bank of Russian Federation, 2010). Seven dummy variables were created to control for differences in the distribution of financial institutions across the Russian Federation: Central Federal Region (CENTRAL), North-Western Federal Region (NW), Southern Federal Region (SOUTH), Volga Federal Region (VOLGA), Ural Federal Region (URAL), Siberian Federal Region (SIBERIA), and Far Eastern Federal Region (FAREAST).

Household size (HHSIZE) was a continuous variable reflecting the number of people in the respondent's household, including the respondent and all children. This variable provides information about family members as well as non-family members who may be part of the same household. Additional information about family or household characteristics such as the family type or marital status of respondents was not available in the dataset.

The predisposing characteristics of the respondents' social structure about which data were available were education and employment. Following Hogarth, Anguelov, and Lee (2005) who demonstrated that "unbanked" consumers are mostly represented by low educated consumers, three dummy variables were created to measure the educational attainment level of respondents. If the respondent had a secondary education (equivalent in the U.S. to completing high school) or less, the variable high school and less (LESSHS) was coded as 1 and 0 otherwise. If the respondent had completed at least special vocational education (technical college) or attended but not completed higher education (at least three years at a higher educational institution), the variable some college (SOMECOLL) was coded as 1 and 0 otherwise. [11] If the respondent completed higher education, the variable graduated from college (COLLGR) was coded as 1 and 0 otherwise.

A dummy variable also was created to describe employment information about each respondent in the sample. It classified each respondent into one of two groups: 1) employed and 2) out of the labor

[11] Vocational education in Russia usually takes three years.

force or other. If the respondent described herself as in one of the eight employment categories (based on his/her main job),[12] the variable INLF was coded 1. It was coded 0 for those who described themselves as registered unemployed, student, retired, non working, household worker, or other.

The third group of characteristics that predispose consumers to use financial services was represented by two variables drawn from the dataset: attitude toward savings and self-assessed financial knowledge. As was mentioned in Chapter 2, attitude toward a particular financial behavior plays an important role in actual implementation of that behavior. Attitude is based on the beliefs that people have about this behavior and the importance of those beliefs. If people believe, for example, that saving behavior results in benefits for them, they probably will have a positive attitude toward financial services and products that provide these benefits.

There was one question with four response options in the 2008 NFLS related to attitude toward savings. Each of the four response options to the question reflects the extent to which respondents prioritize savings as a financial behavior in their management of their everyday revenues.[13] The variable attitude toward savings (ATTSAV) was coded 1 if the respondents indicated they try to save something before they spend the rest of the money, or if they indicated they spend money on everyday needs and then save the rest. It was coded 0 otherwise.

Another attitude question related to the consumer's self-evaluation of his/her financial knowledge. Responses to this question were on a five point-scale: (1) No knowledge and skills, (2) Unsatisfactory knowledge and skills, (3) Satisfactory knowledge and skills, (4) Good knowledge and skills, and (5) Excellent knowledge and skills. Consumers with higher self-assessed financial knowledge

[12] There were eight employment categories available in the survey: qualified worker, including agriculture; unqualified worker, including agriculture; enlisted personnel in the army, interior forces, including police and security force; business person, entrepreneur; civil servant, public authority officer; specialist with higher education in the manufacturing sector; specialist with higher education outside the manufacturing sector (science, culture, education); employee without a higher education (secretary, office worker, shop assistant). As defined by the U.S. Bureau of Labor Statistics, persons not employed included those who were unemployed and looking for work, temporarily laid off, disabled, retired, and homemaker.

[13] The 2008 NFLS used the term "revenue" instead of "income" or "cash flow" which are more common in the U.S.

were expected to be more likely to use financial services. Four dummy variables were created to describe the respondents' answers. If the respondents reported "Unsatisfactory knowledge and skills," UNSATKNW was coded 1 and 0 otherwise. If respondents reported having satisfactory knowledge and skills, SATKNW was coded 1 and 0 otherwise. If respondents reported having good and excellent knowledge and skills, GOODKNW was coded 1 and 0 otherwise. If the respondents reported "No knowledge and skills," or they found it difficult to answer a question, NOKNW was coded 1 and 0 otherwise.

Enabling Variables

The second category of independent variables was enabling variables. The enabling variables drawn from the 2008 NFLS for use in the study were individual/family and community resource variables. Enabling variables reflect resources needed to perform a behavior, in this case use of financial services. To perform a behavior such resources as income and wealth, knowledge and skills, previous experience (Ajzen, 1991), and other specialized resources such as social capital are required.

Based on previous literature on financial services utilization, the specific enabling variables included in the model were relative income, not having experienced an unexpected significant income reduction, financial literacy, a recent bad experience in the financial services market, trust in financial institutions, and positive financial behaviors such as keeping records of earnings and expenditures and comparing terms and conditions of financial services. The independent enabling variables and how they were measured are shown in Table 2.

Table 2

Description of Independent Enabling Variables

Variable	Variable Description
ISMR	A continuous variable reflecting income/subsistence minimum ratio
NORED	= 1 if respondent reported not experiencing unexpected significant reduction in their income over the last three years, 0 otherwise

Variable	Variable Description
BASICFL	Number of correct answers to six basic financial literacy questions
ADVFL	Number of correct answers to four advanced financial literacy questions
YESEXP	= 1if respondent bought a financial service during the last five years and she was sorry later because that service did not meet her needs or because the seller of the service deceived her, 0 otherwise
YESREC	= 1 if the consumer reported keeping records of all revenues and expenditures, 0 otherwise
YESCOMP	= 1 if the consumer reported comparing the terms and conditions of financial services offered by various companies before buying always, sometimes, or rarely, 0 otherwise
HTR	= 1 if the consumer reported being completely sure or rather sure in the quick and just resolution of a dispute with a financial organization regarding the provision of financial services, 0 otherwise
AVTR	= 1 if the consumer reported being fifty-fifty sure in the quick and just resolution of a dispute with a financial organization regarding the provision of financial services, 0 otherwise
LOWTR (reference group)	= 1 if the consumer reported being not quite sure or being not at all sure in the quick and just resolution of a dispute with a financial organization regarding the provision of financial services or reported finding it difficult to answer this question consumer, 0 otherwise

Income is one important enabling variable that influences use of financial services. The income measurement was an income-to-subsistence minimum ratio. Because income was measured as a ratio relative to the subsistence minimum, income figures were not adjust for U.S. currency or for inflation. The subsistence (physiological) minimum is the absolute poverty standard calculated in Russia. It now has wide acceptance and usage among government agencies and is regularly published in statistical

bulletins and yearbooks. As Ivanov and Suvorov (2006) argue, the main drawback of the absolute poverty standard is the randomness of defining the minimum necessary consumer basket. The official subsistence minimum for all of Russia in the first half of 2009 was 5,187 rubles ($165) a month (Federal State Statistics Service, 2009). However, determination of the subsistence minimums was delegated to regional governments; thus, there is a different minimum for each region. The 2008 NFLS dataset included the minimums for each of the different regions. The income/subsistence minimum ratio (ISMR) was included in the model as a continuous variable.

Income as a personal/family resource is dynamic in its nature. Various exogenous income shocks may influence its value. This is particularly true for countries in transition such as Russia which already have experienced several major economic and financial crises. For example, Stillman (2001), using data from the Russian Longitudinal Monitoring Survey, found that changes in household savings were negatively related to exogenous income shocks and the relationship was strongest for low-wealth households. This explains the choice of the next enabling variable – income reduction (NORED). If consumers did not experience an unexpected significant reduction of their income over the last three years, it was coded as 1 and 0 otherwise.

Financial literacy was included in the model as an enabling variable because previous literature suggests financial knowledge is a potential resource for the use of financial services. Consumers with more financial knowledge may be more willing to engage in the financial market and to use financial services requiring a greater level of sophistication. Limited financial literacy may be as an important barrier to demand for services. Cole and Shastry (2009) argued that if individuals are not familiar or comfortable with products, they will not demand them.

The 2008 Nationwide Financial Literacy Survey (NFLS) measured financial literacy in a manner consistent with previous methodology. It adapted the approach earlier used by Lusardi and Mitchell (2006, 2007b); van Rooij, Lusardi, and Alessie (2007); and Cole, Sampson, and Zia (2009) to measure

financial literacy.[14] Each of these studies used a limited number of questions to assess skills and knowledge fundamental for financial literacy. Table 3 describes in detail the questions used in the above studies. Lusardi and Mitchell (2006) examined the financial concepts listed in Table 3, compound interest, inflation, and stock risk, with one question each. The first two questions also were intended to evaluate respondents' competence with basic financial numeracy. The third one evaluated respondents' knowledge of risk diversification (Lusardi & Mitchell, 2006). Similar but slightly different questions (Q4-6 in Table 3) were used by Lusardi and Mitchell (2007a) in a later study to assess the financial concepts and numerical skills they termed "Percentage Calculation," "Lottery Division," and "Compound Interest."

Table 3

Financial Literacy Questions Used in the Previous Research

Concepts	Content of the Question	Source
Q1: Compound Interest[15]	Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: more than $102, exactly $102, less than $102?	Lusardi & Mitchell (2006)
Q2: Inflation	Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?	Lusardi & Mitchell (2006)

[14] Professor Lussardi coauthored the 2008 NFLS questionnaire.

[15] There is some inconsistency in the questions' labeling. The wording of Q1 and Q8 is the same, but the researchers labeled Q1 as testing understanding of compound interest concept, and Q8 as testing numeracy skills.

Concepts	Content of the Question	Source
Q3: Stock Risk	Do you think that the following statement is true or false? "Buying a single company stock usually provides a safer return than a stock mutual fund."	Lusardi & Mitchell (2006)
Q4: Percentage Calculation	If the chance of getting a disease is 10%, how many people out of 1,000 would be expected to get the disease?	Lusardi & Mitchell (2007a)
Q5: Lottery Division	If 5 people all have the winning number in the lottery and the prize is 2 million dollars, how much will each of them get?	Lusardi & Mitchell (2007a)
Q6: Compound Interest	Let's say you have $200 in a savings account. The account earns 10% interest per year. How much would you have in the account at the end of two years?	Lusardi & Mitchell (2007a)
Q7: Numeracy	Suppose you had €100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? (i) More than €102; (ii) Exactly €102; (iii) Less than €102; (iv) Do not know; (v) Refusal.	Van Rooij et al. (2007)
Q8: Compound Interest	Suppose you had €100 in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. After 5 years, how much would you have in this account in total? (i) More than €200; (ii) Exactly €200; (iii) Less than €200; (iv) Do not know; (v) Refusal.	Van Rooij et al. (2007)

Concepts	Content of the Question	Source
Q9: Inflation	Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account? (i) More than today; (ii) Exactly the same; (iii) Less than today; (iv) Do not know; (v) Refusal	Van Rooij et al. (2007)
Q10: Time Value of Money	Assume a friend inherits €10,000 today and his sibling inherits €10,000 3 years from now. Who is richer because of the inheritance? (i) My friend; (ii) His sibling; (iii) They are equally rich; (iv) Do not know; (v) Refusal.	Van Rooij et al. (2007)
Q11: Money Illusion	Suppose that in the year 2010, your income has doubled and prices of all goods have doubled too. In 2010, how much will you be able to buy with your income? (i) More than today; (ii) The same; (iii) Less than today; (iv) Do not know; (v) Refusal	Van Rooij et al (2007)

The questions van Rooij, Lusardi, and Alessie (2007) used to assess the basic financial literacy of Dutch households are important because four of them (Q7-9, Q11) were used in the 2008 NFLS dataset to evaluate the financial literacy of Russian consumers. These four questions aimed to test consumers' financial numeracy skills (Q7 in Table 3) and their knowledge of "Compound Interest" (Q8 in Table 3), "Inflation" (Q9 in Table 3), and "Money Illusion" (Q11 in Table 3). As van Rooij, Lusardi and Alessie (2007) argued, these concepts lie at the basis of financial transactions and day-to-day financial decision-making.

The Russian survey also included two additional questions. One of them aimed to test consumers' understanding of "Discounting," which also requires financial numeracy skills to implement the knowledge. Another question aimed to test understanding and skills to do an "Interest Rate" calculation. In addition to the six questions described above to measure financial literacy, an additional set of four questions from the NFLS survey questionnaire that measured more advanced financial knowledge was utilized. In particular, these questions measured knowledge about protection of consumer rights in financial markets and the Russian system for insuring savings and investments.

Two variables were created as summary measures of financial literacy. First, the respondents' answers to each of the 10 financial literacy questions were coded as 1 if correct. Incorrect responses as well as the response "I cannot estimate even roughly" were coded 0. Then basic financial literacy (BASICFL) was calculated as the number of questions answered correctly among Questions 1 to 6 listed in Table 4. Advanced financial literacy (ADVFL) was the number of questions answered correctly among Questions from 7 to 10 listed in Table 5. Basic financial literacy and advanced financial literacy were included in the model as continuous variables.

In terms of financial services utilization, another enabling variable used was previous experience in the financial market. The previous chapter discussed that financial exclusion is not only limited to difficulties of access but also to difficulties of use and the consequences of these difficulties (Gloukoviezoff, 2007). There also is the issue of people accessing inappropriate financial products. The product characteristics and the way they are sold as well as the personal situation and the knowledge of the customer matter (Andreloni et al., 2008). A bad past experience such as being denied access to a financial service is enough to create a barrier to any new attempt to use a financial service (Andreloni et al., 2008). To control for the importance of bad past experience, a dummy variable YESEXP was created. It was coded as 1 if the respondent bought a financial service during the last five years which they were sorry about later because that service did not meet their needs or because the seller of the service deceived them. Otherwise it was coded as 0.

Table 4

Questions to Assess Basic Financial Literacy

	Concepts	Previously used by	Question as it was in 2008 NFLS
Q1	"Numeracy"[16]	Van Rooij et al. (2007) Lussardi and Mitchel (2006)	Let's assume that you deposited 100,000 rubles in a bank account for 2 years at 8% interest rate. How much money will you have in your account in 2 years if you do not withdraw from or add to this account any money? **1. More than 108,000 rubles** 2. Exactly 108,000 rubles 3. Less than 108,000 rubles 99. I cannot come up with even a rough number
Q2	"Compound Interest"	Lusardi & Mitchell (2006) Van Rooij et al. (2007)	Let's assume that you deposited 100,000 rubles in a bank account for 5 years at 10% interest rate. The interest will be earned at the end of each year and will be added to the principal. How much money will you have in your account in 5 years if you do not withdraw either the principal or the interest? **1. More than 150,000 rubles** 2. Exactly 150,000 rubles 3. Less than 150,000 rubles 99. I cannot estimate the amount even roughly

[16] This question in the earlier studies was referred to as the "Compound Interest" question (Lusardi & Mitchell, 2006, 2007a). In this study we kept the name "Numeracy" for Q1 since Q2 clearly tested the concept of compound interest.

	Concepts	Previously used by	Question as it was in 2008 NFLS
Q3	"Inflation"	Lusardi & Mitchell (2006) Van Rooij et al. (2007)	Imagine, than you deposited the money in a bank account at 8% interest rate, while the annual inflation rate was 10%. Do you think the money from your account can buy more or less, or the same amount of goods and services on average now as a year ago? 1. More than a year ago 2. The same **3. Less than a year ago** 99. I cannot estimate it even roughly
Q4	"Money Illusion"	Van Rooij et al. (2007)	Let's assume that in 2010 your income is twice as much now, and that consumer prices also grow twofold. Do you think that in 2010 you will be able to buy more, less, or the same amount of goods and services as today? 1. More than today **2. Exactly the same** 3. Less than today 99. I cannot estimate it even roughly
Q5	"Discount"		Let's assume that you saw a TV-set of the same model on sale in two different shops. The initial retail price of it was 10,000 rubles. One shop offered a discount of 1,500 rubles, while the other one offered a 10% discount. Which one is a better bargain – a discount of 1,500 rubles or 10%?

	Concepts	Previously used by	Question as it was in 2008 NFLS
			1. A discount of 1,500 rubles 2. A 10% discount 99. I cannot estimate it even roughly
Q6	"Interest Rate"	Katona, Lininger, and Mueller (1962) Mandell (1971)	Let's assume that you took a bank credit of 10,000 rubles to be paid back during a year in equal monthly payments. The credit charge is 600 rubles. Give a rough estimate of the annual interest rate on your credit. The interest rate is about: 1. 3 % 2. 6 % 3. 9 % **4. 12 %** 99. I cannot estimate it even roughly

How well an individual manages personal financial resources may influence one's decision to use financial services. Consumers with more financial discipline and better skills regarding managing their finances are more likely to demonstrate current usage of financial services or intention to use these services in future (Lusardi, & Tufano, 2009).

Two questions from the survey were used to create two additional enabling variables to reflect potential resources in personal financial management. Keeping records (YESREC) was a dummy variable taking on a value of 1 if the consumer reported keeping records, or not keeping records but knowing in general their revenues and expenditures and 0 otherwise. Another variable, comparing terms and conditions (YESCOMPAR), was coded as 1 if the consumer reported comparing the terms and conditions for provision of financial services by various companies before they buy always, sometimes, or rarely, and 0 otherwise.

Table 5

Questions to Assess Advanced Financial Literacy

	Variable Name	Question as it is in 2008 NFLS
Q7	"Bank Deposit Insured"	If a citizen has a deposit in a Russian bank and this bank becomes bankrupt, do you know what maximum level of a deposit is entirely insured by the government? 1. 0 rubles, the government does not insure the bank deposits 2. 20,000 rubles 3. 100,000 rubles **4. 400,000 rubles** 5. 1 million rubles 6. No limits – the government insures all bank deposits in their full amount 99. I find it difficult to answer this question
Q8	"Shares Insured"	If a citizen owns shares in the unit fund, and the value of shares plummeted because of a large scale financial crisis, what is an approximate level of losses insured by the government? **1. 0 rubles, the government does not insure against losses from the reduction of value of the unit fund shares** 2. 20,000 rubles 3. 100,000 rubles 4. 400,000 rubles 5. 1 million rubles 6. No limits – the government insures all unit fund shares in their full amount 99. I find it difficult to answer this question

	Variable Name	Question as it is in 2008 NFLS
Q9	"Annual Interest Rate"	What should the banks do under the current Russian legislation? Choose a phrase most compliant with the Russian law from the options given in the card. 1. Charge the same annual interest rate on all credits 2. Charge the same annual interest rates on all similar credits (credit cards, car purchase credits, mortgage loans, etc.) **3. Inform a borrower of the total credit cost** 4. They should not do any of the above 99. I find it difficult to answer this question
Q10	"Buying on Credit"	When do you think buying on credit is justified? **1. If a shop has sales for the goods I need** 2. If the interest rate on credit is higher than the one on deposit **3. If a person needs to pay for education which would allow to get a better paid job** **4. If a person really needs a vacation but does not have money at the moment** 99. I cannot say anything even roughly

Notes: Question 10 was unique in that there was no single correct response. Therefore, responses were coded such that the only clearly incorrect response (Response 2) was coded as 0 and all other responses were coded as 1.

The remaining enabling variable, trust in financial institutions, relates social capital as a potential resource to financial services usage behavior. As discussed earlier, research has widely recognized that use of financial services "is an indicator of a fundamental characteristic of a functioning market economy: impersonal trust in people and institutions" (Andresen, 2005, p. 2). Really, all market transactions depend on a certain minimum level of trust, but depositing money with banks, investing money in the stock market, and saving for retirement with private pension funds are special indicators of faith. Trust is

an issue of extraordinary importance in Russia, because during the transition years the Russian population witnessed a "massive loss of trust" or "an erosion of trust in financial intermediaries" (Andresen, 2005, p. 1).

As a proxy for trust in financial organizations, we used responses to a question asking about the respondent's confidence in the quick and just resolution of a dispute regarding the provision of financial services by a bank, insurance company, or like organization. Three dummy variables were created to represent different levels of confidence in financial institutions: HTR, AVTR, and LTR.

Need Variables

Need factors are the third group of factors affecting use of financial services according to the Andersen's conceptual framework. The independent need variables are listed in Table 6.

To estimate the perceived need for financial services, two dummy variables reflecting the need to save were created. If the respondents reported always, very often, or sometimes having any money unspent from previous earnings before the next moment new revenues arrived, the variable YESNSAV was coded as 1 and 0 otherwise.

An additional variable was created as an indirect measure of the need for financial services. We expect that people who search for additional information about financial products are likely to currently use or plan to use financial services in the near future. As Phillip Nelson (1970) argued, for any good a consumer has a choice between experiencing and searching to obtain information about the qualities of this good. He also noted that consumers will tend to use information more extensively if it costs less time (or money) to acquire it. Research into consumer behavior provides insights that keeping a good balance between the types of information and the amount of information provided makes financial information a valuable factor in decision making (Kozup & Hogarth, 2008). This suggests that when information is easier to obtain and evaluate, consumers feel less overloaded (Agnew & Szykman, 2005). Consumers who want additional information are more likely to use it when making decisions about use of financial services. Thus, an additional categorical variable was included in the model to reflect a consumer's demand for more and better information about financial services. A variable YESINF was created and

coded as 1 if respondents reported needing better or more information about at least one of 12 services[17] available and 0 otherwise.

Overall, the Andersen Behavioral Model applied to financial services creates a clear framework that allows one to build an empirical model.

Table 6

Description of Independent Need Variables

Variable	Variable Description
YESNSAV	= 1 if the consumer reported always and very often having any money unspent from previous earnings before the next moment for new revenues arrives, 0 otherwise
YESINF	= 1 if the respondent reported needing better or more information about any of 12 financial services, 0 otherwise

Data Analysis Procedures

The 2008 Nationwide Financial Literacy Survey of Russian consumers was used to examine the relationship between financial literacy and current usage of financial services, as well as between financial literacy and intended usage of financial services in the next two years. Data analysis with SAS 9.1 included several steps.

First, descriptive statistics were used to describe the sample's demographic, social structure, and attitudinal characteristics – the predisposing characteristics included in the model. Descriptive statistics also were used to describe the enabling and need variables included in the model as well as the respondents' current and intended use of financial services.

[17] Specifically, the question asked about the following services: consumer credit, bank checking accounts, bank deposit accounts, currency exchange, credit cards, bank plastic cards (not credit cards), mortgage loans, insurance services, investments in unit funds, investments in company stocks, private pension funds, and other financial services.

Next, responses to the financial literacy questions were described and, when appropriate, compared to responses to the same or similar questions in other countries. An average basic and advanced financial literacy score was calculated. A dependent group t-test was used to examine whether the difference in basic and advanced financial literacy mean scores was significant for the full sample of respondents. Chi-square tests were applied to test the relationship between current and intended use of financial services and the variables previously identified in the literature as relevant.

In addition, respondents were divided into two groups: those who were not financially literate (correctly answered no more than three of six basic knowledge questions or two of four advanced knowledge questions) and those who were financially literate (correctly answered at least four of six basic knowledge questions or at least three of four advanced knowledge questions). A one-way ANOVA with a between-subjects factor[18] followed by the Bonferroni test was used to examine whether the differences in basic and advanced mean financial literacy scores were significant for financially literate and illiterate respondents. Chi-square tests were applied to test the relationship between financial literacy and the variables previously identified in the literature as relevant. To describe the differences, means, frequencies, and other appropriate statistics are reported.

In preparation for the final step of the data analysis, multicollinearity was addressed using the Pearson product-moment correlation coefficient and VIF. Then logistic regression was used to predict consumers' behaviors with regards to use of financial services based on the sets of predisposing, enabling, and need variables. Logistic regression was the best fitting and most parsimonious approach because it best takes into account of the nature of the response variable. The outcome variables of interest were binary or dichotomous rather than continuous. The binary dependent variable, current use of financial services (CURUSE), in our study equaled 1 if the respondent used at least one of the 12 financial services in the list provided in the questionnaire. The other dependent variable, intended use of financial services

[18] This is the same as a simple ANOVA or univariate ANOVA.

(INTUSE), equaled 1 if the respondent planned to use at least one of the 12 financial services in the next two years.

This specification of a logistic regression model distinguishes it from linear regression and is reflected both in the choice of a parametric model and in the assumptions (Hosmer & Lemeshow, 2000). Because both dependent variables were binary, the population regression function corresponds to the probability that the dependent variable equals 1, given the sets of explanatory variables. Various nonlinear functions have been suggested in order to be sure that the probabilities are between zero and 1 (Agresti, 1990; Hosmer & Lemeshow, 2000; Wooldridge, 2008). Logistic regression uses cumulative standard logistic distribution and may be summarized in the following model (Wooldridge, 2008, p. 392), where Y is the binary dependent variable with multiple repressors X_i , β_0 is the log odds when X_i equal to 0, and :

$$\Pr = \left(Y = 1 \middle| X_1, X_2, \ldots X_k\right) = F\left(\beta_0 + \beta_1 X_1 + \ldots + \beta_k X_k\right) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \ldots + \beta_k X_k)}} \quad (1)$$

To fit the logistic regression model in the above equation to a set of data requires the estimation of unknown parameters with the method of maximum likelihood, which differs from least squares.

Based on the discussion of factors associated with financial exclusion as described in an adaptation of the Andersen Behavioral Model to explain use of financial services, the dependent variable was specified as a function of three groups of factors: (1) predisposing factors (X_1); (2) enabling factors (X_2); and (3) need factors (X_3). The dependent variables in this study as specified earlier were current use (CURUSE) of financial services and intended use (INTUSE) of financial services. Therefore, use of financial services was modeled as:

$$\Pr = \left(curuse = 1 \middle| X_1, X_2, X_3\right) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3)}} \quad (2)$$

The model for the second specification of the dependent variable intended use of financial services (INTUSE), is identical.

To follow the Andersen Behavioral Model framework, each set of variables – predisposing, enabling, and need variables – was sequentially added to the model. Goodness-of-fit χ^2 was used to indicate the impact of each set of variables on the explanatory power of the model. If the additional variables add explanatory power, the Goodness-of-fit χ^2 value will increase.

CHAPTER 4

RESULTS

Results from the empirical analysis are presented and discussed in this chapter. The first section presents sample characteristics and descriptive results of the model's predisposing, enabling, and need characteristics as well as the respondents' current and future intended use of financial services. Tables 7 and 8 also report the results of Chi-square tests of the association between each of the three types of characteristics and current and intended future use of financial services. Tables 9 through 11 provide details about how financial literacy was measured; in Table 10 are data that compared financial literacy in Russia to other countries.

In the second section, statistical analyses to report results related to the first research question (the correlates of financial literacy) are presented. Specifically, Tables 12 and 13 report the results of Chi-square tests of the association between basic financial literacy and predisposing, enabling, and need characteristics. Tables 14 and 15 report parallel results for the association with advanced financial literacy. Tables 16 and 17 report Chi-square tests of association of basic and advanced financial literacy for current and intended future use of financial services.

The final section reports results related to Research Questions 2 and 3. The remaining tables report results of the logistic regression and the conclusions reached regarding the hypotheses. Specifically, Tables 18 and 21 report the results of the logistic regression on the effect of subjectively-assessed financial literacy on the use of financial services, holding other predisposing, enabling, and need characteristics constant, now and in the future. Tables 19 and 22 report parallel results for the impact of objectively-assessed financial literacy. Finally, Tables 20 and 23 report the results of logistic regressions to identify the correlates of current and future intended use of financial services when both subjectively- and objectively-assessed financial literacy were included in the model along with other predisposing,

enabling, and need characteristics. A summary of the research questions and corresponding tables is provided in the Appendix.

Descriptive Results

Characteristics of the Sample

Table 7 reports the summary statistics describing the sample. The majority of them are in line with the national statistical indicators for Russia. Just more than one-half (54.0%) of the respondents who took part in the 2008 Nationwide Financial Literacy Survey were female. All of the respondents were older than 18 years old. More than one-third (38.5%) were between 26 and 45 years old and nearly one half (47.4%) were 46 years of age or older. The mean age of the sample was 44.7 years old.

The majority (79.7%) of respondents lived in households with two to four people including themselves, with relatively small proportions living alone (11.0%) or in households with more than five people (9.3%). The mean household size for the sample was 3.0.

As for education, the largest group (43.3%) had completed technical college (vocational education) or had some college education, followed by completion of secondary education (31.2%). Much smaller proportions had only a primary or lower education or incomplete secondary education (9.1%) or were college graduates (16.4%). Just over one-half (55.4%) of the respondents were in the labor force. The non-working group, which formed 37.7% of total respondents, was comprised of registered unemployed, students, non-working retirees, and household workers such as housewives.

While each of Russia's federal districts was represented in the sample, nearly one-half of the respondents were from the Central Federal Region (26.5%) or the Volga Federal Region (21.3%). The smallest proportions of the sample came from the Ural (8.0%) and Far Eastern (7.8%) Regions.

Predisposing Characteristics

Table 7 reports the summary statistics for the predisposing demographic, and social structural characteristics of the sample, many of which were described in the previous section. Table 7 also reports frequencies related to the two measures of financial services usage – current and intended future use in two years.

More than half (55.5%) of the respondents reported current use of at least one financial service (one of the 12 financial services listed in the question), and an even a larger proportion (57.2%) declared their plans to use at least one financial service from the list of 12 in the next two years. The group younger than 26 years of age was the most likely (74.4%) to plan to use financial services in the future. Respondents older than 65 years were the least likely to use financial services currently or to plan to use them in the next two years. Those from single-person households were less likely to use financial services currently and in the future than larger households. Respondents with higher levels of education and who were more likely to be employed were more likely to be current and intended users of financial services compared to those with less education and those not in the labor force. The North West and Ural Regions were the two regions out of the seven total with the largest proportions of current users of financial services. The Far Eastern and Ural Federal Regions were the two with the largest proportions of future users of financial services.

A large proportion of the respondents (59.8%) reported positive attitudes toward saving, saying that usually they save when they manage their everyday revenues. They are more active currently in the financial services market (62.6%) and plan to still be using financial services in the next two years (66.9%). More than one-half of the respondents (50.9%) evaluated their financial knowledge and skills as unsatisfactory and lower. Only a very small proportion (1.9%) assessed their knowledge and skills as excellent. Those respondents who reported no knowledge or unsatisfactory knowledge and skills were the least likely to use any of the financial services currently and to plan to use them in the future.

Table 7

Summary Statistics of Predisposing Characteristics

Variable	Mean	Current Use		Intended Use	
		N=1396		N=1194	
	N=1396	NO (%)	YES (%)	NO (%)	YES (%)
		44.48	55.52	42.71	57.29
Demographic Variables					
Age	44.71				
18-25	14.18	50	50	29.63	70.37
26-45	38.47	33.71	66.29	31.00	69.00
46-65	30.95	43.98	56.02	46.90	53.10
More then 65	16.40	65.94	34.06	71.92	28.80
χ^2		70.4283***		110.4276***	
Df		3		3	
Gender					
Male	45.99	43.61	56.39	40.55	53.45
Female	54.01	45.23	54.77	44.53	55.47
χ^2		0.3648		1.9173	
Df		2		2	
Household Size	3.00				
1	10.96	54.9	45.10	59.56	40.44
2-4	79.73	42.86	57.14	40.17	59.83
>=5	9.31	46.15	53.85	43.75	56.26
χ^2		8.0637**		18.3238***	
Df		2		2	
Region of Residency					
Central	26.50	45.41	54.59	47.00	53.00
North West	9.89	37.68	62.32	36.72	63.28

Variable	Mean	Current Use N=1396		Intended Use N=1194	
	N=1396	NO (%)	YES (%)	NO (%)	YES (%)
		44.48	55.52	42.71	57.29
Southern	14.83	49.76	50.24	44.23	55.77
Volga	21.28	41.08	58.92	43.19	56.81
Ural	7.95	37.84	62.16	30.53	69.47
Siberia	11.75	54.88	45.12	57.75	42.25
Far Eastern	7.81	40.37	59.63	23.23	76.77
χ^2		16.3487**		38.6707***	
Df		6		6	
Social Structure Variables					
Education					
Less than High School	9.10	57.48	42.52	68.97	31.03
High School Graduate	31.23	52.98	47.62	48.88	51.12
Some College	43.27	40.73	59.27	37.55	62.45
College Graduate	16.40	31.00	69.00	30.00	70.00
χ^2		41.7329***		57.1008***	
Df		3		3	
Employment Status					
Employed	55.44	35.01	64.99	32.22	67.78
Not in the Labor Force	37.68	59.32	40.68	58.55	47.45
Other	6.88	39.58	60.42	38.75	61.25
χ^2		75.9004***		76.8839***	
Df		2		2	
Attitudinal Variables					
Attitude Toward Saving					
Reported Saving Behavior	59.74	37.41	62.59	33.10	66.90

Variable	Mean	Current Use N=1396		Intended Use N=1194	
	N=1396	NO (%)	YES (%)	NO (%)	YES (%)
		44.48	55.52	42.71	57.29
Reported Not Saving	36.17	53.66	46.34	57.68	42.32
Find Difficult to Answer	4.08	66.67	33.33	44.74	55.26
χ^2		45.4869***		67.9034***	
Df		2		2	
Self-Assessed Financial Literacy					
No Nnowledge	20.70	70.24	29.76	71.78	28.22
Unsatisfactory Knowledge	30.16	44.42	55.58	44.10	55.90
Satisfactory Knowledge	34.17	33.33	66.67	33.17	66.83
Good Knowledge	9.60	32.84	67.16	17.21	82.79
Excellent Knowledge	1.86	38.46	61.54	25.00	75.00
Find Difficult to answer	3.51	36.73	63.27	42.86	57.14
χ^2		110.5958***		134.4900***	
Df		5		5	

Notes: $^{*}p \leq 0.10$, $^{**}p \leq 0.05$, $^{***}p \leq 0.01$

Enabling Characteristics

Frequencies for the enabling characteristics are in Table 8. More than half of the sample (53.1%) had an income-subsistence minimum ratio at a level equal to or less than 200%. Almost three-fourths (71.3%) of the respondents with an income-subsistence minimum ratio greater than 200% used at least one of the 12 financial services listed in the question. It is important to note that more than one-fifth of the respondents (21.7%) did not report their monthly earnings choosing "I find it difficult to answer" as their response. More than half of those respondents already used financial services (55.5%) and even more of them (60.7%) plan to do so in the next two years.

About two-fifths (39.5%) had experienced an unexpected and significant reduction of their income over the last three years. Around one-half (56.3% of those who had experienced a reduction in their income and 56.4% of those who had not) used at least one type of financial services.

The mean basic financial literacy score for the sample was 2.8. The mean basic financial literacy score was more than twice as high as the mean advanced financial literacy score (1.1).

Only about one out of ten (8.7%) had bought a financial service during the last five years and was sorry later because that service did not meet their needs. Those respondents were more likely to use financial services currently and in the future than those who had not had a bad past experience with a financial services.

Almost equal proportions of respondents kept records of their earnings and revenues (44.8%) and compared terms and conditions of financial services offered by various companies before buying (48.9%). Those who kept records of their earnings and revenues and those who did not were equally likely to use financial services. However, respondents who reported having compared terms and conditions were far more likely to be users of financial services compared with their counterparts (76.3% versus 37.2 %).

About half of respondents (49.8%) reported low confidence regarding the quick and just resolution of a dispute with a financial organization (Low Trust in Table 8), and less than one-third (27.2%) described their confidence in financial institutions as "fifty-fifty" (Average Trust in Table 8) More than 60% of the respondents who found it difficult to answer the question did not use financial services currently, but more of them plan to be in the financial services market in the next two years.

Need Variables

Descriptive results for need variables demonstrated that nearly three out of five respondents (53.9%) reported having any money available to save ("money unspent from previous earnings before the next moment new revenues arrives,") and reported needing better or more information about any of 12 financial services (57.9%). Those who reported having always, sometimes, or rarely any unspent money available to save were more likely to use financial services currently (61.9%) and in the future (64.8%).

Respondents who needed more or better information about financial services were more likely to use financial services now and in the future than those who did not.

Chi-square Tests Results

Table 7 reports the results of the Chi-square tests of the variables identified as predisposing characteristics and their relationship with current as well as intended future use of financial services. All of the predisposing variables except gender of the respondents were significantly related to current as well as intended future use of financial services.

The results of Chi-square tests reported in Table 8 revealed statistically significant relationships between current use of financial services and of all of the enabling and need characteristics except keeping records. Intended future use of financial services and the enabling and need variables also were significantly related to intended future use of financial services with the exception of not having experienced an income reduction. The relationship between intended future use of financial services and keeping records also was marginally weak.

Table 8

Summary Statistics of Enabling and Need Characteristics

Variable		Current Use, %		Intended Use,%	
	Mean	N=1396		N=1194	
	N=1396	NO (%)	YES (%)	NO (%)	YES (%)
		44.48	55.52	42.71	57.29
Enabling Variables					
Income/subsistence Minimum Ratio					
>=100%	27.65	56.53	46.37	52.23	47.77
100-200%	25.43	50.14	49.86	48.15	51.85
More than 200%	25.21	28.69	71.31	30.22	69.78
Did Not Report Earnings	21.70	44.55	55.45	39.33	60.67

Variable	Mean	Current Use, %		Intended Use,%	
		N=1396		N=1194	
	N=1396	NO (%)	YES (%)	NO (%)	YES (%)
		44.48	55.52	42.71	57.29
χ^2		53.2074***		37.6467***	
Df		3			
Income Reduction					
Experienced Income Reduction	39.47	43.74	56.26	43.30	56.70
Not Experienced Income Reduction	53.51	43.64	56.36	41.09	58.91
Find Difficult to Answer	7.02	55.10	44.90	53.62	46.38
χ^2		4.8128*		4.1104	
Df		2		2	
Basic Financial Literacy	2.78	2.32	3.16	2.42	3.15
Advanced Financial Literacy	1.14	0.93	1.31	0.91	1.33
		F= 87.70 p<.0001		F= 57.62 p<.0001	
		F=64.28 p<0.0001		F=69.39 p<0.0001	
Past Experience					
Had Bad Past Experience	8.67	21.49	78.51	28.97	71.03
Did not Have Bad Past Experience	86.32	46.39	53.61	43.63	56.37
Find Difficult to Answer	5.01	51.43	48.57	52.94	47.06
χ^2		29.0506***		10.7927***	
Df		2		2	
Record Keeping					
Keeping Records	44.84	43.93	56.07	42.53	57.47
Not Keeping Records	52.08	44.29	55.71	43.30	56.70
Find Difficult to Answer	3.08	55.81	44.19	33.33	66.67
χ^2		2.3239		1.1770*	
Df		2		2	

Variable	Mean	Current Use, % N=1396		Intended Use,% N=1194	
	N=1396	NO (%)	YES (%)	NO (%)	YES (%)
		44.48	55.52	42.71	57.29
Comparing Terms and Conditions					
Compare	48.85	23.75	76.25	22.86	77.14
Do not Compare	39.83	62.77	37.23	63.64	36.36
Find Difficult to Answer	1.32	69.62	30.38	61.76	38.24
χ^2		234.3828***		199.6419***	
Df		2		2	
Trust in Financial Institutions					
High Trust	7.45	33.65	66.35	27.91	72.09
Average Trust	27.15	37.20	62.80	33.33	66.67
Low Trust	49.79	45.18	54.82	46.37	53.63
Find Difficult to Answer	15.62	60.09	39.91	55.23	44.77
χ^2		34.7149***		33.8989***	
Df		3		3	
Need Variables					
Need To Save					
Have Unspent Money to Save	53.87	38.12	61.88	35.22	64.78
Have No Unspent Money to Save	33.24	52.70	47.30	54.60	45.40
Find Difficult to Answer	12.89	58.82	41.18	32.43	67.57
χ^2		32.1812***		44.4266***	
Df		2			
Demand for Additional Information					
Need Better or More Information	57.88	32.45	67.55	21.67	78.33
Do Not Need Better or More Information	38.47	60.56	39.44	74.23	25.77

Variable		Current Use, %		Intended Use,%	
	Mean	N=1396		N=1194	
	N=1396	NO (%)	YES (%)	NO (%)	YES (%)
		44.48	55.52	42.71	57.29
Find Difficult to Answer	3.65	53.33	46.67	50.00	50.00
χ^2		98.3879***		294.9673***	
Df		2		2	

Notes: $^{*}p \leq 0.10$, $^{**}p \leq 0.05$, $^{***}p \leq 0.01$

Financial Literacy: Main Results

Financial Literacy Scores

Table 9 displays responses to the six basic financial literacy questions. As described in the previous chapter, these six questions in the survey aimed to assess the basic financial literacy of Russian consumers. The questions tested the ability of consumers to perform simple percentage calculations in the different contexts of the first, fifth and sixth questions; the remaining questions tested consumers' understanding of the concepts of compound interest, inflation, and money illusion.

The question respondents were most likely to answer correctly was Question 5 described as the "discount" question. Almost 70% of respondents demonstrated the ability to calculate percentages and compare a discount option given in absolute value and one given as a percentage of the price, described as the "discount" question. This question also had the lowest percentage of incorrect responses (8.7%) and the lowest percentage answering they found the question difficult to answer (21.9%). Since the development of a market economy, Russian merchants have became a good match to their foreign counterparts, and Russian advertising of stores' sales and discounts is fairly advanced.

Table 9

Distribution of Responses to Basic Financial Literacy Questions

	Correct (%)	Incorrect (%)	Difficult to Answer (%)
Mean	2.78 (1.71)	1.51 (1.31)	1.7 (2.07)
Q1 Numeracy	58.38	17.84	23.78
Q2 Compound Interest	39.68	32.66	27.65
Q3 Inflation	54.30	20.13	25.57
Q4 Money Illusion	44.56	31.73	23.71
Q5 Discount	69.34	8.74	21.92
Q6 Interest Rate	12.03	39.68	48.28

The question with the second highest proportion of correct answers (58.4%) was Question 1 (the "numeracy" question) which tested calculation of a simple percentage. The percentage answering incorrectly also was the second lowest at 17.8%. A similar proportion (54.3%) correctly answered Question 3 testing the understanding of inflation. Nearly one-fifth were incorrect and one-fourth had difficulty answering. These results are surprising, since high rates of inflation have been an issue in Russia during at least the last 30 years. An even smaller proportion of respondents (44.6%) understood the concept of money illusion (Question 4); 31.7% of respondents tended to think about currency in nominal rather than real terms. Only 39.7% of the respondents were able to correctly answer Question 2 about compound interest; nearly one-third (32.7%) chose the wrong answer. This is an important question because it reveals the lack of understanding among Russian consumers about the power of compound interest in savings and investments.

The smallest proportion of respondents correctly answered Question 6 (the "interest rate" question) - only 12.0% of respondents could roughly estimate the annual interest rate on credit. A large proportion (39.7%) of respondents answered this question incorrectly. This question was originally taken

from the University of Michigan's Survey of Consumer Finances[19] and used in a representative study of consumer perceptions of interest charges conducted by Katona, Lininger, and Mueller (1962). Mandell (1971) used the same question to estimate the effect of the Truth-in-Lending Law upon consumer perception of interest rates and found that only one-tenth of borrowers could estimate the rate of interest they were paying on a car loan and nearly half of borrowers missed the mark by 50% or more. Mandell's (1971) study demonstrated that few borrowers have any idea about the rate of interest they are paying without some type of Truth-in-Lending Law to require lenders to tell them the actual APR (Annual Percent Rate of interest). Even with Truth-in-Lending requirements in place, empirical studies have shown that many U.S. consumers do not clearly understand how to use interest rate disclosures (Chang & Hanna, 1992; Kimball, Frisch, & Gregor, 1997; Lee & Hogarth, 1999). Since July 2007, credit institutions in Russia also are obliged to disclose to customers the effective interest rate for a loan. As a recent World Bank study suggests, the definition of the effective interest rate may be difficult for the typical consumer to understand or to know how to apply in the proper way (International Bank for Reconstruction and Development/The World Bank, 2009a).

Overall, just fewer than one-half (46.4%) of the respondents answered all six questions correctly. The similarity of the questions[20] used to assess financial literacy in the 2008 NFLS with questions used by Lusardi and Mitchell (2006, 2007a), Van Rooij, Lusardi, and Alessie (2007), Cole, Sampson, and Zia (2009), and Monticone (2010) allows comparison of the results. The proportions of correct and incorrect answers are presented in the Table 10 for American, Dutch, Indian, Indonesian, Italian, and Russian respondents. From the table it is obvious that Russian respondents demonstrated a much lower level of

[19] This question was originally in a representative study of consumer perceptions of interest charges conducted by George Katona of the University's of Michigan Survey Research Center in the Survey of Consumer Finances. The question was formulated in the following way, "Suppose you needed a thousand dollars for a car which you would repay in twelve monthly payments; about how much do you think the interest or carrying charges would be?" (Katona, Lininger, & Mueller, 1962, p. 150)

[20] Questions are considered to be similar if they test the same concept but use slightly different wording. Questions are listed in Table 3 in the previous chapter.

basic financial knowledge than American, Dutch, and Indonesian consumers for all questions where comparison was possible to make. Only when compared to Indian respondents' understanding of inflation and Italian respondents' numeracy skills were Russian respondents more knowledgeable.

Table 10

Financial Literacy Questions: Comparison of Results

Questions	American Respondents HRS 2004 N=1,269	Dutch Respondents DNB HS N=1,508	Indian Respondents 2006 Gujarat HS N=1,497	Indonesian Respondents Access to Finance Survey N=3,360	Italian Respondents SHIW N=3, 992	Russian Respondents 2008 NFLS N=1,460
Authors	Lusardi & Mitchell (2006)	Van Rooij et al., (2007)	Cole et al.(2009)		Monticone (2010)	
Numeracy						
Correct		90.8%			39.6%	58.38%
Incorrect		5.2%			31.96%	17.84%
Do not know		3.7%			28.43%	23.78%
Compound Interest						
Correct	61.7%	76.2%	59.00%	78.00%		39.68%
Incorrect	22.2%	19.6%				32.66%
Do not know	9.4%	3.8%				27.65%
Inflation						
Correct	75.2%	82.6%	25.00%	61.00%	60.5%	54.30%
Incorrect	13.4%	8.6%			9.52%	20.13%
Do not know	9.9%	8.5%			29.98%	25.57%
Money Illusion						

Questions	American Respondents HRS 2004 N=1,269	Dutch Respondents DNB HS N=1,508	Indian Respondents 2006 Gujarat HS N=1,497	Indonesian Respondents Access to Finance Survey N=3,360	Italian Respondents SHIW N=3, 992	Russian Respondents 2008 NFLS N=1,460
Correct		71.8%				44.56%
Incorrect		24.3%				31.73%
Do not know		3.5%				23.71%

Responses to the set of the four advanced financial literacy questions are reported in Table 11. Russian respondents did even worse on this set of questions than on the previous one. Less than 9% of respondents knew the maximum deposit in a Russian bank insured by the government when a bank becomes bankrupt (Q7). Just a little more than 10% of respondents knew that the government does not insure against losses from the reduction of value the unit fund shares; 71.6% said they could not answer the question (Q8). A much larger proportion (38.5%) of respondents knew what banks are required to do regarding disclosure of interest rate charges under current Russian legislation (Q9). On a more positive note, almost 60% of respondents correctly identified justifiable reasons to buy on credit (Q10). This comparatively high percentage of correct answers may be explained by the fact that only one answer choice was incorrect. It is important to highlight that the proportion choosing "I have difficulties to answer" was relatively high for all four questions and higher than the proportion answering incorrectly.

Table 11

Distribution of Responses to Advanced Financial Literacy Questions

		Correct (%)	Incorrect (%)	Difficult to answer (%)
	Mean	1.14	0.88	1.98
	St.d.	(0.89)	(0.98)	(1.31)
Q7	Deposit in bank insured	8.52	32.81	58.67
Q8	Losses in shares insured	10.24	18.19	71.56
Q9	Annual interest rate	38.47	29.30	32.23
Q10	Buying on credit	56.73	6.95	36.32

When lack of knowledge about consumer protection laws[21] is so widespread, there is reason to worry that Russian consumers are not adequately protected from possible misconduct by financial intermediaries as well as financial frauds and scams. The results in Table 11 also show that some consumers are not able to assess relevant information even when it is disclosed (for example, the maximum bank deposit insured by the government which is clearly stated in law).[22] Poorly informed consumers are less likely to engage in financial market participation.

Overall, the results of the assessment of financial literacy in Russia indicate its low level. Relative to other countries, surprisingly high proportions of respondents chose "difficult to answer" as a response to the financial literacy questions. The distribution of the "difficult to answer" responses was from 21.9% to 48.3% for the individual basic financial literacy questions, and even higher, from 32.2% to 71.6%, for the advanced literacy questions. One might speculate that this distribution is due, in part, to unclear wording of the questions. However, there also are other explanations. The literature suggests that different respondents may use exactly the same words to describe different responses – ignorance, indecision, or uncertainty about the meaning of the question asked (Sanchez & Morchio, 1992). Thus,

[21] The main law about consumer protection is called in Russia "Law on Protection of Consumer Rights."

[22] The Russian Federation Federal Law on Insurance of Households' Deposits in Banks of the Russian Federation.

researchers have different views about the necessity to include a no-opinion ("I have difficulties to answer" in our survey) option in surveys. According to many survey researchers, offering a no-opinion option reduces the pressure on respondents to give a response when no such opinion is presented (Schuman & Presser, 1996). Other researchers have found that the availability of a no-opinion option may discourage some respondents from doing the cognitive work needed to choose an answer. Krosnick, et al. (2002) found that attraction to no-opinion options was the greatest, for example, among respondents with the lowest cognitive skills (as measured by educational attainment) or among respondents who devoted little effort to the reporting process. This finding justifies the decision made in this study to interpret "I have difficulties to answer" option as an incorrect answer to the financial literacy questions.

To conclude the discussion of the objectively-assessed financial literacy of Russian respondents, a dependent group t-test was used to compare the difference in the means of the basic financial literacy score and advanced financial literacy score, while taking into account the fact that the observations are not independent of one another. A relationship between the two types of the financial literacy scores was expected. The dependent group t-test produced a t-value for the difference between the two variables of 36.99 with 1395 degrees of freedom. The corresponding p-value was <.0001, which was greater than the pre-specified alpha level of 0.05. Thus, the difference between the basic financial literacy score and advanced financial literacy score was not statistically significantly different from 0. In other words, the means for basic financial literacy and advanced financial literacy were low and not statistically significantly different from one another.

Research Question One: The Correlates of Financial Literacy

The first research question aimed to identify the correlates of consumers' financial literacy. To answer this question, the relationship between basic and advanced financial literacy and correlates previously identified in the literature as relevant was examined. For consistency, the correlates were organized into the same three categories of variables (predisposing, enabling, and need) that will be used in subsequent analyses and discussion. The Pearson's Chi-square tests of association or homogeneity for each pair of variables were employed. A one-way ANOVA with a between-subjects factor followed by a

Bonferroni test was performed to examine whether the differences in basic and advanced mean financial literacy scores between the groups were significant for financially literate and illiterate respondents.

To meet the requirement of appropriateness of the Pearson's Chi-square tests (Runyon, Coleman, & Pittenger, 2000), the financial literacy scores were transformed into nominal variables. The basic financial literacy score, calculated as the number of correct answers the respondents gave to the set of six questions measuring basic financial knowledge, was converted into a nominal variable with two categories: "50% or less of answers correct" and "More than 50% of answers correct." Respondents were coded as having "50% or less of answers correct" when they answered fewer than four of six questions correctly. Similarly, respondents were coded as having "More than 50% of answers correct" when they answered at least four of six questions correctly. The same procedure was implemented for advanced financial literacy, calculated as the number of correct answers given to the set of four questions. Respondents were coded as having "50% or less of answers correct" when they answered fewer than three of four questions correctly. Similarly, respondents were coded as having "More than 50% of answers correct" when they answered three or four questions correctly. Clearly, respondents in the latter category demonstrated the highest level of financial literacy. For a more holistic view of the association between the correlates and the respondents' financial literacy, most of the correlates were categorized, including age and size of household.

In general, to perform the Pearson's Chi-square tests, the null hypothesis for each pair of variables was that the relative proportions of one variable were independent of the second variable; in other words, the proportions for one variable were the same for different values of the second variable. Specifically, to answer the first research question, the null hypothesis was that the proportion of respondents who answered no more than 50% of the financial literacy questions correctly and the proportion who answered more than 50% of the questions correctly were the same for different categories of the correlate. When the null hypothesis was true, we expected the value of the Chi-square statistic to be relatively small. The stronger the relationship between the two variables of interest in the sample, the larger the Chi-square statistic is (O'Rourke, Hatcher, & Stepanski, 2005).

Two tables report the relationships between basic financial literacy and the characteristics of interest, organized as predisposing, enabling, and need characteristics. Tables 12 and 13 show the results of frequency tabulations, the ANOVA procedure, and Chi-square tests for basic financial literacy and three groups of variables. Tables 14 and 15 reveal the association between the same set of characteristics and respondents' levels of advanced financial knowledge.

Basic Financial Literacy

Table 12 shows averages (means) and standard deviations of the basic financial literacy scores for each predisposing characteristic's categories in column (2) and (3), the percent of respondents in each category in column (4), and the proportions of respondents in each category that answered correctly less than 50% (column (5)) and more than 50% (column (6)) of the basic financial literacy questions. Chi-square values, degrees of freedom[23] and indications of the statistically significant differences in basic mean scores between the groups are also included in the table.

Table 12

Basic Financial Literacy by Predisposing Characteristics

	Mean Score	St. D.	% of respondents	Basic Financial Literacy Score, % of respondents	
	2.58	1.8		50% or less of answers correct	More than 50% of answers correct
	(2)	(3)	(4)	(5)	(6)
Age					
18-25	2.97[d]	1.63	14.18	57.58	42.42
26-45	3.05[d]	1.60	38.47	53.82	46.18

[23] The degrees of freedom in a test of independence are equal to ((number of rows) −1) × ((number of columns)−1). For 2x2 tables where degree of freedom=1 "Fisher's Exact Test is printed automatically. It estimates the probability of observing a table that gives at least as much evidence of association as the one actually observed, given that the null hypothesis is true. The probability is given directly in this test without Chi-square statistics.

	Mean Score 2.58 (2)	St. D. 1.8 (3)	% of respondents (4)	Basic Financial Literacy Score, % of respondents: 50% or less of answers correct (5)	Basic Financial Literacy Score, % of respondents: More than 50% of answers correct (6)
46-65	2.81[d]	1.73	30.95	58.33	41.67
More than 65	1.93[a,b,c]	1.74	16.40	76.86	23.14
F- value	25.41				
	χ^2			36.3773***	
	Df			3	
Gender					
Male	2.87	1.69	45.99	57.94	42.06
Female	2.71	1.73	54.01	60.88	39.12
	χ^2			1.2368	
	Df			1	
Household Size					
1	2.22[bc]	1.84	10.96	69.28	30.72
2-4	2.85[a]	1.69	79.73	58.49	41.51
More than 5	2.91[a]	1.64	9.31	56.92	43.08
F- value	9.6				
	χ^2			6.9041	
	Df			2	
Region of Residency					
Central	2.55[bd]	1.70	26.50	65.58	34.32
North-Western	3.17[ag]	1.74	9.89	50.72	49.28
Southern	2.69	1.68	14.83	58.94	41.06
Volga	3.01[ag]	1.75	21.28	52.19	47.81
Ural	2.84	1.46	7.95	63.06	36.94

	Mean Score	St. D.	% of respondents	Basic Financial Literacy Score, % of respondents	
				50% or less of answers correct	More than 50% of answers correct
	2.58	1.8			
	(2)	(3)	(4)	(5)	(6)
Siberian	2.89	1.79	11.75	59.76	40.24
Far Eastern	2.41[db]	1.67	7.81	66.97	30.03
F- value	4.29				
	χ^2				20.0006***
	Df				6
Education					
Less Than High School	1.79[bcd]	1.69	9.10	80.31	19.69
High School Graduate	2.47[acd]	1.72	31.23	66.06	33.94
Some College	2.97[abd]	1.63	43.27	56.79	43.21
College Graduate	3.43[abc]	1.56	16.40	42.79	57.21
F- value	34.63				
	χ^2				58.9838***
	Df				3
Employment Status					
Employed	3.03[bc]	1.62	55.44	55.43	44.57
Not in the Labor Force	2.35[ac]	1.76	37.68	68.25	31.75
Other	3.17[ab]	1.70	6.88	44.79	55.21
F- value	28.28				
	χ^2				30.6703***
	Df				2
Attitude Toward Saving					
Reported Saving Behavior	3.1[bc]	1.60	59.74	52.76	47.24
Reported Not Saving	2.34[a]	1.78	36.17	68.12	31.88

	Mean Score 2.58	St. D. 1.8	% of respondents	Basic Financial Literacy Score, % of respondents	
				50% or less of answers correct	More than 50% of answers correct
	(2)	(3)	(4)	(5)	(6)
Find Difficult to Answer	2.07[a]	1.65	4.08	82.46	17.54
F- value	37.86				
	χ^2			43.7741***	
	Df			2	
Self-Assessed Financial Literacy					
No Knowledge	1.59[efc]	1.73	20.7	80.62	19.38
Unsatisfactory Knowledge	2.61[ecd]	1.59	30.16	66.98	33.02
Satisfactory Knowledge	3.44[bf]	1.41	34.17	46.75	53.25
Good Knowledge	3.50[b]	1.55	9.60	38.81	61.19
Excellent Knowledge	3.89[bfa]	1.21	1.86	34.62	65.38
Find Difficult to Answer	2.37[dabe]	1.73	3.51	65.31	34.69
F- value	61.21				
	χ^2			127.6772***	
	Df			5	

Notes: [a,b,c,d, e, f] Superscripts indicate significant differences in Bonferroni mean pairwise comparisons (p<.05 or better). For example, respondents' mean basic financial literacy score for single-person household ([a]) is significantly different from the score for all larger households ([b,c]).

F-value from a simple ANOVA analysis included in the table if it was significant at the .05 level or better and indicated significant differences in means.

$^{*}p \leq 0.10$, $^{**}p \leq 0.05$, $^{***}p \leq 0.01$

The results of Chi-square tests revealed statistically significant relationships between basic financial literacy and the following correlates: age of respondents, region of residency, education

attainment, employment status, attitude toward saving, and self-assessed financial literacy, all at p<.01.Basic financial literacy was closely related to respondents' age. It was not surprising that those ages 26 to 45 were the most likely to correctly answer more than one-half of the questions while people older than 65 were the least likely. The Russian elderly population are part of a cash-only generation and lack "a history of using sophisticated financial services" (International Bank for Reconstruction and Development/The World Bank, 2009a, p. 7). The obtained value of the Chi-square statistic was quite large - 36.3773 (DF=6) - and the *p*-value was less than .01, indicating there was less than a one in 100 chance of obtaining a Chi-square value of this size by chance alone. Thus, basic financial literacy was related to the age of respondents. A one-way ANOVA revealed a significant effect for age categories (F=25.41, $p < .0001$). The Bonferroni test also showed that respondents in the oldest age group (more than 65 years old) scored significantly lower on basic financial literacy (1.93) than did all other respondents ($p<.05$).

Males did slightly better than females on the basic financial literacy questions. However, the ANOVA results showed that the null hypothesis for the present study, that in the population there is no difference between males and females with respect to mean basic financial literacy scores, should be accepted. The Chi-square tests indicated no significant relationship between basic financial literacy and gender.

Single-person household respondents were less likely to answer more than 50% of the basic financial literacy questions correctly (30.7% compared to between 41.5% and 43.1% for larger households). However, the groups were not significantly different from each other as the Chi-square value was too small to reject the null hypothesis of independence.

The Chi-square statistic (20.000, DF=6) indicated a significant relationship between basic financial literacy and the Federal region in which the respondents lived. Those who lived in North-Western and Volga Federal Regions appeared to be somewhat more knowledgeable. Differences in the basic financial literacy mean scores were statistically significant ($p<.05$) between respondents from North-Western and Volga Federal Regions and those living in Central and Far Eastern Federal Regions.

There was a strong link between the basic financial literacy level and the level of education received as well as significant differences ($p<.05$) in the mean scores between all four groups of education attainment. A lower level of education was associated with a lower basic financial literacy score (1.79). Respondents with a primary or lower education or uncompleted secondary education did really poorly on the questions with fewer than one-fifth correctly answering four or more questions, while college graduates were the most likely to correctly answer the questions. The p-value was less than .01, meaning that the null hypothesis that basic financial literacy and education are independent in the population may be rejected.

Given that employment is associated with managing income and other financial decisions, it is not surprising that the Chi-square statistic indicated a relationship with basic financial literacy. Those not in the labor force were the least likely to answer the basic financial literacy questions correctly. A Bonferroni test showed that employed respondents and the other respondents scored significantly ($p<.05$) higher on basic financial literacy than did the respondents who were currently not in the labor force.

The Chi-square statistic also indicated a relationship between basic financial literacy and Russian respondents' attitude toward saving. Those not saving at all and those who found it difficult to answer the question were more likely than those who saved to answer half or fewer of the basic financial literacy questions correctly (68.1% and 82.5% versus 52.8%). The difference between those respondents in the above groups was statistically significant ($p<.05$) with respect to their basic financial literacy.

The *a priory* expectation was that Russian respondents with higher self-assessed financial knowledge would perform better on an objective financial literacy test than those with lower self-assessed financial knowledge. As expected, respondents who reported they had "excellent knowledge and skills" were the most likely to answer the basic financial literacy questions correctly. Objectively-measured basic financial literacy rose steeply with higher self-assessed financial literacy. While a common concern in the literature is that people tend to be more confident in their abilities than is warranted, that appears not to be the case in Russia. Respondents who evaluated their financial knowledge and skills as satisfactory, good, and excellent were more likely to earn a higher basic financial literacy score than those

who described their financial knowledge and skills as unsatisfactory, nonexistent, or found the question difficult to answer. The differences in the mean scores were statistically significant ($p<.05$). The Chi-square test indicated a strong relationship between the subjective and objective measures of financial literacy.

Table 13 reports the results of Chi-square statistics examining the relationships between basic financial literacy and the correlates in the theoretical model.

Table 13

Basic Financial Literacy by Enabling and Need Characteristics

	Mean Score	St. D.	% of respondents	Basic Financial Literacy Score, % of respondents	
				50% or less of answers correct	More than 50% of answers correct
	(2)	(3)	(4)	(5)	(6)
Income-subsistence Minimum Ratio					
>=100%	2.55[c]	1.73	27.65	65.28	34.72
100-200%	2.67[c]	1.78	25.43	61.40	38.59
More than 200%	3.30[bad]	1.53	25.21	47.44	52.56
Did Not Report Earnings	2.60[c]	1.69	21.70	64.03	35.97
F-value	15.58***				
χ^2				29.7136***	
Df				3	
Income Reduction					
Experienced Income Reduction	2.68[bc]	1.64	39.47	64.07	46.45
Not Experienced Income Reduction	2.98[ac]	1.74	53.51	55.55	35.93

	Mean Score	St. D.	% of respondents	Basic Financial Literacy Score, % of respondents	
				50% or less of answers correct	More than 50% of answers correct
	2.78	1.71			
	(2)	(3)	(4)	(5)	(6)
Not Reported Income Reduction	1.86[ab]	1.59	7.02	79.59	20.41
F-value	20.78***				
χ^2				32.1727***	
Df				2	
Past Experience					
Had Bad Past Experience	3.36[bc]	1.4	8.67	52.07	47.93
Did Not Have Bad Past Experience	2.77[ac]	1.73	86.32	59.25	40.75
Find Difficult to Answer	1.93[ab]	1.58	5.01	77.14	22.86
F-value	15.99***				
χ^2				11.8495***	
Df				2	
Record Keeping					
Keeping Records	2.75	1.73	44.84	59.74	40.26
Not Keeping Records	2.83	1.69	52.08	59.56	40.44
Find Difficult to Answer	2.58	1.88	3.08	55.81	44.19
χ^2				0.2587*	
Df				2	
Comparing Terms and Conditions					
Compare	3.27[bc]	1.51	48.85	49.27	50.73
Do not Compare	2.26[a]	1.73	39.83	70.68	29.32

		Mean Score	St. D.	% of respondents	Basic Financial Literacy Score, % of respondents	
					50% or less of answers correct	More than 50% of answers correct
		(2)	(3)	(4)	(5)	(6)
Find Difficult to Answer		2.49[a]	1.84	11.32	64.56	35.44
F-value		60.24***				
	χ^2				60.1832***	
	Df				2	
Trust in Financial Institutions						
High Trust		3.17[e]	1.60	7.45	52.88	47.12
Average Trust		3.11[cd]	1.57	27.15	54.88	45.12
Low Trust		2.80[db]	1.69	49.79	58.85	41.15
Find Difficult to Answer		1.97[bc]	1.82	15.62	72.94	27.06
F-value		23.87***				
	χ^2				21.7013***	
	Df				3	
Need To Save						
Have unspent Money		3.07[bc]	1.66	53.87	52.60	47.40
No Unspent Money		2.40[a]	1.72	33.24	68.53	31.47
Find Difficult to Answer		2.24[a]	1.70	12.89	74.51	25.49
F-value		24.04***				
	χ^2				38.9109***	
	Df				2	
Demand for Additional Information						

	Mean Score	St. D.	% of respondents	Basic Financial Literacy Score, % of respondents	
				50% or less of answers correct	More than 50% of answers correct
	2.78	1.71			
	(2)	(3)	(4)	(5)	(6)
Need Better or More Information	3.09[bc]	1.54	57.88	54.12	45.88
Do Not Need Better or More Information	2.30[ac]	1.76	38.47	70.04	29.96
Find Difficult to Answer	2.73[ab]	1.98	3.65	55.00	45.00
F-value	32.05[***]				
χ^2				31.9471[***]	
Df				2	

Notes: [a,b,c,d, e, f] Superscripts indicate significant differences in Bonferroni mean pairwise comparisons ($p<.05$ or better).

F-value from a simple ANOVA analysis included in the table if it was significant at the .05 level or better and indicated significant differences in means.

[*]$p \leq 0.10$, [**]$p \leq 0.05$, [***]$p \leq 0.01$

The relationship was significant for all of the characteristics. As expected, the results demonstrated that basic financial literacy and income were associated in a predictable way. Respondents with higher income-subsistence minimum ratios answered more basic financial literacy questions correctly than those with lower income-subsistence minimum ratios. Among those respondents whose income-subsistence ratios were 1.0 or less, the mean score was 2.5, significantly less than the average of 3.3 for respondents whose income-subsistence minimum ratios were more than 2.0.

Respondents were asked if they experienced an unexpected significant reduction of their income over the last three years. Overall, 39.5% of people who participated in the survey experienced an unexpected and significant reduction in their income. Those who had experienced an unexpected reduction in income were more likely to correctly answer at least four of the basic financial literacy questions compared to those who had not experienced an income reduction or found the question difficult to answer. There were significant differences between respondents ($p<.05$) in all three groups with respect to their basic financial literacy mean scores. These results lend support to the notion that people "learn" from income fluctuations and adjust to the new situation by paying more attention to financial information available to them.

Consistent with the notion that individuals learn about financial management through experience, the Chi-square results indicated a significant relationship between basic financial literacy and having had a negative experience in the financial services market. Respondents who had had a negative experience were more likely than other respondents to answer correctly four or more questions correctly.

There was a significant relationship between basic financial literacy and another experience variable, comparing the terms and conditions of financial services before buying. Those who reported they had made such comparisons were more likely to correctly answer more than half of questions than those who had never compared product terms and conditions and those who found the question difficult to answer. There were significant differences between respondents in those groups ($p<.05$) with respect to their basic financial literacy.

The traditional belief is that those who are more successful in money management are also more financially literate. While those who did not keep records of the family's resources and did not have even a vague idea of how much money they receive and spend during a month earned lower financial literacy scores than those who kept records, the relationship was only marginally significant ($p< .10$). One-way ANOVA results revealed that the three groups of respondents, those who kept records, those who did not, and those who found the question difficult to answer, seemed similar with respect to basic financial literacy scores.

To evaluate the effect of social capital on use of financial services, a variable approximating trust in financial services was created. Those who responded they were "completely sure in the quick and just resolution of the dispute if a conflict with a financial organization arises regarding financial services" were the most likely to answer more than one-half of the basic financial literacy questions correctly. Those who indicated some trust scored higher (3.2) than those who demonstrated complete distrust (2.8) and those who found the question difficult to answer (2.0). A Bonferroni test showed that respondents with a high level of trust and those with some trust in financial institutions scored significantly higher ($p<.05$) on basic financial literacy than participants with a low level of trust and those who found the question difficult to answer.

Table 13 also reports the results of tests of the relationship between basic financial literacy and two need characteristics: need to save and demand for additional financial information. Both were significant. Respondents who sometimes, very rarely or never had unspent money before new earnings arrived and those who found the question difficult to answer were the least likely to correctly answer the basic financial literacy questions. Those with less knowledge may have more difficulties making ends meet in their budget. Their lack of knowledge or their limited financial resources may have deprived them from participation in the financial services market and opportunities to learn more about financial management. Those respondents who said they always or very often had unspent money in their budget to save did significantly better ($p<.05$) with the mean score of 3.07 on the basic financial literacy test than those who said they relatively rare or never had unspent money to save (2.4) or found the question difficult to answer (2.2). Important to note is that having unspent money may also reflect the respondents' financial situation rather than their active management to create savings.

There is also a significant relationship between basic financial literacy and the respondent's demand for additional financial information. Table 13 reports that those who wanted better or more information about financial services had higher basic financial literacy. Nearly one-half of those respondents (45.9%) who wanted better or more information correctly answered more than three of the financial literacy questions compared with 30% of respondents who did not report demand for additional

information. Those who found it difficult to answer the question did surprisingly well; 50% correctly answered more than three of the financial literacy questions. There were significant differences ($p<.05$) between respondents in all three categories in basic financial literacy scores.

In general, the proportions of respondents with lower and higher basic financial literacy scores were not the same for the different categories of the correlates. The Chi-square results were significant at the 99% confidence level for associations with age, federal region, education, employment, attitude toward saving, self-assessed financial literacy, income-subsistence ratio, income reduction, comparing terms and conditions, having had a previous bad experience, trust in financial services, need to save, and demand for additional information about financial services. The relationship between keeping records of family expenditures and revenues and basic financial literacy was significant at the 90% confidence level.

Advanced Financial Literacy

Table 14 is the first in the second series of tables presenting results of frequencies tabulations simple ANOVA, and Chi-square tests of the correlates of advanced financial literacy. As before, the variables are organized as predisposing, enabling, and need as they are in the final model. The mean advanced financial literacy score of 1.1 was very low. Surprisingly small proportions of respondents in all categories answered at least two questions correctly. In general, the relationships between the correlates and advanced financial literacy were similar to the relationships between the correlates and basic financial literacy but weaker. Specifically, region of residence and employment status were related to advanced financial literacy at the 99% confidence level; education, attitude toward savings, and self-assessed financial literacy were significantly related to advanced financial literacy at the 95% confidence level, and age was related marginally ($p<.1$). Although household size was not significantly related to advanced financial literacy, differences in the mean scores were significant ($p<.05$) for single-person households and the largest households in the sample.

Similar to the analyses of the correlates of basic financial literacy, the hypothesis of independence was accepted for the relationship between advanced financial literacy and gender. Males and females were not significantly different from each other with respect to their advanced financial literacy scores.

Table 14

Advanced Financial Literacy by Predisposing Characteristics

	Mean Score	St. D.	% of respondents	Basic Financial Literacy Score, % of respondents	
	1.14	0.89	N=1396	50% or less of answers correct	More than 50% of answers correct
	(2)	(3)	(4)	(5)	(6)
Age					
18-25	1.29[dc]	0.80	14.18	94.95	5.05
26-45	1.30[dc]	0.87	38.47	92.55	7.45
46-65	1.10[bad]	0.91	30.95	93.52	6.48
More then 65	0.69[bcb]	0.80	16.40	97.38	2.62
F-value	28.97***				
	χ^2			7.1112*	
	Df			3	
Gender					
Male	1.10	0.87	45.99	92.99	7.01
Female	1.18	0.91	54.01	94.83	5.17
	χ^2			2.0690	
	Df			1	
Household Size					
1	0.95[bc]	0.86	10.96	95.42	4.58
2-4	1.16[a]	0.89	79.73	94.07	5.93
More than 5	1.18[a]	0.91	9.31	91.54	8.46
F-value	3.78***				

	Mean Score	St. D.	% of respondents	Basic Financial Literacy Score, % of respondents	
	1.14	0.89	N=1396	50% or less of answers correct	More than 50% of answers correct
	χ^2			1.9511	
	Df			2	
Region of Residency					
Central	1.17	0.92	26.50	93.24	6.76
North-Western	1.16	0.75	9.89	98.55	1.45
Southern	1.24[fg]	0.89	14.83	93.72	6.28
Volga	1.22[fg]	0.97	21.28	90.91	9.09
Ural	1.18	0.92	7.95	90.09	9.91
Siberian	0.93[cd]	0.78	11.75	98.78	1.22
Far Eastern	0.89[cd]	0.82	7.81	96.33	3.67
F-value	3.83***				
	χ^2			21.1485***	
	Df			6	
Education					
Less than High School	0.69[bcd]	0.82	9.10	96.85	3.15
High School Graduate	1.02[acd]	0.87	31.23	95.18	4.82
Some College	1.21[abd]	0.88	43.27	93.87	6.13
College Graduate	1.43[abc]	0.87	16.40	90.39	9.61
F-value	24.09***				
	χ^2			8.1891**	
	Df			3	
Employment Status					

	Mean Score	St. D.	% of respondents	Basic Financial Literacy Score, % of respondents	
	1.14	0.89	N=1396	50% or less of answers correct	More than 50% of answers correct
Employed	1.28[b]	0.89	55.44	92.25	7.75
Not in the Labor Force	0.93[ac]	0.85	37.68	96.77	3.29
Other	1.18[b]	0.92	6.88	92.71	7.29
F-value	25.28***				
	χ^2			11.6101***	
	Df			2	
Attitude Toward Saving					
Reported Saving Behavior	1.28[bc]	0.87	59.74	92.57	7.43
Reported Not Saving	0.93[a]	0.89	36.17	96.04	3.96
Find Difficult to Answer	0.95[a]	0.87	4.08	96.49	3.51
F-value	25.92***				
	χ^2			7.3725**	
	Df			2	
Self-Assessed Financial Literacy					
No Knowledge	0.79	0.86	20.7	96.54	3.46
Unsatisfactory Knowledge	1.1[cde]	0.88	30.16	95.25	4.75
Satisfactory Knowledge	1.37[abf]	0.85	34.17	92.24	7.76
Good Knowledge	1.35[abf]	0.87	9.60	88.81	11.19
Excellent Knowledge	1.30[af]	0.74	1.86	96.15	3.85
Find Difficult to Answer	0.65[cde]	0.80	3.51	97.96	2.04
F-value	21.19***				

	Mean Score	St. D.	% of respondents	Basic Financial Literacy Score, % of respondents	
	1.14	0.89	N=1396	50% or less of answers correct	More than 50% of answers correct
χ^2				15.0252**	
Df				5	

Notes: [a,b,c,d, e, f] Superscripts indicate significant differences in Bonferroni mean pairwise comparisons ($p<.05$ or better).

F-value from a simple ANOVA analysis included in the table if it was significant at the .05 level or better and indicated significant differences in means.

$^{*}p \leq 0.10$, $^{**}p \leq 0.05$, $^{***}p \leq 0.01$

Table 15 reports the results of the Chi-square tests of the variables identified as enabling characteristics and advanced financial literacy, as well as need characteristics and advanced financial literacy. As with basic financial literacy, the income-subsistence minimum ratio, having experienced an income reduction, trust in financial institutions, and comparing terms and conditions were significantly related to advanced financial literacy. The nature of the relationships was similar to those for basic financial literacy.

The highest proportion of respondents answering the questions correctly were those who did not report their earnings, and those who had income-subsistence minimum ratios greater than 200% of poverty. The Bonferroni test showed that respondents with income-subsistence minimum ratios greater than 200% of poverty scored significantly higher ($p<.05$) on advanced financial literacy than did respondents in the two groups with income-subsistence minimum ratios less than 200% of poverty.

Those who experienced an income reduction during last three years were more likely to correctly answer the advanced financial literacy questions than those who had not and those who found the question difficult to answer. All three groups were significantly (p<.05) different from each other.

There also was a significant association between advanced financial literacy and whether the respondent compared terms and conditions of financial services before buying them. The p-value was less than 0.01, meaning that there was less than one chance in 100 of obtaining a Chi-square value of 34.2548 (or larger) by chance alone. This result was not surprising because people who regularly compare the terms and conditions of the services provided by financial institutions are more likely to know how they are protected according to current Russian legislation, the subject of two of the advanced financial literacy questions.

Because the advanced financial literacy questions were so closely tied to consumers' rights and responsibilities in financial markets, advanced financial literacy was expected to be associated with trust in financial institutions. The Chi-square statistic (6.6798) was significant (p <.01).

Two variables that were significantly associated with basic financial literacy were not significantly related to advanced financial literacy. No association was discovered between the respondent's ability to keep records of her income and expenditures and advanced financial literacy, so chance could explain the observed slight differences in the table cells for these variables. Having had a previous negative experience with a financial service was not significantly related to advanced financial literacy either. However, those who had a negative experience were more likely to correctly answer the questions than those who had not and those who found the questions difficult to answer. Those differences in means between all groups were significant.

As for the need variables, they both were significantly related to advanced financial literacy. Those respondents who wanted to know more about financial services more likely to correctly answer more than two questions than those respondents who were not interested in more or better information or who found the questions difficult to answer. There were significant differences between those groups of

respondents ($p<.05$). Also similar to the previous analysis, need to save was significantly related to advanced financial literacy but only marginally ($p<.1$).

Table 15

Advanced Financial Literacy by Enabling and Need Characteristics

	Mean Score	St. D.	% of respondents	Basic Financial Literacy Score, % of respondents	
			N=1396	50% or less of answers correct	More than 50% of answers correct
	1.14	0.89			
	(2)	(3)	(4)	(5)	(6)
Income-subsistence Minimum Ratio					
>=100%	1.04[c]	0.87	27.65	95.85	4.15
100-200%	1.05[c]	0.87	25.43	95.77	4.23
More than 200%	1.30[ab]	0.87	25.21	92.61	7.39
Did Not Report Earnings	1.19	0.97	21.70	91.09	8.91
F-value	6.85***				
χ^2				10.0611**	
Df				3	
Income Reduction					
Experienced Income Reduction	1.11[bc]	0.88	39.47	98.98	1.02
Not Experienced Income Reduction	1.24[ac]	0.87	53.51	92.10	7.90
Find Difficult to Answer	0.58[ab]	0.76	7.02	95.64	4.36
F-value	24.68***				
χ^2				11.6904***	
Df				2	

	Mean Score	St. D.	% of respondents N=1396	Basic Financial Literacy Score, % of respondents	
				50% or less of answers correct	More than 50% of answers correct
	1.14	0.89			
	(2)	(3)	(4)	(5)	(6)
Past Experience					
Had Bad Past Experience	1.50[bc]	0.85	8.67	92.56	7.44
Did Not Have Bad Past Experience	1.13[ac]	0.89	86.32	93.86	6.14
Find Difficult to Answer	0.74[ab]	0.77	5.01	98.57	1.43
F-value	17.61[***]				
χ^2				3.0709	
Df				2	
Record Keeping					
Keeping Records	1.14[c]	0.86	44.84	93.93	6.07
Not Keeping Records	1.16[c]	0.90	52.08	94.09	5.91
Find Difficult to Answer	0.79[ab]	0.91	3.08	93.02	6.98
F-value	3.45[**]				
χ^2				0.0866	
Df				2	
Comparing Terms and Conditions					
Compare	1.14[bc]	0.87	48.85	90.18	9.82
Do Not Compare	0.86[a]	0.85	39.83	97.48	2.52
Find Difficult to Answer	0.97[a]	0.76	11.32	98.10	1.90
F-value	64.69[***]				

		Mean Score	St. D.	% of respondents N=1396	Basic Financial Literacy Score, % of respondents	
		1.14	0.89		50% or less of answers correct	More than 50% of answers correct
		(2)	(3)	(4)	(5)	(6)
	χ^2				34.2548***	
	Df				2	
Trust in Financial Institutions						
High Trust		1.14[d]	0.80	7.45	96.15	3.85
Average Trust		1.27[d]	0.84	27.15	92.61	7.39
Low Trust		1.24[d]	0.90	49.79	93.38	6.62
Find Difficult to Answer		0.60[abc]	0.80	15.62	97.25	2.75
F-value		34.57***				
	χ^2				6.6798**	
	Df				3	
Need To Save						
Having Unspent Money		1.26[bc]	0.87	53.87	92.70	8.24
No Unspent Money		0.99[ac]	0.90	33.24	96.34	3.66
Find Difficult to Answer		0.80[ab]	0.80	12.89	97.22	2.78
F-value		18.60***				
	χ^2				5.6101*	
	Df				2	
Demand for Additional Information						
Need Better or More Information		1.35[cb]	0.87	57.88	91.76	8.24
Do Not Need Better or More Information		0.88[a]	0.87	38.47	96.34	3.66

	Mean Score	St. D.	% of respondents N=1396	Basic Financial Literacy Score, % of respondents	
				50% or less of answers correct	More than 50% of answers correct
	1.14	0.89			
	(2)	(3)	(4)	(5)	(6)
Find Difficult to Answer	0.93[a]	0.80	3.65	97.22	2.78
F-value	47.96***				
χ^2				14.4823***	
Df				2	

Notes: [a,b,c,d, e, f] Superscripts indicate significant differences in Bonferroni mean pairwise comparisons ($p<.05$ or better).

F-value from a simple ANOVA analysis included in the table if it was significant at the .05 level or better and indicated significant differences in means.

$^{*}p \leq 0.10$, $^{**}p \leq 0.05$, $^{***}p \leq 0.01$

Table 13 revealed earlier that those respondents who wanted to know more about financial services were more financially literate than those respondents who were not interested in additional knowledge or information. Considering more advanced financial literacy in Table 15, again we found there was a strong relationship at 99% level of significance between demand for financial information and financial knowledge.

In sum, the results in Tables 14 and 15 suggest that advanced financial literacy is associated with nearly all the same variables as basic financial literacy but the level of statistical significance and strength of the relationships varied. Specifically, at the 99% level of significance, advanced financial literacy levels were associated with only a few variables: region of residency, employment status, income

reduction, comparing terms and conditions, and demand for additional information. At the 95% level of significance, advanced financial literacy levels were associated with education, attitude toward savings, self-assessed financial literacy, and income-subsistence minimum ratio. Age, trust in financial institutions, and need to save variables were related to advanced financial literacy but only at even lower levels of statistical significance.

Use of Financial Services

Table 16 presents the results of Chi-square tests of association between current and intended future use of financial services and basic financial literacy levels. Individuals who demonstrated higher levels of basic financial literacy were more likely to use financial services currently and to intend to use financial services in the next two years. Specifically, 66.2% of those who answered more than one-half of the basic financial literacy questions correctly reported currently using at least one of the 12 financial services listed in the question. Nearly the same proportion (67.0%) of those with greater advanced financial literacy reported that they plan to use financial services in the next two years. There was a statistically significant relationship between current use of financial services and whether a respondent had a higher or lower basic financial literacy score as well as between intended future use of financial services and basic financial literacy.

Table 16

Current and Intended Future Use of Financial Services by Basic Financial Literacy Levels

				Basic Financial Literacy Score, % of respondents	
Dependent Variables	Mean Score	St. d.	% of respondents	50% or less of answers correct	More than 50% of answers correct
	2.78	1.71			
Current Use of Financial Services		N=1396			

Dependent Variables	Mean Score	St. d.	% of respondents	Basic Financial Literacy Score, % of respondents	
	2.78	1.71		50% or less of answers correct	More than 50% of answers correct
Currently use at least one of 12 financial services	3.16	1.56	55.52	48.26	66.19
Currently do not use any of 12 financial services	2.31	1.79	44.48	51.74	33.81
χ^2				43.8294***	
Df				1	
Intended Use of Financial Services			N=1194		
Plan to use at least one of 12 financial services	3.14	1.56	57.29	50.36	67.00
Do not plan to use any of 12 financial services	2.42	1.77	42.71	49.64	33.00
χ^2				33.8434***	
Df				1	

Notes: $^{*}p \leq 0.10$, $^{**}p \leq 0.05$, $^{***}p \leq 0.01$

Table 17 presents the final two Chi-square tests of associations between current and intended future use of financial services and advanced financial literacy levels. There was a statistically significant relationship between current use of financial services and advanced financial literacy. Just over three-fourth of respondents (76.2%) with higher advanced financial literacy scores currently used at least one of the 12 financial services. Slightly smaller proportions of respondents (75.0%) with higher advanced financial literacy scores planned to use financial services in the next two years. The corresponding Chi-

square values for both tests suggest that the associations between current and intended future use of financial services and advanced financial literacy levels were not the result of chances.

Table 17

Current and Intended Future Use of Financial Services by Advanced Financial Literacy Levels

Dependent Variables	Mean Score	St. d.	% of respondents	Basic Financial Literacy Score, % of respondents	
				50% or less of answers correct	More than 50% of answers correct
	1.14	0.89			
Current Use of Financial Services			N=1396		
Currently use at least one of 12 financial services	1.31	0.89	55.52	54.19	76.19
Currently do not use any of 12 financial services	0.93	0.84	44.48	45.81	23.81
χ^2				15.4699***	
Df				1	
Intended Use of Financial Services			N=1194		
Plan to use at least one of 12 financial services	1.32	0.89	57.29	56.15	75.00
Do not plan to use any of 12 financial services	0.91	0.85	42.71	43.85	25.00
χ^2				9.8251***	
Df				1	

Notes: $^{*}p \leq 0.10$, $^{**}p \leq 0.05$, $^{***}p \leq 0.01$

Logistic Regression

This section presents the results of the logistic regression analyses in the following order. First, possible multicollinearity between the independent variables is addressed. Second, results of several logistic regressions that assess the effects of subjectively-assessed financial literacy on the use of financial services are discussed as related to the second research question. Third, logistic regressions that assess the effects of objectively-assessed financial literacy on the use of financial services corresponding with the third research question are presented. Finally, the logistic regressions that assess the relationship between both assessments of financial literacy and use of financial services are described. In each section results related to the analysis of current use of financial services are presented first followed by results related to the analysis of intended future use of financial services.

Following the Andersen Behavioral Model as a theoretical framework for this study, the independent variables were divided into three blocks (predisposing, enabling, and need variables), with each block entered sequentially block-by-block into the logistic regression. In Stage 1, the predisposing variables - demographic, social structural and attitudinal variables - were added. In Stage 2, the respondents' enabling characteristics were added; finally need factors were added to the model in the third stage. The analyses described above were performed for each of the dependent variables: current use of financial services and intended future use of financial services.

Sequential logistic regression allowed examination of the collective and relative contributions of the variables in each block. The test of significance was the difference in the value of the Chi-square statistics between models with and without an additional block of variables.

The independent variables included in the model potentially may be correlated with each other. Multicollinearity may inflate the variances of the parameter estimates. It also may result in wrong signs of regression coefficient estimates, and consequently affect confidence intervals and hypotheses tests (Wooldridge, 2008). The Pearson product-moment correlation test was performed to determine the extent of multicollinearity. The pattern of correlations supported some of the predictions of the model; for example, correlations indicated education was positively related to self-assessed financial literacy as well

as to objectively-assessed financial literacy. Most important, with respect to magnitude, the correlations ranged from weak to moderate indicating that multicolliniarity was not a concern. A second diagnostic confirmed that multicolliniarity was not an issue. The Variance Inflation Factors (VIF) produced by linear regression analyses were examined.[24] VIF is the number of times the variance of the corresponding parameter estimate is increased due to multicollinearity as compared to what it would be if there were no multicollinearity. Usually values of VIF exceeding 10 are regarded as indicating multicollinearity; however, for logistic regression models, values above 2.5 may be a cause for concern (Allison, 1999).In these analyses, there were no such values.

Current Use of Financial Services

Three sets of logistic regressions are described in this section. The first set of logistic regressions investigated the relationship between the log odds of using financial services and subjectively- or self-assessed financial literacy to address hypotheses $H_{021,}$ and H_{A21} of Research Question 2. The second set of logistic regressions investigated the relationship between the log odds of using financial services and objectively-assessed financial literacy, specifically basic financial literacy to address hypotheses H_{031} and H_{A31} of Research Question 3. The third set of logistic regressions investigated the relationship between the log odds of using financial services and both subjectively-assessed and objectively-assessed financial literacy.

Research Question 2: Subjectively-Assessed Financial Literacy and Current Use of Financial Services

To begin the multivariate analysis, the base model examined the relationship between current use of financial services and subjectively-assessed financial literacy. The log odds of being a user of financial services were regressed on three dummy variables representing self-assessed financial literacy, and the results are reported in the columns labeled "Base Model" in Table 18. The model was statistically

[24] Although the Variance Inflation Factor is a collinearity diagnostic statistic produced by linear regression analyses, it is possible to use it in logistic regression. In this case neither the choice of the dependent variable nor the significance of the parameters' estimates matter.

significant at the p<.001 level, indicating that use of financial services could be predicted correctly by self-assessed financial literacy.

Individual tests for each of the dummy coefficients revealed which levels of self-assessed financial literacy were significantly different from having no knowledge and skills. Each of the other three categories of self-assessed financial literacy (unsatisfactory, satisfactory, and good) was associated with significantly higher log odds of using financial services, compared to respondents with no self-assessed financial literacy.

Next, other predisposing variables were added to the model. The results of this logistic regression are presented in the "Stage 1: Predisposing Variables" columns in Table 18. The additional predisposing predictors added to the model were demographic characteristics (age, gender, household size, region of residency), social structural characteristics (employment status and education), and attitude toward savings.

Table 18

Current Use of Financial Service Logistic Regressions: Self-Assessed Financial Literacy

Independent Variables	Self-Assessed Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 1		Model 2		Model 3	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Intercept			-0.286***		-1.314***		-1.483***	
			(0.352)		(0.478)		(0.486)	
Demographic Variables								
Age			-0.009**	0.991	-0.003	0.997	-0.001	0.999
			(0.003)		(0.005)		(0.005)	

Independent Variables	Self-Assessed Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 1		Model 2		Model 3	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Male			-0.121	0.886	-0.123	0.884	-0.117	0.890
			(0.119)		(0.150)		(0.151)	
Household Size			0.004	1.004	-0.032	0.969	-0.046	0.955
			(0.030)		(0.063)		(0.635)	
Region: North-West			0.297	1.356	0.100	1.105	0.127	1.135
			(0.218)		(0.265)		(0.268)	
Region: South			-0.245	0.783	-0.203	0.817	-0.134	0.875
			(0.138)		0.249)		(0.252)	
Region: Volga			0.188	1.207	0.057	1.048	0.055	1.056
			(0.170)		(0.208)		(0.210)	
Region: Ural			0.122	1.130	-0.102	0.909	-0.127	0.881
			(0.299)		(0.298)		(0.301)	
Region: Siberia			-0.477**	0.62	-0.785***	0.456	-0.723***	0.485
			(0.202)		(0.252)		(0.253)	
Region: Far East			0.210	1.240	0.211	1.235	0.253	1.287
			(0.243)		(0.298)		(0.302)	
Social Structure Variables								
Education: High			-0.510***	0.6	-0.190	0.827	-0.171	0.843
school and less			(0.183)		(0.231)		(0.232)	
Education: Some			-0.317**	0.73	-0.085	0.965	-0.046	0.955
college			(0.179)		(0.222)		(0.232)	

Independent Variables	Self-Assessed Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 1		Model 2		Model 3	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Employed			0.618***	1.86	0.163	1.177	0.127	1.135
			(0.127)		(0.177)		(0.179)	
Attitude Variables								
Attitude Toward			0.553***	1.74	0.465***	1.593	0.393	1.482
Saving			(0.220)		(0.149)		(0.153)	
Financial Literacy:	0.86***	2.36	0.662***	1.94	0.722***	2.059	0.694***	2.001
Unsatisfactory	(0.15)		(0.16)		(0.194)		(0.196)	
Financial Literacy:	1.33***	3.78	0.963***	2.62	0.783***	2.187	0.713***	2.041
Satisfactory	(0.15)		(0.159)		(0.203)		(0.206)	
Financial Literacy:	1.31***	3.70	0.882***	2.42	0.743**	2.102	0.598**	1.818
Good	(0.20)		(0.220)		(0.149)		(0.302)	
Enabling Variables								
Income/Subsistence					0.168***	1.183	0.177***	1.194
Minimum Ratio					(0.059)		(0.069)	
Basic Financial Literacy								
Did not Experience					-0.188	0.828	-0.173	0.841
Income Reduction					(0.147)		(0.148)	
Negative Previous					0.721**	2.057	0.065**	1.906
Experience					(0.293)		(0.300)	
Trust in Financial					0.227	1.255	0.171	1.187
Institutions: High					(0.290)		(0.291)	

Independent Variables	Self-Assessed Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 1		Model 2		Model 3	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Trust in Financial Institutions: Average					0.147 (1.177)	1.158	0.131 (0.178)	1.139
Keep Records					0.117 (0.229)	1.125	0.115 (0.230)	1.122
Compare Terms and Conditions					1.420*** (0.155)	4.183	1.340*** (0.157)	3.817
Need Variables								
Need to Save							0.310 (0.261)	1.362
Need Better and More Information							0.440*** (0.156)	1.552
N	1369		1369		1093		1093	
Nagelkerke R^2	0.0780		0.1651		0.3134		0.3233	
-2 Log Likelihood Increase for Added Variables	91.999****		96.828****		525.401****		9.029**	
-2 Log Likelihood, Model	1826.245		1729.417		1203.599		1194.570	
-2 Log Likelihood, Intercept Only	1918.244		1918.244		1501.797		1501.797	

Notes: ****p<.001, ***p<.01, **p<.05, *p<.1

The increased value of the block model after adding the remaining predisposing variables was highly significant ($\chi 2=96.828$, $p<0.0001$), suggesting that at least one of the additional variables was important. The coefficients of the additional variables revealed that the significance of the added variable set was due primarily to the strong impact of the employment variable and the variable assessing attitude toward savings. The odds of using financial services were about 1.9 times as large for employed respondents as they were for respondents not in the labor force or in other groups. A positive attitude about the need to save some money when managing everyday revenues increased the odds of using financial services by 74% compared to those who did not save any money. Relative to the logistic regression without the other predisposing variables, coefficients for the variables representing self-assessed financial literacy were all reduced, indicating that the additional predisposing variables accounted for some of the differences in self-assessed financial literacy.

The next block included the enabling variables: the income-subsistence minimum ratio, not having experienced an unexpected income reduction, a previous negative experience with financial services, trust in financial institutions, comparing terms and conditions, and keeping records of expenditures and revenues. Results are reported in the columns labeled "Stage 2: Enabling Variables" in Table 18. This block of variables also made a significant contribution to the model ($\chi^2 = 519.818$, df = 7, $p <.0001$). Among the added variables, the income-subsistence minimum ratio and comparing terms and conditions were statistically significantly different from zero at the 1% level, and the coefficient indicating a negative past experience was statistically significantly different from zero at the 5% level. Each unit increase in the income-subsistence minimum ratio increased the odds of the use of financial services by 1.2. Those respondents who compared terms and conditions of financial services were four times as likely to use financial services as respondents who had not compared terms.

Somewhat counterintuitive is the result that the odds of using financial services were increased by a factor of 2.1 when the respondents had had a negative experience with financial services compared to those who had never had such an experience, controlling for other variables in the model. One might assume that a previous negative experience might reduce the likelihood of using financial services.

However, perhaps the respondents learned from that experience and believed they could avoid problems in the future or in situations in which they must use financial services (for example, direct deposit of wages). One obvious explanation is that in order to have a bad experience respondents have to be using a financial institution, so on some level this result makes sense.

In the third and final stage, the need variables were added to the model. Controlling for other variables, the impact of the need variables was significantly different from zero at the 5% level (the value of the block model was $\chi^2 = 9.029$). Of the added variables, demand for better and more information was statistically significantly different from zero at the 1% level. Since the parameter estimate was greater than 0 (0.44), respondents who indicated they needed better or more information about financial services were more likely to use financial services then those who did not have a need or found it difficult to answer the question.

Overall, among the predisposing demographic variables, only respondents' residence in the Siberian Federal Region was significant across all four regressions (Table 18). Compared with the Central Federal Region, respondents from the Siberian Federal Region were about 51.5% less likely to use financial services (Model 3). The percentage difference in log odds between respondents from the Siberian and Central Federal Regions increased across Models 1-3 from 32% to 51.5%. The only other demographic variable that was significant was age of the respondent which was significant only in Model 1 that included only the predisposing variables. In this model, the log odds of current use of financial services decreased by about 0.09% for each year increase in age. As for the social structure characteristics, being in the labor force, having completed a secondary education or less, and having some college education or more were significant only in Model 1. In this model, respondents in the labor force were 86% more likely to use financial services than retired respondents, students, house workers, or other respondents. Compared to college graduates, respondents who had completed a secondary education or less were 40% less likely to use financial services and respondents with some college education were 27%, less likely.

Among the attitude variables, subjectively-assessed financial literacy as well as attitude toward saving were significant determinants of the log likelihood of use of financial services in each of the three models. As subjective financial literacy increased by one unit, the odds of using financial services substantially increased compared with respondents with no self-assessed financial literacy. Across the models, the relative size of the coefficients was as expected (higher) comparing those with satisfactory knowledge to those with unsatisfactory knowledge. However, the coefficients for the dummy variable "Good Knowledge" were smaller than the coefficients for the dummy variable "Satisfactory Knowledge." A positive attitude toward saving also increased the likelihood of use of financial services. Across the three models respondents who had a positive attitude toward saving were 48% to 74% more likely to use financial services than those who did not have a positive attitude toward saving or those who found it difficult to answer the question.

With respect to the enabling variables, three variables were significant in two of three regressions (Models 2 and 3): the income-subsistence minimum ratio, a previous negative experience with financial institutions, and comparing terms and conditions. As mentioned earlier with respect to need variables only an expressed need for better and more information was a significant factor in the final Model 3.

In sum, in all three regressions (Model 1-3), the effect of subjectively-assessed financial literacy on use of financial services, holding other predisposing, enabling, and need characteristics of the respondents constant, was statistically significant. It was significant at the 1% level for unsatisfactory and satisfactory knowledge and skills (compared to none), and at the 5% level for good knowledge (compared to none).

Research Question 3: Objectively-Assessed Financial Literacy and Current Use of Financial Services

Four logistic regressions were specified in the same manner as the previous regressions. That is, a base model examined the relationship between current use of financial services and basic financial literacy only; those results are shown in the columns labeled "Basic Financial Literacy" in Table 19. Objectively-assessed basic financial literacy increased the likelihood of use of financial services by 34% for each unit increase in the basic financial literacy score.

Several predisposing variables were significant when they were added in the first stage of the logistic regression. The results, reported in the columns labeled "Stage 1: Predisposing Variables" in Table 19, indicated that age of respondents, the Siberian region of residence, having completed a secondary education or less, being in the labor force, and having a positive attitude toward saving were all significantly related to use of financial services. Age, living in the Siberian Federal Region (compared to the Central Federal Region), and having a high school education or less (compared to being a college graduate) were all negatively related to use of financial services. Compared to college graduates, respondents who reported lower educational levels (high school and less) were about 39% less likely to use financial services. Being in the labor force (compared to not being in) and having a positive attitude toward saving (compared to not saving) were positively related to use of financial services.

The second stage logistic regression (Model 5) in which the enabling variables were added are reported in the columns labeled "Stage 2: Enabling Variables" in Table 18. Age, educational attainment, and employment, which were significant in Model 4, were not significantly different from zero in Model 5. The income-subsistence minimum ratio, a previous negative experience with financial institutions, and comparing terms and conditions were significant predictors among the enabling characteristics. For example, the probability of current use of financial services increased by about 19% for each unit increase in the income-subsistence minimum ratio.

The results after adding the last block, need variables (reported in the columns labeled "Stage 3: Need Variables" in Table 19), indicated that only one, the need for more and better financial information, was significant. The Siberian Region of residency, a positive attitude toward saving, the income-subsistence minimum ratio, having a negative experience with financial institutions, and comparing terms and conditions as well as objectively-assessed basic financial literacy (each of these variables were significant in the previous stage) were significant predictors of use of financial services in the complete model.

Overall, as the basic financial literacy score increased by one unit, the odds likelihood of use of financial services increased by 23% in the first stage results, by 16% in the second stage, and by 16% in

the third stage. Thus, basic financial literacy was a significant determinant of the likelihood of use of financial services at each stage of analyses although the impact decreased after the first stage.

Table 19

Current Use of Financial Service Logistic Regressions: Basic Financial Literacy

Independent Variables	Basic Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 4		Model 5		Model 6	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Intercept	-0.5877		-0.232		-1.215		-1.421***	
	(0.106)		(0.350)		(0.474)		(0.009)	
Demographic Variables								
Age			-0.009**	0.991	-0.003	0.997	-0.001	0.999
			(0.004)		(0.005)		(0.005)	
Male			-0.105	0.9	-0.042	0.959	-0.104	0.901
			(0.118)		(0.62)		(0.150)	
Household Size			-0.011	0.989	-0.114	0.892	-0.056	0.945
			(0.050)		(0.149)		(0.063)	
Region: North-West			0.212	1.237	-0.020	0.262	0.011	1.011
			(0.218)				(0.266)	
Region: South			-0.267	0.766	-0.249	0.780	-0.187	0.830
			(0.186)		(0.248)		(0.256)	
Region: Volga			0.149	1.161	0.008	1.008	0.014	1.015
			(0.176)		(0.208)		(0.209)	
Region: Ural			0.189	1.208	-0.096	0.909	-1.131	0.878
			(0.236)		(0.296)		(0.299)	

Independent Variables	Basic Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 4		Model 5		Model 6	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Region: Siberia			-0.490**	0.613	-0.816***	0.442	-0.766***	0.465
			(0.203)		(0.251)		(0.252)	
Region: Far East			0.380	1.462	0.284	1.329	0.310	1.363
			(0.240)		(0.297)		(0.301)	
Social Structure Variables								
Education: High			-0.493***	0.611	-0.167	0.846	-0.131	0.877
School and Less			(0.182)		(0.230)		(0.232)	
Education: Some			-0.264	0.768	0.001	1.001	-0.0001	1.000
College			(1,175)		(0.222)		(0.224)	
Employed			0.634***	1.885	0.171	1.187	0.136	1.146
			(0.127)		(0.177)		(0.178)	
Attitude Variables								
Attitude Toward			0.551***	1.735	0.424***	1.529	0.345**	1.412
Saving			(0.122)		(0.150)		(0.154)	
Financial Literacy:								
Unsatisfactory								
Financial Literacy:								
Satisfactory								
Financial Literacy:								
Good								
Enabling Variables								

Independent Variables	Basic Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 4		Model 5		Model 6	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Income/Subsistence Minimum Ratio					0.170*** (0.058)	1.186	0.178*** (0.059)	1.195
Basic Financial Literacy	0.2949*** (0.033)	1.343	0.207*** (0.036)	1.230	0.155*** (0.045)	1.167	0.147*** (0.045)	1.158
Did not Experience Income Reduction					-0.192 (0.146)	0.826	-0.0175 (0.147)	0.839
Negative Previous Experience					0.748** (0.295)	2.112	0.661** (0.298)	1.937
Trust in Financial Institutions: High					0.240 (0.282)	1.271	0.157 (0.284)	1.170
Trust in Financial Institutions: Average					0.235 (0.174)	1.264	0.204 (0.175)	1.226
Keep Records					0.174 (0.227)	1.189	0.172 (0.228)	1.188
Compare Terms and Conditions					1.480*** (0.152)	4.168	1.327*** (0.155)	3.769
Need Variables								
Need to Save							0.294 (0.258)	1.341
Need Better and More Information							0.478*** (0.154)	1.612
N	1369		1369		1093		1093	

Independent Variables	Basic Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 4		Model 5		Model 6	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Nagelkerke R^2	0.0854		0.1694		0.3197		0.3281	
-2 Log Likelihood	83.8417****		99.842****		523.966****		10.591****	
Increase for Added Variables								
-2 Log Likelihood, Model	1834.402		1734.56		1210.294		1199.703	
-2 Log Likelihood, Intercept Only	1918.244		1918.244		1501.797		1501.797	

Notes: ****p<.001, ***p<.01, **p<.05, *p<.1

Subjectively-Assessed and Objectively-Assessed Financial Literacy and Current Use of Financial Services

Three logistic regressions were performed to examine the influence of the predictors of current use of financial services when both types of financial literacy – subjectively-assessed and objectively-assessed financial literacy –were included in the model. Results are presented in Table 20. To capture even more completely the possible impact of objectively-assessed financial literacy, both measures of financial literacy (basic and advanced) were included in the logistic regressions in Model 8.

When only the predisposing variables were included in the regression, the obtained Model 7 (results in the columns labeled "Stage 1: Predisposing Variables" in Table 20) was identical to Model 1 described earlier. When the enabling variables, which included objective measures of basic and advanced financial literacy, were added, the regression included three measures of financial literacy. The results of

this stage of the logistic regression revealed that the coefficients for both self-assessed financial literacy ($p<.01$ and $p<.1$) as well as basic financial literacy ($p<.05$) were significantly different from zero. The odds of using financial services compared to not using them increased by a factor of 1.1 for each unit increase in the basic financial literacy score, controlling for other variables in the model. Since this is very close to 1.0 (no effect for odds ratios), it was not surprising that basic financial literacy was significant only at the 5% level. The coefficient for advanced financial literacy was not significant. Other significant predictors in Model 8 of the likelihood of using financial services were the Siberian Federal Region residency, attitude toward saving, the income-subsistence minimum ratio, a negative experience with financial institutions, and comparing terms and conditions.

The third stage, in which the need variables were added, was the final and complete model of current use of financial services. With need variables in the regression, one can see that a host of predisposing, enabling, and need characteristics of the respondents inform the probability that they reported current use of financial services. Statistically significant positive correlates of current use of financial services in the final model (in the columns labeled "Stage 3: Need Variables" of Table 20) included subjectively- and objectively-assessed financial literacy, the income-subsistence minimum ratio, attitude toward saving, a negative experience with financial services, having compared terms and conditions, and a need for more and better financial information. Specifically, reporting unsatisfactory or satisfactory self-assessed financial literacy (compared to none), a higher income-subsistence minimum ratio, higher objectively-assessed basic financial literacy scores, a negative previous experience with financial institutions, having compared terms and conditions, and needing more or better financial information increased the log odds of current use of financial services. In contrast, the respondents from the Siberian Federal Region compared to those from the Central Federal Region were less likely to report current use of financial services.

Table 20

Current Use of Financial Service Logistic Regressions: Subjective and Objective Financial Literacy

Independent Variables	Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Model 7		Model 8		Model 9	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Intercept	-0.286 (0.352)		-1.659 (0.499)		-1.806*** (0.506)	
Demographic Variables						
Age	-0.009** (0.004)	0.991	-0.001 (0.005)	0.999	0.000 (0.005)	1.000
Male	-0.121 (0.119)	0.886	-0.116 (0.150)	0.890	-0.111 (0.151)	0.895
Household Size	0.004 (0.05)	1.004	-0.035 (0.063)	0.965	-0.05 (0.063)	0.951
Region: North-West	0.297 (0.219)	1.346	0.05 (0.267)	1.051	0.071 (0.27)	1.074
Region: South	-0.245 (0.188)	0.783	-0.231 (0.25)	0.794	-0.161 (0.252)	0.851
Region: Volga	0.188 (0.170)	1.207	0.003 (0.211)	1.003	0.011 (0.212)	1.011
Region: Ural	0.122 (0.239)	1.130	-0.122 (0.298)	0.886	-0.145 (0.301)	0.865
Region: Siberia	-0.478** (0.202)	0.620	-0.798*** (0.256)	0.450	-0.740*** (0.257)	0.477

Independent Variables	Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Model 7		Model 8		Model 9	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Region: Far East	0.211	1.235	0.284	1.328	0.318	1.374
	(0.243)		(0.303)		(0.306)	
Social Structure Variables						
Education: High	-0.510***	0.600	-0.113	0.893	-0.097	0.908
School and Less	(0.183)		(0.234)		(0.235)	
Education: Some	-0.318**	0.728	0.008	1.008	-0.004	0.996
College	(0.176)		(0.224)		(0.226)	
Employed	0.618***	1.855	0.171	1.186	0.137	1.147
	(0.127)		(0.178)		(0.179)	
Attitude Variables						
Attitude Toward	0.553***	1.738	0.395***	1.484	0.327**	1.387
Saving	(0.122)		(0.152)		(0.155)	
Financial Literacy:	0.663***	1.940	0.621***	1.861	0.596***	1.815
Unsatisfactory	(0.159)		(0.198)		(0.200)	
Financial Literacy:	0.963***	2.620	0.590***	1.804	0.528**	1.695
Satisfactory	(0.162)		(0.216)		(0.219)	
Financial Literacy:	0.883***	2.417	0.556*	1.744	0.417	1.517
Good	(0.22)		(0.31)		(0.313)	
Enabling Variables						
Income/Subsistence			0.160***	1.173	0.169***	1.184
Minimum Ratio			(0.059)		(0.059)	
Basic Financial			0.102**	1.108	0.103**	1.109
Literacy			(0.049)		(0.049)	

Independent Variables	Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Model 7		Model 8		Model 9	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Advanced Financial Literacy			0.130 (0.091)	1.139	0.116 (0.092)	1.123
Did Not Experience Income Reduction			-0.224 (0.148)	0.799	-0.207 (0.149)	0.813
Negative Previous Experience			0.685** (0.296)	1.984	0.612** (0.3)	1.844
Trust in Financial Institutions: High			0.241 (0.29)	1.273	0.181 (0.292)	1.199
Trust in Financial Institutions: Average			0.164 (0.177)	1.178	0.147 (0.178)	1.159
Keep Records			0.120 (0.230)	1.128	0.119 (0.231)	1.126
Compare Terms and Conditions			1.369*** (0.156)	3.930	1.293*** (0.159)	3.643
Need Variables						
Need to Save					0.316 (0.263)	1.372
Need Better and More Information					0.426*** (0.157)	1.531
N	1396		1093		1093	
Nagelkerke R^2	0.1694		0.3266		0.3345	

Independent Variables	Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Model 7		Model 8		Model 9	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
-2 Log Likelihood Increase for Added Variables	188.826***		533.29***		8.497**	
-2 Log Likelihood, Model	1729.417		1196.124		1187.627	
-2 Log Likelihood, Intercept Only	1918.244		1501.797		1501.797	

Notes: ****p<.001, ***p<.01, **p<.05, *p<.1

Intended Future Use of Financial Services

The first set of logistic regressions in this section addressed hypotheses $H_{022,}$ and H_{A22} of Research Question 2. The second set of logistic regressions addressed hypotheses H_{032} and H_{A32} of Research Question 3. The third set of logistic regressions investigated the relationship between the log odds of using financial services and both subjectively-assessed and objectively-assessed financial literacy.

Research Question 2: Self-Assessed Financial Literacy and Intended Future Use of Financial Services

Four regressions investigated the extent to which self-assessed financial literacy predicts the intended future use of financial services. The models for the four regressions are identical to those that were just outlined for current use of financial services except that the dependent variable measured intended future use. As shown in the columns labeled "Self-Assessed Financial Literacy" in Table 21, the base model demonstrated that, as with current use of financial services, those who indicated they had some level of financial knowledge had significantly higher log odds of intending to use financial services in the future than respondents with no knowledge.

When the other predisposing variables were added to the model (Model 10), self-assessed financial literacy remained significant. Specifically, compared to the respondents from the Central Federal Region, respondents from the North-Western and the Ural Federal Regions were about 58% and 70%, correspondingly, more likely to intend to use financial services in the next two years. As in the previous analyses of current use of financial services, respondents from the Siberian Region were less likely (47%) compared to respondents from the Central Region to intend to use financial services in the future.

As in the analyses of current use of financial services, several predisposing variables (age of respondents, education level of high school or less, being in the labor force) were significant in stage two of the analysis of future use. What was different from the previous analysis was that the predisposing variables remained significant even after the block of enabling variables (Model 11) and the block of need variables (Model 12) were added. In Model 11, having compared terms and conditions was the only significant enabling variable. That variable remained significant in Stage 3, in which both need variables also were significant for the first time.

Overall, in the final model several variables were statistically significant predictors of intended future use of financial services. As with the analyses of current use of financial services, attitude toward saving, having some self-assessed financial literacy, having compared terms and conditions, and needing more and better information increased the likelihood of intending to use financial services in the future. Also as in the previous analysis, living in the Siberian Federal Region (compared to the Central Federal Region) and having always, or very often any money unspent before new earnings arrived increased the likelihood of intending to use financial services in the future. Also different from analysis of current financial services, the likelihood of using financial services in the future decreased with the age of the respondents; respondents who had completed a secondary education or less compared to college graduates also were less likely to report intending to use financial services in the future.

Table 21

Intended Future Use of Financial Services Logistic Regressions: Self-Assessed Financial Literacy

Independent Variables	Self-Assessed Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 10		Model 11		Model 12	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Intercept	-0.753		-0.313		-0.079		-0.770	
	(0.128)		(0.406)		(0.509)		(0.549)	
Demographic Variables								
Age			-0.028**	0.972	-0.025***	0.976	-0.021***	0.980
			(0.004)		(0.005)		(0.006)	
Male			-0.105	0.901	-0.06	0.942	-0.052	0.949
			(0.137)		(0.164)		(0.172)	
Household Size			0.014	1.014	-0.019	0.981	-0.052	0.949
			(0.056)		(0.067)		(0.071)	
Region: North-West			0.455*	1.577	0.205	1.227	0.368	1.445
			(0.243)		(0.281)		(0.299)	
Region: South			0.045	1.046	-0.009	0.991	0.148	1.159
			(0.243)		(0.274)		(0.288)	
Region: Volga			0.245	1.278	0.237	1.267	0.323	1.382
			(0.192)		(0.226)		(0.238)	
Region: Ural			0.533*	1.704	0.387	1.472	0.278	1.320
			(0.275)		(0.323)		(0.344)	
Region: Siberia			-0.631***	0.532	-0.810***	0.445	-0.686**	0.503
			(0.231)		(0.271)		(0.281)	

Independent Variables	Self-Assessed Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 10		Model 11		Model 12	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Region: Far East			1.150***	3.157	0.941***	2.562	1.204***	3.333
			(0.301)		(0.343)		(0.369)	
Social Structure Variables								
Education: High School and Less			-0.533**	0.587	-0.531**	0.588	-0.505*	0.603
			(0.21)		(0.252)		(0.265)	
Education: Some College			-0.278	0.758	-0.264	0.768	-0.285	0.752
			(0.2)		(0.241)		(0.254)	
Employed			0.523***	1.688	0.309*	1.362	0.232	1.261
			(0.147)		(0.188)		(0.2)	
Attitude Variables								
Attitude Toward Saving			0.767***	2.153	0.576***	1.779	0.423**	1.527
			(0.139)		(0.161)		(0.172)	
Financial Literacy: Unsatisfactory	0.987***	2.683	0.722***	2.059	0.619***	1.856	0.553**	1.739
	(0.166)		(0.183)		(0.213)		(0.225)	
Financial Literacy: Satisfactory	1.449***	4.260	0.895***	2.446	0.704***	2.022	0.503**	
	(0.165)		(0.184)		(0.223)		(0.236)	
Financial Literacy: Good	2.244***	9.432	1.674***	5.336	1.361***	3.899	1.012***	2.751
	(0.248)		(0.271)		(0.337)		(0.352)	
Enabling Variables								
Income/Subsistence Minimum Ratio					0.048	1.049	0.094	1.194
					(0.058)		(0.062)	

Independent Variables	Self-Assessed Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 10		Model 11		Model 12	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Basic Financial Literacy								
Did Not Experience					0.014	1.014	0.058	1.060
Income Reduction					(0.158)		(0.167)	
Negative Previous					0.136	1.146	-0.165	0.848
Experience					(0.281)		(0.294)	
Trust in Financial					0.288	1.334	0.144	1.155
Institutions: High					(0.335)		(0.342)	
Trust in Financial					-0.074	0.928	-0.118	0.889
Institutions: Average					(0.189)		(0.199)	
Keep Records					0.123	1.131	0.097	1.155
					(0.240)		(0.253)	
Compare Terms and					1.084***	2.957	0.878***	2.407
Conditions					(0.166)		(0.175)	
Need Variables								
Need to Save							0.533*	1.704
							(0.299)	
Need Better and More							1.465***	4.325
Information							(0.171)	
N	1209		1209		962		962	
Nagelkerke R^2	0.1352		0.2969		0.3473		0.4244	

Independent Variables	Self-Assessed Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 10		Model 11		Model 12	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
-2 Log Likelihood	128.34****		173.74****		288.40****		77.08****	
Increase for Added Variables								
-2 Log Likelihood, Model	1522.272		1348.537		1029.699		951.919	
-2 Log Likelihood, Intercept Only	1650.610		1650.610		1318.102		1318.102	

Notes: ****p<.001, ***p<.01, **p<.05, *p<.1

Research Question 3: Objectively-Assessed Basic Financial Literacy and Intended Future Use of Financial Services

Four additional logistic regressions were estimated to understand the effect that basic financial literacy might have on the intended future use of financial services. Model 13 (reported in the columns labeled "Basic Financial Literacy" in Table 22) was identical to the base model in Table 18. The predisposing variables, including only one financial literacy measure (objectively-assessed financial literacy), was used in Model 13. Model 14 was identical to Model 13, except for the addition of the enabling variables. Finally, the need variables were added in Model 15.

The results of the four regressions, presented in Table 22, are very similar to those in Table 21 in which the only measure of financial literacy was self-assessed financial literacy. The same variables were statistically significant predictors of intended future use of financial services: age of respondents, region of residency (Siberian, Far Eastern compared to Central), attitude toward saving, education attainment

(having a completed high school education or less compared to being college graduate), comparing terms and conditions, need to save, and need for better and more information. The income-subsistence ratio was significant in the models using the basic financial literacy score but only marginally. There was one important difference between the regressions that included self-assessed financial literacy versus an objective measure. Self-assessed financial literacy was significant in each stage of the regression. In contrast, the basic financial literacy score was only significant in the first stage of the regression.

Table 22

Intended Future Use of Financial Service Logistic Regressions: Basic Financial Literacy

Independent Variables	Basic Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 13		Model 14		Model 15	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Intercept	-0.436		0.702		0.186		-0.563	
	(0.115)		(0.399)		(0.503)		(0.545)	
Demographic Variables								
Age			-0.029***	0.971	-0.025***	0.975	-0.021***	0.979
			(0.004)		(0.005)		(0.006)	
Male			-0.084	0.920	-0.07	0.933	-0.053	0.948
			(0.134)		(0.162)		(0.171)	
Household Size			0.006	1.006	-0.03	0.970	-0.063	0.939
			(0.056)		(0.065)		(0.07)	
Region: North-West			0.479**	1.614	0.194	1.214	0.37	1.448
			(0.239)		(0.278)		(0.296)	
Region: South			0.104	1.109	0.022	1.023	0.164	1.178
			(0.214)		(0.27)		(0.284)	

Independent Variables	Basic Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 13		Model 14		Model 15	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Region: Volga			0.294	1.342	0.287	1.333	0.359	1.431
			(0.190)		(0.225)		(0.238)	
Region: Ural			0.609**	1.838	0.412	1.509	0.281	1.325
			(0.270)		(0.320)		(0.343)	
Region: Siberia			-0.519**	0.595	-0.687***	0.503	-0.620**	0.538
			(0.225)		(0.265)		(0.277)	
Region: Far East			1.442***	4.228	1.098***	2.998	1.286***	3.617
			(0.296)		(0.339)		(0.364)	
Social Structure Variables								
Education: High			-0.644***	0.525	-0.598**	0.550	-0.539**	0.583
School and Less			(0.206)		(0.250)		(0.264)	
Education: Some			-0.324*	0.723	-0.288	0.750	-0.302	0.739
College			(0.196)		(0.239)		(0.253)	
Employed			0.531***	1.700	0.277	1.319	0.216	1.241
			(0.144)		(0.186)		(0.198)	
Attitude Variables								
Attitude Toward			0.848***	2.334	0.607***	1.835	0.435**	1.545
Saving			(0.137)		(0.161)		(0.173)	
Financial Literacy:								
Unsatisfactory								
Financial Literacy:								
Satisfactory								

Independent Variables	Basic Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 13		Model 14		Model 15	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Financial Literacy: Good								
Enabling Variables								
Income/Subsistence					0.073	1.076	0.108*	1.113
Minimum Ratio					(0.057)		(0.061)	
Basic Financial	0.261***	1.298	0.121***	1.128	0.071	1.073	0.055	1.056
Literacy	(0.036)		(0.041)		(0.05)		(0.052)	
Did Not Experience					0.045	1.046	0.089	1.093
Income Reduction					(0.156)		(0.165)	
Negative Previous					0.194	1.214	-0.128	0.880
Experience					(0.279)		(0.293)	
Trust in Financial					0.423	1.526	0.202	1.224
Institutions: High					(0.324)		(0.335)	
Trust in Financial					0.037	1.038	-0.046	0.955
Institutions: Average					(0.185)		(0.195)	
Keep Records					0.140	1.150	0.106	1.112
					(0.235)		(0.248)	
Compare Terms and					1.156	3.176	0.916***	2.499
Conditions					(0.163)		(0.172)	
Need Variables								
Need to Save							0.564*	1.758
							(0.294)	

Independent Variables	Basic Financial Literacy		Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Base Model		Model 13		Model 14		Model 15	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Need Better and More Information							1.516*** (0.169)	4.555
N	1209		1209		962		962	
Nagelkerke R^2	0.060		0.263		0.329		0.415	
-2 Log Likelihood Increase for Added Variables	55.59****		207.76****		340.04****		86.14****	
-2 Log Likelihood, Model	1595.03		1387.26		1047.58		961.45	
-2 Log Likelihood, Intercept Only	1650.61		1650.61		1318.10		1318.10	

Notes: ****p<.001, ***p<.01, **p<.05, *p<.1

Subjectively-Assessed and Objectively-Assessed Financial Literacy and Intended Future Use of Financial Services

Table 23 contains the estimates for the parameters obtained through the three subsequent regressions in which the predisposing, enabling, and need variables were introduced sequentially. The third stage in which the need variables were added was the final and complete model of intended future use of financial services (reported in the columns "Stage 3: Need Variables").

Results in Tables 20-23 for intended future use of financial services reveal consistency in the effects of several predictors. Being younger, residency in the Far Eastern Federal Region relative to the Central Federal Region, having completed college (relative to high school or less), having some self-

assessed financial literacy (as compared to none), a positive attitude toward saving, having compared terms and conditions, and expressing a need to save as well as for better and more information were significant and positive determinants of the intention to use financial services in the next two years. Living in the Siberian Federal Region (relative to the Central region) was a negative and significant determinant. Unlike the analysis of current use of financial services, age, education attainment, and need to save remained important and significant predictors of future use of financial services in Model 3, which included all of the variables.. At the same time the effect of basic financial literacy as well as advanced financial literacy was not significant in the final model.

In sum, results from the logistic regressions suggest that many of the bivariate relationships initially identified in the Chi-square analyses reported in Tables 1 through 5 were confirmed in the multivariate analyses. Specifically, basic financial literacy as well as subjectively-assessed financial literacy were associated with current use of financial services even after controlling for other predisposing, enabling, and need variables. In contrast, the association between basic financial literacy and intended future use of financial services did not remain once predisposing, other enabling, and need variables suggested by the theoretical framework were added in the regression.

Table 23

Intended Future Use of Financial Service Logistic Regressions: Subjective and Objective Financial Literacy

Independent Variables	Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Model 1		Model 2		Model 3	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Intercept	0.313 (0.406)		-0.230 (0.531)		-0.887 (0.570)	
Demographic Variables						

Independent Variables	Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Model 1		Model 2		Model 3	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Age	-0.028***	0.972	-0.024***	0.977	-0.020***	0.980
	(0.004)		(0.005)		(0.006)	
Male	-0.105	0.901	-0.065	0.937	-0.055	0.946
	(0.137)		(0.164)		(0.172)	
Household Size	0.014	1.014	-0.015	0.985	-0.050	0.951
	(0.056)		(0.067)		(0.072)	
Region: North-West	0.455**	1.577	0.217	1.242	0.370	1.448
	(0.243)		(0.284)		(0.300)	
Region: South	0.045	1.046	-0.002	0.998	0.152	1.165
	(0.22)		(0.275)		(0.288)	
Region: Volga	0.245	1.278	0.244	1.276	0.326	1.385
	(0.192)		(0.228)		(0.24)	
Region: Ural	0.533*	1.704	0.399	1.490	0.286	1.332
	(0.275)		(0.323)		(0.344)	
Region: Siberia	-0.631***	0.532	-0.776***	0.460	-0.664**	0.515
	(0.231)		(0.273)		(0.283)	
Region: Far East	1.150***	3.157	0.990***	2.691	1.242***	3.461
	(0.301)		(0.346)		(0.372)	
Social Structure Variables						
Education: High	-0.533**	0.587	-0.508**	0.601	-0.484*	0.616
School and Less	(0.21)		(0.255)		(0.269)	
Education: Some	-0.278	0.758	-0.251	0.778	-0.271	0.762
College	(0.2)		(0.242)		(0.255)	

Independent Variables	Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Model 1		Model 2		Model 3	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Employed	0.523***	1.688	0.310*	1.363	0.233	1.262
	(0.147)		(0.189)		(0.2)	
Attitude Variables						
Attitude Toward	0.767***	2.153	0.555***	1.742	0.404**	1.498
Saving	(0.139)		(0.164)		(0.175)	
Financial Literacy:	0.722***	2.059	0.598***	1.818	0.534**	1.706
Unsatisfactory	(0.183)		(0.217)		(0.23)	
Financial Literacy:	0.895***	2.446	0.671***	1.957	0.473**	1.605
Satisfactory	(0.184)		(0.236)		(0.249)	
Financial Literacy:	1.674***	5.336	1.342***	3.825	0.991***	2.694
Good	(0.271)		(0.348)		(0.364)	
Enabling Variables						
Income/Subsistence			0.049	1.050	0.094	1.099
Minimum Ratio			(0.058)		(0.062)	
Basic Financial			-0.006	0.994	0.002	1.002
Literacy			(0.054)		(0.056)	
Advanced Financial			0.122	1.129	0.088	1.092
Literacy			(0.097)		(0.101)	
Did Not Experience			0.001	1.001	0.047	1.048
Income Reduction			(0.159)		(0.167)	
Negative Previous			0.112	1.118	-0.185	0.831
Experience			(0.283)		(0.297)	

Independent Variables	Stage 1: Predisposing Variables		Stage 2: Enabling Variables		Stage 3: Need Variables	
	Model 1		Model 2		Model 3	
	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio	Coef. (SE)	Odds Ratio
Trust in Financial Institutions: High			0.306 (0.334)	1.357	0.157 (0.342)	1.170
Trust in Financial Institutions: Average			-0.072 (0.19)	0.930	-0.116 (0.199)	0.891
Keep Records			0.12 (0.241)	1.127	0.094 (0.253)	1.099
Compare Terms and Conditions			1.054*** (0.168)	2.870	0.858*** (0.177)	2.358
Need Variables						
Need to Save					0.539* (0.3)	1.715
Need Better and More Information					1.458*** (0.171)	4.295
N	1209		962		962	
Nagelkerke R^2	0.2969		0.3489		0.4251	
-2 Log Likelihood Increase for Added Variables	302.073****		220.42****		76.966****	
-2 Log Likelihood, Model	1348.537		1028.117		951.151	
-2 Log Likelihood, Intercept Only	1650.610		1318.102		1318.102	

Notes: ****p<.001, ***p<.01, **p<.05, *p<.1

CHAPTER 5

SUMMARY AND DISCUSSION

This chapter provides a summary of the findings and a discussion of the results within the context of existing research and theory. The chapter also puts the findings in the context of Russia, specifically as a transition economy. The following presents a summary of the findings and a discussion of the results; implications, and limitations of the study. Implications related to theory, policy, and future research are included.

Summary of the Findings

The overall purpose of this study was to advance understanding of the relationship between financial literacy and financial services utilization. The following questions were investigated: 1) What are the correlates of consumers' financial literacy? 2) How does the financial market participation of Russian consumers with greater self-assessed financial knowledge differ from the participation of the rest of consumers? 3) How does the financial market participation of Russian consumers with greater objectively-assessed financial literacy differ from the behavior of the rest of Russian consumers?

Data for this study came from the 2008 Nationwide Financial Literacy Survey conducted by the World Bank in Russia. Based on the data, three measures of financial literacy were created. The first was a subjective measure, the respondents' assessment of their own financial literacy on a scale from one to five. The second and third were objective measures of basic financial literacy and advanced financial literacy, respectively. Basic financial literacy was measured with six questions testing numeracy and basic knowledge related to understanding inflation, discounting, and interest rates. Advanced financial literacy was measured with an additional set of four questions primarily about protection of consumer rights in financial markets and the Russian system for insuring savings and investments.

The research questions were chosen for two reasons. First, financial literacy becomes of critical importance in countries in transition to market-oriented economies, such as Russia. In a market-oriented economy, consumers are no longer protected by government against making bad financial decisions as they were in the previous highly regulated economy. Many are unprepared to assume the increased responsibility they have been given to insure their own futures because of a lack of financial literacy. Second, greater financial literacy can also be an important component of efforts intended to increase the use of financial services. The ability of consumers to make informed financial decisions is critical to financial services market participation and efficient utilization of these services.

Current research pays attention to the possibility that financial literacy likely correlates with use of financial services (Beck & De la Torre, 2007; Djankov et al., 2008; Kempson, Atkinson, & Pilley, 2006). A substantial body of financial literacy research has developed around the world and numerous surveys of financial literacy have been conducted internationally. However, when investigating the consequences of financial exclusion or demand for financial services, few researchers have included variables that measure subjectively-assessed or objectively-assessed financial literacy of consumers (Bell & Lerman, 2005; Cole et al., 2009; Müller & Weber, 2009; Van Rooij et al., 2007). Even fewer have looked at financial literacy as a correlate of use of financial services in a country in transition, such as Russia. The most recent research regarding consumer protection and financial literacy in Russia (and eight other countries) was conducted by the World Bank. It revealed that in countries that have moved from central planning to a market economy, "consumer protection and financial literacy are still in their infancy" (Rutledge, 2010a, p. 1).

To use or not to use financial services is a financial decision made by consumers. A series of studies have demonstrated that financial knowledge is correlated with self-beneficial financial behavior such as use of financial services (Courchane, Gailey, & Zorn, 2008; Hilgert et al., 2003; Lusardi & Mitchell, 2007a).

The gaps in the literature related to the relationship between financial literacy and use of financial services in countries in transition may be explained by the fact that neither financial literacy nor financial

exclusion were important problems in economies that were not market-oriented, such as Russia. During Soviet times the economy was based on central planning and state ownership. This was also true for the banking system. The former Soviet Union had a "monobank" system that was under state control and the state made the major decisions about allocation of resources. Market instruments were not commonly used and people were a "cash-only" generation because most of their earned income was in cash. Consumers were not aware of bank products such as checks, credit cards, mortgages, or debit cards. In Soviet times, there was no need to compare banks or learn about a bank's reputation. Financial services for households were limited to deposits in Sberbank, a stable and trusted institution, and enforced purchases of government bonds.

The transition to a market economy and numerous financial shocks (reorganization of state banks into commercial banks in 1989, Pavlov's reform in 1991 that introduced new ruble bank-notes, Gaidar's liberalization of prices and voucher privatization in 1992, and the crash and default on obligations to depositors of MMM financial pyramid in 1994) permanently changed the way Russians perceived financial markets. "Fraudulent bankruptcies and pyramid schemes led to the emergence of distrust toward all financial intermediaries in post-communist Russia. The Russian population did not evaluate where to place their savings by assessing which commercial bank was trustworthy, but, more fundamentally, tried to assess whether *any* commercial bank was trustworthy" (Spicer & Pyle, 2002, p. 5).

Recently, Russia demonstrated one of the most rapid increases in consumer lending across Europe – 84% a year in the last five years. Consumer credit expanded from almost nothing to 9.2% of Gross Domestic Product in 2008 (Rutledge, 2010b). Recent developments in financial markets in Russia have been uneven throughout the population. According to Honohan (2007) and Rojas-Suarez (2009) only two-thirds of adults have access to financial services in Russia. Currently Russia has faced a number of challenges which partly reflect the impact of the global financial crises on the country and make participation in the financial services market even less attractive for many Russians.

This study contributes to our understanding of the relationship between the financial literacy of consumers and their use of financial services in Russia, a country that has moved from central planning to

a market economy and experienced rapid development of the financial services market. The results suggest that financial literacy, whether measured subjectively or objectively, can affect use of financial services. Financial literacy may empower consumers with confidence in their abilities and skills. Confidence may give consumers freedom to make informed choices in the financial services market and increase financial inclusion. The empirical research was based on the Andersen Behavioral Model adapted for financial services utilization and recognized that there were many determinants of financial market participation. Three groups of variables (predisposing, enabling, and need variables) were included in the analyses.

The first research question sought to examine the correlates of basic and advanced financial literacy of Russian consumers. The results showed that the mean basic financial literacy score for the sample was low at 2.8. The similarity of the questions used to assess basic financial literacy in the 2008 NFLS to questions used by other researchers revealed that Russian respondents demonstrated a much lower level of basic financial knowledge than American, Dutch, and Indonesian consumers on all questions where comparison was possible. Only when compared to Indian respondents' understanding of inflation and Italian respondents' understanding of percent calculation were Russian respondents more knowledgeable.

Results also demonstrated an extremely low level of advanced financial literacy. The mean score (1.1) for advanced financial literacy was more than twice as low as the mean basic financial literacy score. This result confirms concerns of the researchers from the World Bank that the Russian population lacks awareness of their rights as financial consumers (Rutledge, 2010b). Less than 9% of respondents knew the maximum deposit in a Russian bank insured by the government when a bank becomes bankrupt. Just a little more than 10% of respondents knew that the government does not insure against losses from the reduction of value of unit fund shares. One may expect that Russian consumers would have more interest in their rights in the financial market because almost every Russian family lost their savings during one or another financial reform or crisis. This low level of knowledge may reflect the fact that a large proportion of Russians still relies more on the informal financial system for savings and borrowing,

including intergenerational money transfers, than on the formal financial system (Clarke, 2002). Or it may be that consumers find it difficult or costly to obtain the necessary information. Another possible explanation is the lack of trust not only in financial institutions but in the government itself. People may not see a point in obtaining knowledge about consumer rights, if they do not believe in government institutions as their advocates. A comparative study of the social capital in Russia and Denmark suggested that 80% of the Russian population distrust the government and the administration (Hjøllund, Paldam, & Svendsen, 2001)

Bivariate analyses revealed, that all other things equal, Russian respondents were more likely to have greater financial literacy (answered more than 50% of questions correctly) if they were ages 26 to 45; lived in the North-Western, Volga, or Southern Federal Regions of Russia; were employed; and had a university education. Those who had a positive attitude toward savings and saved money monthly before new earnings arrived also were more likely to demonstrate greater basic financial literacy than those who did not. Respondents with higher income-subsistence minimum ratios were more likely to answer more basic financial literacy questions correctly than those with lower income-subsistence minimum ratios. Income fluctuation also was found to be correlated with financial literacy.

It was expected that financial literacy should increase with experience with financial services market. Indeed, basic financial literacy was correlated with having a previous negative experience with financial institutions and comparing terms and conditions of financial services before buying. Trust in financial institutions and indicating a need to save as well as for better and more information about financial services were all significant correlates of basic financial literacy. Importantly, there was a very strong correlation between objective and subjective literacy.

As for the advanced financial literacy, the nature of the relationships was similar to those for basic financial literacy. The findings about the correlates of financial literacy are mostly similar to those reported by researchers for other countries (Mandell & Klein, 2009; Monticone, 2010; Van Rooij et al., 2007; Worthington, 2006). A noticeable difference was that gender was not significantly correlated to financial literacy among the Russian population as in previous research.

The second research question aimed to investigate the association between consumers' self-assessed knowledge and their usage of financial services currently and in the next two years. For current and intended future use of financial services, expectations about the relationship were presented in the following two pairs of hypotheses.

H_{021}: The odds likelihood of current use of financial services among consumers with greater self-assessed financial literacy does not differ from that of consumers with lower self-reported financial literacy.

H_{A21}: Russian consumers who have greater self-assessed financial literacy have greater odds of using financial services currently.

H_{022}: The odds likelihood of use of financial services in the next two years among Russian consumers with greater self-assessed financial literacy does not differ from that of consumers with lower self-assessed financial literacy.

H_{A22}: Russian consumers who have greater self-assessed financial knowledge have greater odds of expecting to use financial services in the next two years.

The results for the regression analyses (Model 1-3, Model 10-12) indicated that a statistically significant positive relationship existed at a p-value less than $\alpha=0.01$ or a p-value less than $\alpha=0.05$ between self-assessed financial literacy and both current and intended future use of financial services. Specifically, those who claimed they were at all knowledgeable about personal finance (compared to those who said they were not) were more likely to currently use financial services as well as to plan to use them in the future, suggesting that subjectively-assessed financial literacy does affect financial market participation.

The third research question sought to investigate the association between consumers' financial literacy and their usage of financial services currently and in the next two years. The relationship was presented in the following two pairs of hypotheses.

H_{031}: The odds likelihood of use of financial services among Russian consumers with greater objectively-measured financial literacy does not differ from that among consumers with lower objectively-measured financial literacy.

H_{A31}: Russian consumers who are more financially literate have greater odds of using financial services currently.

H_{032}: The odds likelihood of use of financial services in the next two years among Russian consumers with greater objectively-measured financial literacy does not differ from that among consumers with lower objectively-measured financial literacy.

H_{A32}: Russian consumers who are more financially literate have greater odds of expecting to use financial services in the next two years.

On this question, the analysis was more informative about current use of financial services than for predicting use of financial services in the next two years. The respondents who had higher basic financial literacy scores were more likely to currently use financial services. Higher financial literacy could improve the ability of respondents to understand financial services, including their advantages and potential risk. This suggests that financial literacy education could provide information resources useful to financial behaviors required in financial market participation. The relationships between basic financial literacy and current use of financial services remained strong through all three stages of analyses when predisposing, other enabling, and need variables were added into the model.

An additional set of logistic regressions tested the impact of objectively-assessed basic financial literacy on current use of financial services when subjectively-assessed financial literacy and objectively-assessed advanced financial literacy were added as explanatory variables. Objectively-assessed basic financial literacy and subjectively-assessed financial literacy were significant predictors of current use of financial services. This result was as expected.

Objectively-assessed advanced financial literacy was not a significant predictor. This result clearly suggests that those with more knowledge about consumer rights and consumer protection are not different from respondents with less knowledge in their likelihood of using financial services. Advanced

financial literacy was very low in Russia and there may not have been sufficient variability in the responses to expect the variable to be significant.

Overall an important conclusion from the analyses regarding current use of financial services confirms that financial literacy does affect use of financial services and the relationship persists regardless of the specific measure of literacy (objective or subjective). Less clear, however, is the relationship between basic financial literacy and intended future use of financial services. Basic financial literacy was a positive and significant predictor of future use only at the first stage of analysis that controlled only for predisposing characteristics. At the second and third stages, the results did not provide evidence that the basic financial literacy of respondents affected their plans to use financial services in the next two years. The lack of predictive power could have different explanations.

A possible argument suggests that the predictive power of basic financial literacy disappeared because its effect was captured by education variables (high school education or less compared with college graduates) which remained statistically significant determinants across all three stages of analysis. Regardless, this result does not reject the null hypothesis H_{012}.

Additional findings attempted to investigate other drivers of use of financial services in Russia currently and in the near future. The results were consistent with the theoretical and empirical literature (Beck & De la Torre, 2007; Bell & Lerman, 2005; Demirgüç-Kunt et al., 2007). Region of residency appeared to be a strong predictor of use of financial services. A possible reason for differences in use of financial services between people from different Federal regions is differences in exposure to financial services across regions. Possibly this finding reflects supply constraints in some regions, due to the inability of the banking system to take advantage of scale economies in regions such as the Siberian Federal Region, for example, because of high fixed costs.

A significant positive relationship was found between the income-subsistence minimum and use of financial services currently and in the future; Russians with higher income had a higher likelihood of demanding financial services than those with lower incomes. Among those respondents who currently use financial services, one-third reported an income-subsistence ratio greater than 200%. The education

variable was significant only at earlier stages of analyses when only predisposing variables were added for current use of financial services, but remained significant across all stages for analyses for future use of financial services. Perhaps education variables were not significant for current use of financial services because several of the basic financial literacy questions measured numeracy, a skill that can be expected to improve with more education. The sign on attitude toward saving suggested that respondents who believed saving was important were more likely to demand financial services.

This study also contributed to our understanding of the influence of additional variables that enable consumers to use financial services or reflect their need to do so. The likelihood of current as well as future use of financial services increased with previous exposure to the financial services market. It was somewhat surprising to discover that those who had a negative experience during the last five years were more likely to currently use financial services. This factor was not a significant predictor of intended future use of financial services when all financial literacy measures were entered in the model. Another interesting finding was that an expressed need for better and more information was robustly significant at all stages of analyses and for both dependent variables. This was expected because those who use financial services currently as well those who plan to do so are very likely to realize the complexity of the modern retail financial market.

Finally, the study found that those who had some money unspent in their monthly family budget that they could save were more likely to intend to use financial services in the future. Although the significance was weak, it confirmed the significance of this variable in other studies (Osei-Assibey, 2009).

From these findings, the study therefore concluded that financial exclusion in Russia is related to the limited geographic coverage of commercial banks, a negative attitude toward savings, low income, a lack of previous experience with financial institutions, and disinterest in better and more information as well as low financial literacy.

Limitations

This study investigated the relationship between financial literacy and current as well as future use of financial services. There are many challenges in examining such relationships and some of them were limitations in this study.

Several of the limitations are related to the nature of the survey. The 2008 NFLS is a cross-sectional survey. Thus only the associations between factors can be determined, not casual relationships. Cross-sectional survey data do not allow us to determine if greater financial literacy causes an increase in financial market participation or if current use of financial services makes a person more knowledgeable about financial services and products. This kind of survey does not allow for the analysis of behavior change over time. Nor it is possible to identify any causal relationships between the variables and intended future use of financial services. Data from more than one point in time would be preferable and could help us to understand more about the relationship between financial literacy and current and future use of financial services.

The data available to create some of the independent variables could also be a limitation. The question used to create the variable "attitude toward savings" actually asked if the respondents saved before or after they spent money on everyday needs. Thus, it does not precisely assess attitude. A more preferable variable for future research would be an attitudinal scale that captures attitudes and preferences toward saving. Another independent variable, "trust in financial institutions," was the best available proxy measure. It was responses to a question about respondents' confidence in a just and quick resolution of a dispute with a financial institution. Clearly, an attitudinal scale could better measure the multiple dimensions of trust in financial institutions. With a better measure, the role of trust as a predictor of use of financial services might change. The limited value of this variable in the model may be due in large part to the inadequacies of the measure.

As discussed earlier, financial literacy is a challenging construct to measure. Sometimes a change in the wording of the questions may impact the respondents' understanding of the questions (Van Rooij et al., 2007). The questions included in the NFLS 2008 to measure basic financial literacy were not perfectly

formulated. The most confusing was a question about interest rates. The question could be read by many as missing necessary information in the context of the question. Partly, this may explain why the proportion choosing "I found it difficult to answer" answer choice was so high for this question. A different wording might have resulted in a truer picture of the respondents' understanding of interest rates. The wording of the question "Money Illusion" that tested understanding of nominal and real values of money also may not be ideal. Clearly, the correct "textbook" answer is that when increases in money income increase overall purchasing power, then price increases of similar proportions result in purchasing power actually remaining the same. But in reality, one may have doubts about whether "the same" actually means the same, knowing that not all prices for goods and services change in the same proportion and at the same time.

In addition, variables were not available in the dataset to represent all aspects of the Andersen Behavioral Model. Specifically, the blocks of enabling and need variables could have been expanded had more accurate measures of individual/family resources as well as need for financial services been available. For example, in this study the block of need characteristics included only two variables. One measured the need to use financial services based only on whether respondents reported having unspent money in their budget always, sometimes, or rarely that could be deposited in a financial institution. Another variable assessed need for financial services indirectly based on whether the respondents indicated they wanted more and better information about financial services. Additional variables that would likely be better measures of need might reflect attempts to open a bank account or applications for credit cards or other types of credit.

Finally, there is a possibility that those respondents whose responses were unusable and were excluded from the sample (about 10% of the original sample) may have been systematically different in important ways from those included in the sample. Knowing how their responses might have been different was one of the challenges of the study.

Implications

Given that the results demonstrate there is a significant relationship between financial literacy and use of financial services, there are several implications of this study. The implications for theory, policy, and future research are discussed in the sections that follow.

Theory Implications

Studying why people do or do not use financial services is complicated for several reasons. Use of financial services may be described as a behavior - engaging or participating in the financial services market - and could be explained using one or more of the various behavioral theories. It also could be seen as consumer demand for financial services and explained using a traditional supply-demand framework.

The theoretical framework chosen for this study represented yet a third approach. The Andersen Behavioral Model of Health Services was adapted and applied to investigate the relationship between the financial literacy of Russian respondents and their use of financial services. The Andersen Behavioral Model recognized that a variety of factors influences the use of services and allowed categorizing the possible effects on the use of financial services into three groups: predisposing, enabling, and need characteristics. In this study each block was entered sequentially into a logistic regression that allowed examination of the collective and relative contributions of the variables in each block. The Andersen Behavioral Model framework provides deep insight into how people who use financial services differ from those who do not depending on differences in their predisposing, enabling, and need characteristics. It also can provide information about barriers to financial inclusion and motivators to use or not to use financial services.

From a methodological standpoint, by increasing the attention to the determination and measurement of the predisposing, enabling, and need variables, researchers may be able to account for various factors that influence or impede use of financial services. More precise and comprehensive measurement of the corresponding variables may increase the utility of the behavioral model in explaining and predicting financial services utilization. For example, in addition to income as an

important enabling characteristic, other indicators of wealth accumulation may be added. Inclusion in the model of a more direct measure of the availability of financial institutions in the community where the respondents live might also increase the predictive power of the model.

Policy Implications

Public policies play an important role in determining the financial stability of a society and the long-term health of its citizens. Recent developments in financial markets have highlighted several trends. First, increases in financial services utilization have been uneven. Second, skyrocketing consumer borrowing makes them vulnerable to various forms of harassment from lenders, credit bureaus, debt collectors, and identity thieves. Third, Russian consumers have a low level of financial literacy and are not aware of their rights in the financial services market. Thus, the financial future of the Russian people depends not only on their own financial decisions but also is shaped by the country's overall financial condition and its institutional framework.

This study found that financial literacy is strongly correlated with use of financial services and the relationship does not rely on the specific measure of literacy (objective or subjective). The results suggest clear guidance for the development of financial literacy education in Russia and particularly what audience should be targeted and what topics should be discussed. The concept of financial education is very new for Russia. Efforts to develop financial literacy education started only recently when the Minister of Finance of the Russian Federation signed an agreement in October 2008 with the World Bank to establish a Trust Fund to support the advancement of financial literacy and capability programs. Currently not many programs are in place. Nor are there many players who offer those programs. Although some recent studies have questioned the effectiveness of education in improving financial literacy (Willis, 2008), other studies have shown a direct connection between financial literacy and financial behavior (Courchane et al., 2008; Hilgert et al., 2003).

To support and advance financial literacy, stakeholders in Russia, such as regulators, banking associations, consumer advocates and other nonprofit organizations, should consider the following recommendation. The core content of financial literacy education in Russia should be defined, taking into

account the relatively short history of market economy. What do the Russian people need to know the most to maintain their personal long-term financial "health"?

The results of the study highlighted the extremely low awareness that Russians have about their consumer rights in financial markets, and the knowledge they have about basic financial concepts. Much of the population is still not confident about participating in a market economy that requires a high level of personal responsibility, including the use of financial services. Thus, financial education in Russia should have adequate country-specific solutions and be developed hand in hand with the efforts to create a more inclusive financial system. Financial education needs not only to help consumers to realize their financial goals (Lyons, Palmer, Jayaratne, & Scherpf, 2006), but also to provide basic financial knowledge and numeracy skills, and to promote desired financial behaviors Another core competency for financial education in Russia is an awareness of consumer rights and the incentives to act in one's self-interest. In some sense, financial literacy education should provide financial security for consumers, which has increasing importance in a country that has recently transitioned to a market-based economy.

Implications for Future Research

This study was conducted to investigate the relationship between financial literacy and use of financial services. The following are suggestions for future research.

First, rather than focusing on financial services as a whole, attempts could be made to examine the relationship between financial literacy and the use of particular financial services. For example, researchers might examine the questions of whether those who have greater financial literacy are more likely to use more sophisticated financial services than those with lower financial literacy. Second, since results of financial literacy tests showed that a large proportion of respondents chose the "I found it difficult to answer" option, future studies could more closely examine this group. What are their demographic characteristics? What are their financial behaviors? How are they different from those who answered the questions correctly? Third, another extension of the study could focus on improvements in measurement of financial literacy and testing the internal reliability of the basic and advanced financial literacy questions used in this research. Numeracy as a basic financial literacy measure may be less-

relevant in a country such as Russia with relatively high education levels but little experience with financial products compared to countries with less education but more experience in the financial services market. The advanced financial literacy measures should be improved in future research. Three of the four question (Q7-9) examined knowledge about a very specific aspect of financial services while Q10 could be interpreted as assessing perceptions of using credit or value judgments about credit rather than knowledge. Further work also should find better indices for measurement of money management skills. Finally, future research could attempt to find a way to establish a causal link between financial literacy and actual financial outcomes such as use of financial services.

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Appendix

Research Questions, Major Findings and Corresponding Tables

Research Question	**Tables**
QUESTION 1:	
What are the correlates of consumers' financial literacy? Basic Financial Literacy Advanced Financial Literacy	 Table 12 Table 13
QUESTION 2:	
Does the financial market participation of Russian consumers with greater self-assessed financial knowledge differ from the rest of consumers, holding all else constant?	
Corresponding Hypotheses:	
Current Use of Financial Services	Table 18
H_{021}: The odds likelihood of use of financial services among consumers with greater **self-assessed financial literacy** does not differ from that of consumers with lower self-reported financial literacy holding constant other factors.	
H_{A21}: Russian consumers who have greater **self-assessed** financial literacy have greater odds of using financial services holding constant other factors.	
Intended Future Use of Financial Services	Table 21
H_{022}: The odds likelihood of use of financial services in the next two years among Russian consumers with greater **self-assessed financial literacy** does not differ from that of consumers with lower self-assessed financial literacy holding constant other factors.	
H_{A22}: Russian consumers who have greater **self-assessed** financial knowledge have greater odds of expecting to use financial services in the next two years holding constant other factors.	
QUESTION 3:	

Research Question	Tables
Does the financial market participation of Russian consumers with greater **objectively-assessed financial literacy** differ from the behavior of the rest of the Russian consumers, holding all else constant?	
Corresponding Hypotheses:	
Current Use of Financial Services	Table 19
H_{031}: The odds likelihood of use of financial services among Russian consumers with greater **objectively-assessed financial literacy** does not differ from that among consumers with lower **objectively-assessed financial literacy,** holding constant other factors.	
H_{A31}: Russian consumers who are more financially literate have greater odds of using financial services currently, holding constant other factors.	
Intended Future Use of Financial Services	Table 22
H_{032}: The odds likelihood of use of financial services in the next two years among Russian consumers with greater **objectively-assessed financial literacy** does not differ from that among consumers with lower **objectively-assessed financial literacy,** holding constant other factors**.**	
H_{A32}: Russian consumers who are more financially literate have greater odds of expecting to use financial services in the next two years, holding constant other factors.	
Final and Complete Models:	
Current Use of Financial Services: Subjectively-Assessed and Objectively-Assessed Financial Literacy	Table 20
Future Use of Financial Services: Subjectively-Assessed and Objectively-Assessed Financial Literacy	Table 23