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**The role of Self-Accounting and Financial Capability in  
consumer credit decisions**

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# The role of Self-Accounting and Financial Capability in consumer credit decisions

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The role of financial capability in the consumers' financial behavior has been widely analyzed by the literature. The same happened for the relationship between debt and financial capability. The consensus about the benefits of an increase in the levels of financial literacy collides with a diversity of opinions on what the best solutions to increase financial capability. While methods based on traditional teaching may not be an effective solutions and they could not provide results in the short term, solutions oriented to support consumers in important financial decisions (requests for funding, choice of retirement solutions, etc..) may show greater effectiveness. Studies in literature have shown the tendency of subjects with high levels of financial capability to adopt a long term view and to upgrade their daily financial behavior with attitudes and practices related to self-finance (budget, financial check-up, saving for goals, etc.) The paper focuses on the relationship between financial capability and self-accounting practices, interpreting the latter as evidence of conduct financially aware. After a review of the literature designed to emphasize the role of self-accounting in the context of personal finance, a financial check-up based tool is proposed, pointing out how the financial accounts' schemes and logics (regular budget, estimates and forecasts checking targets) may find useful application in the context of personal finance.

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Key-words: Self-Accounting, Financial Capability, Consumer Credit

The relevance of financial capability is determined by the evolution of the market and by the ever increasing degree of financial innovation. The surge in the number of products and services and their articulation in a variety of customized solutions have simultaneously expanded the range of possible options but also the complexity of customer choices.

All agree that increase in the number of available financial solutions turns into a market improvement only if the customer is able to evaluate the distinguishing characteristics of each one, thus recognizing that most suitable for his or her needs; however several studies have shown that the level of knowledge in financial matters is generally low and, sometimes, it's not sufficient to formulate sound and responsible choices regarding saving, investment and borrowing.

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We gratefully acknowledge Experian Italia for providing the credit data at the core of this empirical study.

There is vast awareness that a knowledge divide separates the supply and the demand side of the market; because this situation is not considered to be positive for several reasons<sup>1</sup>, governments, supervisory authorities and private organizations have started to study the alternatives available to rebalance the relationship between consumers and financial intermediaries. The diversity of opinions regarding the means of intervention and the target populations has led to the start of a multitude of projects and initiatives that differ in purpose, logic and duration. The choices that might seem more natural – the integration of financial capability courses into the scholastic curricula – does not seem to be totally effective<sup>2</sup> and it does ignore adults (the most active in financial terms) who, being no longer of school age, would be excluded from such programs.

While it would be illogical to ignore a significant part of consumers, letting them to be guided in their personal financial choices only by their own experiences and beliefs, it must be also be considered that it is extremely expensive and complicated to engage in a comprehensive educational program considering also the limitations of time and motivation of the adult population. The assumption that adults should be asked to invest considerable portions of their free time to learn concepts which often do not even feel the need to acquire, highlights the limitations of a mass approach. More suited to the needs of adult consumers are those solutions that are provided in the proximity of specific financial decisions, focused on topics closely related to the object of choice. From this point of view, financial capability is not any more something generic and standardized (by the logic that "one size fit all") and becomes a diversified mode of action, oriented through the real consumers needs.

This paper focuses on consumer credit, by proposing a decision support tool aimed at those who are considering taking new financing. The goal of the tool is to focus consumers' attention on some critical choices of financing, with a highlight of the possible impact of a specific loan on the financial situation of the borrower.

In the first part we will focus on the contribution that the planning and control approach, typical of accounting, can provide to financial capability. Once the usability and adaptability of the accounting instruments is tested, the necessary adjustments required to avoid possible behavioral distortions, which occur in case consumers are asked to a self-made diagnosis, will be considered. The second part of the paper presents the tool structure and the estimation of its parameters through an analysis of the Italian market.

## **ACCOUNTING, SELF-ACCOUNTING AND FINANCIAL CAPABILITY**

Financial capability becomes relevant, talking about consumer credit, when issues such as indebtedness and the equilibrium in consumer finances and his or her the capacity of repayment of debts are considered. There are several profiles that come into consideration when we analyse the level of consumer comprehension of the risks that come with a new debt. A first element of vulnerability in the consumer logic is "shortermism" (Lichtenstein, Fischhoff 1977). Consumers overweight benefit from the immediate possession of the purchased good, ignoring the effects that loan repayments will have on their future financial situation (Hilgert, Hogarth, Beverly 2003). A

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<sup>1</sup> A financial market where the consumers are unable to detect the differences between products is a market oriented to inefficiency and mispricing phenomena, and a consumer that doesn't really understand a financial product could make wrong decisions that could affect his financial future.

<sup>2</sup> The adoption of financial capability courses by schools and universities is very expensive and seem to be ineffective in producing long-term knowledge improvements (Mandell 2006).

second critical factor is the inability of consumers to evaluate the financial contract, as they concentrate on partial indicators such as the amount of the installment, while ignoring comprehensive measures such as total financial amount of debts or the APR. A third critical factor is the tendency of consumers to narrow framing. Assessments about the sustainability of funding should be based on a comprehensive view of the financial situation, rather than focussing on the analysis of the specific operation. Fragmentation, which follows a myopic view and partial equilibria of medium-to long-term risk, is a characteristic of consumer credit choices, as it happens with all the activities where the limited payment amount leads to focus on a small part of a wider financial balance. The consumer considers the single debt, forgetting about its effect on his or her global financial situation. A fourth element to be considered is the consumers' overconfidence. As Graser-Weber (2007) show, consumers tend to attribute to themselves the credit for financial successes, identifying exogenous factors to justify their losses. The trust in a full mastery in financial matters, based on previous financial experiences, is identified as the main cause of overconfidence, which exposes the consumer to take risks and make choices without having the full awareness of the consequences.

If the critical factors that expose consumers to a not-optimal financial behavior are different and suggest the need of a financial counseling activity, it is useful to analyze the contribution that accounting principles and solutions can provide on the matter.

Using accounting for financial capability purposes is motivated by the common goal of management and control of financial balances that firms and consumers share. Thaler (1999) emphasizes how individuals feel the need to "record, summarize, analyze, and report the results of financial transactions and other events, doing so with the same purposes of the organizations that use the managerial accounting". The desire to keep trace of where their money is going, and to keep spending under control can replicate the business world's own accounting practices.

Concerning the use of accounting principle Heath and Soll (1996) note that consumers tend to classify their expenditures into categories (food, transportation, entertainment, etc..) as well as companies gather their expenditure items into homogeneous groups. This mental classification is a preliminary work for an activity of planning and expenditure control, which, at the end, looks very similar to a budget approach. Shefrin and Thaler (1988) and Karlsson (1998) show that individuals classify assets into three mental accounts: current income, current assets, and future income, thus creating an accounting structure similar to a budget based on corporate balance sheet, income statement and budgets. Evidence of the differentiated approach is obtained by Karlsson (1998): he demonstrates the future expenses have a more negative impact on the decisiveness to buy when the payments based on current assets are preferred to current income ones.

While companies have to report their performance to a variety of stakeholders and are thus required to formalize the result of the accounting process in a document (the balance), the absence of such need allows the consumer to adopt a mental budget. Thaler (1993) defines mental accounting "as a collection of aggregation rules for what gets combined with what". For Hirst, Joyce and Schadelwald (1994) it's "a type of framing in which individuals are hypothesized to form accounts for the psychological benefits of cost and outcomes", while Kahneman and Tversky (1981) identify mental account as "an outcome which frame specifies (i) the set of elementary outcomes that are evaluated jointly and the manner in which they are combined and (ii) a reference outcome that is considered neutral or normal". Similarly Gourville and Soaman (1998) and Prelec and Lowenstein (1998) define mental accounting as a cognitive form of bookkeeping that individuals practice to keep track of expenses and control consumption.

Different papers identify in mental accounting, in addition to a purpose of budgeting, a control instrument. Heath (1995) and Heath and Soll (1996) note that the mental budgeting is a tool for expenditure control. Cheema and Soman (2006) identify it as a self-regulatory mechanism or a self-control device, that prevent consumers "from doing what they want to do (eg, buy a car), forcing them instead to do What they think they should do (eg, save for retirement)".

The virtual nature of mental budget has important implications on the operational level, which potentially can affect its reliability. A first element of doubt for a mental budget adoption concerns the inner conflict of consumers who, faced with an expenditure constraint in self-imposed mental budget, want to make a purchase for larger amounts. Cheema and Soman (2006) have verified how consumers flexibly classify expenses, or construct accounts, to justify spending. This flexibility allows consumers to find loopholes and to circumvent the self-control imposed by mental accounts. The same conclusions are reached by Kunda (1990). The author states that "the biasing role of goals is thus constrained by one's ability to construct a justification for the desired conclusion: people will come to believe what they want to believe only to the extent that reason permits". The conclusion is that the virtual nature of mental budgeting helps to make it more malleable and, therefore, less credible and effective.

A second critical profile of mental budgeting concerns the classification of items which are not directly attributable to any of the known category (home, entertainment, food, etc..). The risk of misclassification can lead the consumer to exceed the limits imposed by budget, citing the possibility of splitting the cost across several categories.

A third critical factor in the use of mental budgeting is the narrow framing (Bonini, Rumina 1996, Moon, Keasy, Duxbury 1999). It refers to the tendency of consumers to consider buying and spending individually, without considering purchases made together, or relating to the same category. A typical example of narrow framing is the purchase of a good on sale. Being concentrated on the discounted price consumers tend to forget to pay adequate attention to the price of the other goods of the shopping-list; this leads to spend more than one would have done if he or she had compared the total expenditure with that of an alternative supplier.

The reliability of mental budgeting is also hampered by the tendency of consumers to react very differently to the same circumstances, however in different situations. For example, individuals who suddenly have access to significant financial assets (by inheritance, lottery winnings, etc.) tend to have different purchasing behavior than those who get the same amount via wise and planned investment activities (Hirst, Joyce and Schadelwald 1994). There are also evidences that the increase in spending in the first case is sometimes excessive even considering the new wealth (Moon, Keasy, Duxbury 1999).

The flexibility of mental accounting, especially compared to a written budget, is proved by Heat and Soll (1996), which recognize that the latter, being based to a higher degree of formalization, forces the consumer into a more rigorous approach thus preventing the breach of the financial limits of the budget. All these considerations strongly suggest the use of a written budget. The added value of writing a budget is also stressed by Thaler (1990), that explains the role of written budget in mitigating the consumers' tendency to prefer current consumption to the future one. It would also effectively generate a sense of guilt introducing a psychological cost that can inhibit the consumer from making unplanned purchases. Prelec and Lowenstein (1998) in analyzing the mental processes of consumers show that a written budget helps the consumer to rationalize choices. Similarly Sharif and Thaler (2006), emphasizing non-rational behavior in cases where the payment and use of the asset are not simultaneous, demonstrate the effectiveness accounting and of written budgets in reducing these phenomena. Finally, written budgets contribute in reducing consumers' shorttermism,

helping them to become aware of the of medium-long term effects connected with their current behavior (Wertenbroch 1998).

## **SUPPORTING CONSUMERS: A PROPOSAL**

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Accounting and self-accounting methods have been adopted to develop a tool designed to support consumers that are considering taking a loan. The goal is to define a model of self-assessment enabling consumers to determine the impact of a new loan on their financial situation. To be effective with adults, however, the tool has to overcome the abovementioned problems of traditional education. Because adults would allocate only a fraction of their time to learning financial matters only the financial knowledge that is needed has to be delivered and it has to be delivered when is needed, and the way it is acceptable and understandable by the user. This means complying to principles of relevancy, contingency and usability which require to answer properly to specific needs and to actual problems. Ergonomics is thus the underlying rule that mandates the way the tool is conceived and developed; ergonomic principles, referred to the educational contents, impose that the model is “tailor-made” and therefore finds its input in the form of the easily available and usable data on the consumer’s financial flows. Regarding the form of the model, ergonomics require that the input information is known (or can be found) by the client, that they are clear and simple, avoiding the use of jargon (FSA 2004) and that attention is paid not to require an excessive amount of input information. Should the model require the consumer to find data that he or she does not possess (or that are difficult to obtain) would deprive it of its function as an information intermediary. Being simple and user friendly is necessary in order to reach consumers that lack basic financial knowledge, precisely those with the greatest need for counselling; economizing on the amount of input data required is considered necessary in order to minimize the abandonment of those who, lacking a strong motivation, might consider the opportunity-cost of using of the model as excessively high. For similar reasons, the output of the model must also respect its overall principles: it must be clear and immediately understandable.

As is the case for all forms of financial counselling (the provision of advice on savings, investments, insurance, etc), the elaboration of implicit information on customers seeking loan advice occurs on the basis of the know-how and ability of the counsellor in the area of problem-solving; it thus refers to long term financial budgeting, and to estimations of the consumer’s default risk. From the input data relative to the consumer’s periodical cash flow, it is possible to obtain a tailor-made estimate of the consumer’s level of risk and identify his specific financial habits (spending attitudes, tendency to borrow, saving habits, etc.). Data relative to a consumer’s socio-demographic profile allows the estimation of the consumer’s risk by means of a regression analysis based on the behaviours of a representative sample of consumers. The output of the two different analysis is a statement summarizing the possible effects that the new loan could have on the consumer’s financial situation, highlighting the consequences that their current behaviour and choices could have on the future financial situation.

## **METHODOLOGY AND DATA**

To create the model of self-assessment for consumer credit, two methods of analyses were used in combination. The first uses the logic of a financial budget to determine the net residual cash flow (NRCF) available to the consumer after having provided for his primary needs (food, clothing, housing, etc.), financial obligations (tax payments, repayment of current loans, etc.) and having

satisfied any additional needs (free time, entertainment, etc.). Over a defined period of time, the NRCF is calculated as the difference between total monthly income (salary, investments returns, benefits, etc.) and the total of his expenses and financial costs. The NRCF is considered as a measure of the consumer's ability to reimburse new loans and as a measure of the consumer's ability to face any unexpected events that may negatively affect the family budget (such as a reduction in income or an increase in expenditures). Unemployment, divorce and invalidating illnesses (and/or those that require expensive medical care) are some of the events able that might cause the default of the consumer (Kempson, Atkinsons 2006). NRCF is standardised by considering it as a percentage of total income. Given that a low value of NCFR corresponds with a situation in which a larger part of the income is dedicated towards daily needs and the repayment of current debts, it can be argued that the lower the level of NRCF, the risk of default of the borrower becomes higher due to the consumer's limited capacity to cope with unexpected financial events. In order to simplify the information and make it more intuitive for the consumer, five classes of risk were defined (0-5) where lower values are associated to situations of less risk and higher values are associated with situations of greater risk. Table 1 presents the different classes of risk.

**Table 1 – financial analyses of consumer cash flow and default risk**

Class of risk	NRCF - Net Residual Cash Flow (as percentage of total incomings)
0	$25\% \leq \text{NRCF}$
1	$20\% \leq \text{NRCF} < 25\%$
2	$15\% \leq \text{NRCF} < 20\%$
3	$10\% \leq \text{NRCF} < 15\%$
4	$5\% \leq \text{NRCF} < 10\%$
5	$\text{NRCF} < 5\%$

Data relative to financial inflows and outflows represent the input by the consumer to the model. During the data entry, the consumer is guided by means of insertion grids. Inflows are classified as (1) net income from employment and other incomes (dividends, rents etc.), while the principal expense categories regard (1) housing costs (maintenance, energy and heating, furniture and electrical domestic goods), (2) tax, (3) food and drink, (4) clothing and shoes, (5) transport and communications (telephone, internet, fuel, car insurance, car maintenance costs, etc.), (6) leisure and education (books, music, pay-tv, cinema, theatre, sport, etc.), (7) other goods and services (medical expenses, care costs, etc). Next to these items the consumer is asked to indicate financial obligations relative to current debts (mortgage and other loan repayments) as well as the repayments of the new loans that the consumer is considering applying for.

Some data, such as those regarding spending habits which are typically individual can only be supplied by the consumer. As to other expenses, estimations, based upon official statistical surveys, are available; these suggestions alleviate the burden of data entry for the consumer. The availability of such official data allowed their use in this study; however the same methodology can be applied in other countries once the quality of official statistics is (hopefully) comparable. The data source is the [Italian] National Institute of Statistics (ISTAT) which regularly runs enquiries on the purchasing habits of Italian<sup>3</sup> consumers in reference to food and drink, clothing and shoes, transport and communications, leisure, and other goods and services. The average level of national spending (ExAve) was modified in order to consider the impact of three important factors: geographic location (AreaEx<sub>a</sub>), profession (JobEx<sub>b</sub>) and the composition of the household (FamilyEx<sub>c</sub>); these three factors, indeed, influence the level and the composition of family expenses. The average of the estimates on the division of the 'd-th' category of spending (e.g. food, clothing, etc.), whether for

<sup>3</sup> Istituto Nazionale di Statistica (ISTAT). 2006. Family consumptions – 2005

the ‘b-th’ job condition ( $JobQuote_{b,d}$ ) or for the ‘c-th’ category - composition of the household ( $FamilyQuote_{c,d}$ ), allowed to refine the estimations of the individual spending items. The estimate of the level of spending for the ‘d-th’ spending item (e.g. clothing, food, etc.) for a subject living in the ‘a-th’ region (Tuscany, Sicily, etc.) that holds the ‘b-th’ job (company director, manual labourer, etc.) and that shows the ‘c-th’ family composition (e.g. married with 2 children) was calculated in the following way.

$$EX_{a,b,c,d} = ExAve \times (1 + AreaEx_a) \times (1 + JobEx_b) \times (1 + FamilyEx_c) \times \left( \frac{JobQuote_{b,d} + FamilyQuote_{c,d}}{2} \right)$$

The parameters within vectors AreaEx, JobEx and FamilyEx indicate in which percentage the level of spending is different from the mean. Positive values indicate that subjects belonging to such categories show average levels of spending that are much greater, the higher the value of the parameter. Vice versa, negative values of the parameter indicate levels of spending that are lower than the average. The estimate of the parameters was obtained using the ISTAT tables on the division of Italian household spending on consumer goods.

The analysis of the NRCF was supported by a sample statistical analysis aimed at determining the default risk of individual consumers by comparing their socio-demographic-behavioural profiles with those of a reference population. The data analysed were made up of a sample of 206,334 observations relative to consumers that had previously applied for a loan in Italy during the period 2006-2007. The data were made available by Experian Italia that extracted and stratified the sample data in order to make it representative of the Italian consumer credit customers.

The sample was analysed by using a logistic regression model, at the basis of which the behaviour of the measure of default risk ( $R$ ) was reproduced, starting with the constant  $\alpha$ , through  $i$  regressors  $x_i$ , of which the estimation parameters were contained within vector  $\beta$ , and error term  $\varepsilon$ .

$$R = \alpha + \beta X + \varepsilon$$

The independent variables of the model regard both the socio-demographic profile of the consumer and his financial behaviour. The first group of variables were age, gender, geographical region, job, living conditions, composition of the household and the number of dependent family members. The second group were the presence or the lack of loan applications in the previous six months, the number of current loans, the number of late payments in the last twelve months, the effective monthly amount of repayment of current loans and its weight as a percentage of net income.

The choice of variables was based on the results of previous studies on consumer financial behaviours. The tendency of consumers with lower incomes, higher percentages of the income devoted to the repayment of current loans, and with a number of late payments within the last twelve months to be more easily vulnerable to financial distress has been demonstrated in various studies (Barron, Elliehausen, and Staten 2000; Getter 2003). Where arrears in repayments are a direct evidence of the borrower’s lack of financial resources and are followed a drift towards situations of financial distress, income and the repayments to income ratio are related to potential default as they make , the borrower less prepared to face unfavourable variations in his cash flow.

Including the number of applications for new loans in the previous six months is based on the assumption, confirmed by the literature (Elliehausen, Lundquist, Staten 2007), that a consumer in financial distress starts use new loans to reimburse older ones before declaring default. Living conditions are relevant since homeownership (compared to having to rent the home) means the borrower is not bound to pay rentals that could overload/stress the family budget. In addition to

homeownership, marital status and age are the life cycle characteristics associated with the request for loans (Lansing, Maynes, and Kreinin 1957; Juster and Shay 1964; Aizcorbe, Kennickell, and Moore 2003).

The results of the regression analyses were traced back to five classes of risk where higher values correspond to greater levels of risk. The sum of the results obtained with the first method (the financial method) and those obtained from the regression model define the overall result of the model. When the first method showed a structural deficit in the family accounts, destined in the medium-long term to define situations of difficulty, the model attributes by default a final result equal to 10, corresponding to the highest level of risk. Indeed, if consumers regularly spend more than they earn, it is not necessary to analyse the other behavioural variables in order to reach the conclusion that they are destined to end up in financial distress in the medium-long term. In other cases, the model expresses a rating obtained from the sum of the results of the first method (0-5) and those from the second (0-5). It therefore has a variation interval of 0-10, where higher values correspond to an equally high risk of financial difficulty.

Being expressed by a discrete number between zero and ten makes the results simple to communicate, interpret and immediately comprehensible. Because the same result can be obtained with different combinations of intermediate results (from the two methods) the output is enriched with comments differentiated according to the average results in order to highlight the different components of risk that emerge during the elaboration.

## RESULTS

The estimate of the parameters required to calculate the individual items of expenditure associated to the individual socio-demographic profiles led to the identification of the following vectors: AreaEx, JobEx, FamilyEx; and matrices: JobQuote and FamilyQuote – the values of which are reported in the tables 2 to 6.

<p><b><i>Table 2: parameters relative to geographic location used in the calculation of consumer spending levels (AreaEx)</i></b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: center;">AreaEx</th> <th style="text-align: center;">Value</th> </tr> </thead> <tbody> <tr><td>Piedmont</td><td style="text-align: right;">+2.71%</td></tr> <tr><td>Valle d' Aosta</td><td style="text-align: right;">+11.19%</td></tr> <tr><td>Lombardy</td><td style="text-align: right;">+22.91%</td></tr> <tr><td>Trentino Alto-Adige</td><td style="text-align: right;">+24.63%</td></tr> <tr><td>Veneto</td><td style="text-align: right;">+17.09%</td></tr> <tr><td>Friuli Venezia Giulia</td><td style="text-align: right;">+1.81%</td></tr> <tr><td>Liguria</td><td style="text-align: right;">-3.88%</td></tr> <tr><td>Emilia Romagna</td><td style="text-align: right;">+18.89%</td></tr> <tr><td>Tuscany</td><td style="text-align: right;">+9.82%</td></tr> <tr><td>Umbria</td><td style="text-align: right;">+2.84%</td></tr> <tr><td>Marche</td><td style="text-align: right;">+4.00%</td></tr> <tr><td>Lazio</td><td style="text-align: right;">+4.47%</td></tr> <tr><td>Abruzzi</td><td style="text-align: right;">-7.47%</td></tr> <tr><td>Molise</td><td style="text-align: right;">-9.23%</td></tr> <tr><td>Campania</td><td style="text-align: right;">-20.05%</td></tr> </tbody> </table>	AreaEx	Value	Piedmont	+2.71%	Valle d' Aosta	+11.19%	Lombardy	+22.91%	Trentino Alto-Adige	+24.63%	Veneto	+17.09%	Friuli Venezia Giulia	+1.81%	Liguria	-3.88%	Emilia Romagna	+18.89%	Tuscany	+9.82%	Umbria	+2.84%	Marche	+4.00%	Lazio	+4.47%	Abruzzi	-7.47%	Molise	-9.23%	Campania	-20.05%	<p><b><i>Table 3: parameters relative to employment professions used in the calculation of consumer spending levels (JobEx)</i></b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: center;">JobEx</th> <th style="text-align: center;">Value</th> </tr> </thead> <tbody> <tr><td>Entrepreneur and businessman</td><td style="text-align: right;">+25.55%</td></tr> <tr><td>Selfemployed</td><td style="text-align: right;">+4.28%</td></tr> <tr><td>Manager and employers</td><td style="text-align: right;">+13.80%</td></tr> <tr><td>Workers</td><td style="text-align: right;">-15.12%</td></tr> <tr><td>Retired from work</td><td style="text-align: right;">-34.69%</td></tr> <tr><td>Other conditions</td><td style="text-align: right;">-44.85%</td></tr> </tbody> </table> <p><b><i>Table 4: parameters relative to the family composition used in the calculation of consumer spending levels (FamilyEx)</i></b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: center;">FamilyEx</th> <th style="text-align: center;">Value</th> </tr> </thead> <tbody> <tr><td>Single under 35 years old</td><td style="text-align: right;">-23.03%</td></tr> <tr><td>Single within 35-64 years old</td><td style="text-align: right;">-28.32%</td></tr> <tr><td>Single over 65 years old</td><td style="text-align: right;">-46.18%</td></tr> </tbody> </table>	JobEx	Value	Entrepreneur and businessman	+25.55%	Selfemployed	+4.28%	Manager and employers	+13.80%	Workers	-15.12%	Retired from work	-34.69%	Other conditions	-44.85%	FamilyEx	Value	Single under 35 years old	-23.03%	Single within 35-64 years old	-28.32%	Single over 65 years old	-46.18%
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Puglia	-11.84%		Couple without child (head under 35 y.o.)	+6.74%
Basilicata	-13.38%		Couple without child (head within 35-64 y.o.)	+0.79%
Calabria	-18.43%		Couple without child (head over 65 y.o.)	-15.02%
Sicily	-28.06%		Couple with 1 child	+17.57%
Sardinia	-8.03%		Couple with 2 childs	+21.71%
			Couple with 3 or more childs	+24.63%
			Single with child	-13.74%
			Other conditions	+7.79%

**Table 5: the percent levels of spending per individual item and divided by profession**

JobQuote	Food and beverage	Clothing	Transport and Communications	Free time	Other goods and services
Entrepreneur and businessman	25.57%	5.29%	31.75%	11.11%	26.28%
Selfemployed	28.57%	11.59%	28.41%	9.05%	22.38%
Manager and employers	26.17%	11.95%	28.27%	11.15%	22.46%
Workers	32.34%	10.31%	29.38%	9.22%	18.75%
Retired from work	39.07%	8.79%	25.98%	8.41%	17.76%
Other conditions	38.49%	9.49%	24.78%	9.31%	17.93%

**Table 6: the percent levels of spending per individual item and divided by family composition**

FamilyQuote	Food and beverage	Clothing	Transport and Communications	Free time	Other goods and services
Single under 35 years old	23.52%	10.56%	31.52%	10.40%	24.00%
Single within 35-64 years old	28.18%	10.14%	28.52%	8.93%	24.23%
Single over 65 years old	50.57%	7.78%	15.79%	8.01%	17.85%
Couple without child (h.o.f. under 35 y.o.)	22.77%	11.78%	29.62%	9.24%	26.59%
Couple without child (h.o.f. within 35-64 y.o.)	27.82%	10.79%	30.52%	8.09%	22.77%
Couple without child (h.o.f. over 65 y.o.)	43.80%	8.00%	23.00%	7.80%	17.40%
Couple with 1 child	29.50%	10.86%	29.50%	9.56%	20.58%
Couple with 2 childs	29.66%	11.96%	28.26%	10.40%	19.72%
Couple with 3 or more childs	32.30%	12.00%	27.56%	11.26%	16.89%
Single with child	32.10%	11.09%	27.23%	10.42%	19.16%
Other conditions	34.39%	9.47%	29.24%	9.14%	17.77%

The heterogeneity of the consumer spending habits is highlighted by the percentage values of the first three parameters (geographic area, profession and family composition). The differences in the levels of spending in the various geographical areas can be, at least partially, explained by the

different level of prices in different regions; for example, the general level of prices in Sicily is clearly lower than that in Tuscany (AreaEx Sicily -28.6%, AreaEx Tuscany +9.82%). The differences in the spending levels related to the professional position is explained by the differences in income; also, it is reasonable that spending levels are higher for larger families, and when the head of the household is in the working age bracket.

The steadiness in the demand for basic goods is verified in the data on the composition of expenditures. Indeed, it is reasonable that when financial resources are limited the proportion of expenditures destined for primary needs (e.g. food, etc) tends to increase at the detriment of non-essential spending (e.g. leisure).

The demographic characteristics and behaviours of the sample used for the regression logistics and the relative independent variables are presented in tables 7 and 8.

**Table 7: Description of the qualitative and descriptive statistics of the dependent variables**

<b>Indipendent variable</b>	<b>Description</b>	<b>%</b>
sex	Gender	
	<i>Male</i>	67.47%
	<i>Female</i>	32.53%
area	Region	
	<i>Piedmont</i>	7.21%
	<i>Valle d'Aosta</i>	0.14%
	<i>Lombardy</i>	17.32%
	<i>Trentino Alto-Adige</i>	0.88%
	<i>Veneto</i>	5.75%
	<i>Friuli Venezia Giulia</i>	1.61%
	<i>Liguria</i>	2.91%
	<i>Emilia Romagna</i>	6.16%
	<i>Tuscany</i>	5.29%
	<i>Umbria</i>	1.29%
	<i>Marche</i>	1,2%
	<i>Lazio</i>	11.71%
	<i>Abruzzi</i>	2.20%
	<i>Molise</i>	0.40%
	<i>Campania</i>	8.64%
	<i>Puglia</i>	8.03%
	<i>Basilicata</i>	0.73%
	<i>Calabria</i>	4.01%
	<i>Sicily</i>	9.65%
<i>Sardinia</i>	4.35%	
job	Job	
	Entrepreneur and businessmann	2.48%
	<i>Clerks</i>	30.82%
	<i>Worker</i>	44.25%
	<i>Doctor</i>	1.25%
	<i>Teacher</i>	2.43%
	<i>Soldier</i>	2.46%
	<i>Retired from work</i>	15.86%

	<i>Housewife</i>	0.37%
	<i>Student</i>	0.04%
	<i>Unemployed</i>	0.05%
house	Living condition	
	<i>Rent</i>	23.97%
	<i>With parents</i>	15.81%
	<i>Homeownership (with mortgage loan)</i>	0.05%
	<i>Homeownership (without mortgage loan)</i>	57.65%
	<i>Other conditions</i>	2.50%
family	Family composition	
	<i>Single</i>	30.00%
	<i>Divorced</i>	2.82%
	<i>Married</i>	57.48%
	<i>Cohabitant</i>	1.81%
	<i>Separated</i>	3.97%
	<i>Widower</i>	3.92%
<i>new_borr</i>	Requests for new loans in the last six months	
	<i>Yes</i>	9.69%
	<i>No</i>	90.31%

**Table 8: Description of the quantitative and descriptive statistics of the dependent variables**

<b>Indipendent variable</b>	<b>Description</b>	<b>Mean</b>	<b>SD</b>
age	Age	44.20	13.39
cr_line	Number of active credit lines	1.429	1.36
late	Arrears in the last 12 months	0.756	2.329
people	Dependents relatives	0.926	1.472
debt_perc	Expenditures relative to the repayment of existing debts on total income	26.17%	78.39

The higher proportion of males (67.47%) in the sample population can be explained by their role within the family of decision makers on financial matters (FSA 2001); because of this, even when the loan is intended for the entire family, the principal borrower tends to be the male. The geographic distribution takes into account difference population densities, also connected to the presence of large cities (e.g. Rome and Milan). The composition of the sample regarding professions reflects both differences in the population numbers and different tendencies to use credit, justifying the strong prevalence of clerks (30.82%) and manual workers (44.25%). The data on repayment to income ratio shows high volatility within different categories, meaning a cross sectional use of credit.

The results from the logistic regression analysis carried out on the sample are reported in table 9.

**Table 9: Results from the logistic regression analysis, determinants of consumer default risk**

<b>Indipendent variable</b>	<b>Description</b>	<b>Estimated Coefficient</b>	<b>p-value</b>
age	Age	-0.00611	<0.0001
cr_line	Number of active credit lines	0.2652	<0.0001
late	Arrears in the last 12 months	0.3264	<0.0001
people	Dependents relatives	0.0854	<0.0001
debt_perc	Repayment to total income ratio	0.000287	<0.0001

sex	Gender		
	<i>Male</i>	0	
	<i>Female</i>	0.0224	0.0207
area	Region		
	<i>Piedmont</i>	0	
	<i>Valle d'Aosta</i>	0	
	<i>Lombardy</i>	0	
	<i>Trentino Alto-Adige</i>	-0.4169	<0.0001
	<i>Veneto</i>	-0.0564	0.0009
	<i>Friuli Venezia Giulia</i>	0.1806	<0.0001
	<i>Liguria</i>	0	
	<i>Emilia Romagna</i>	0	
	<i>Tuscany</i>	0	
	<i>Umbria</i>	-0.2353	<0.0001
	<i>Marche</i>	0	
	<i>Lazio</i>	0	
	<i>Abruzzi</i>	0	
	<i>Molise</i>	0	
	<i>Campania</i>	0.1991	<0.0001
	<i>Puglia</i>	0.1206	<0.0001
	<i>Basilicata</i>	0	
	<i>Calabria</i>	0.1678	<0.0001
	<i>Sicily</i>	0.1907	<0.0001
	<i>Sardinia</i>	-0.1436	<0.0001
job	Job		
	<i>Entrepreneur and businessmen</i>	-0.1993	
	<i>Clerks</i>	-0.2295	
	<i>Worker</i>	0	
	<i>Doctor</i>	0	
	<i>Teacher</i>	-0.4037	<0.0001
	<i>Soldier</i>	-0.2655	<0.0001
	<i>Retired from work</i>	0.0565	0.0003
	<i>Housewife</i>	-0,6173	<0.0001
	<i>Student</i>	0	
	<i>Unemployed</i>	0	
House	Living condition		
	<i>Rent</i>	0.4059	<0.0001
	<i>With parents</i>	0.2239	<0.0001
	<i>Homeownership (with mortgage loan)</i>	0	
	<i>Homeownership (without mortgage loan)</i>	0	
	<i>Other conditions</i>	0.3696	<0.0001
Family	Family composition		
	<i>Single</i>	0.1248	<0.0001
	<i>Divorced</i>	0.3397	<0.0001
	<i>Married</i>	0	
	<i>Cohabitant</i>	0.2758	<0.0001
	<i>Separated</i>	0.3533	<0.0001
	<i>Widower</i>	0,2397	<0.0001
new_borr	Applications for new loans in the last six months		

		<i>Yes</i>	1.0005	<0.0001
		<i>No</i>	0	
Observation	206,334			
Degree of freedom	44			
R <sup>2</sup>	0.2132			

The estimated model shows a “good fit” and is able to account for about 21% of total variance. The results indicate the variables most directly linked to consumer financial behaviour, rather than those relative to the socio-demographic profiles, that are more highly related to situations of financial distress. The number of current loans (0.2652) and the presence arrears in the last twelve months (0.3264) both show direct links to the risk of default, together with multiple loan applications in the last six months (1.0005). Thus, this study confirms the previous empirical evidence reported in the literature (Elliehausen, Lundquist, and Staten 2007). The opinion that individuals with low levels of homeownership have a definite riskier profile (those paying a rent 0.4059, in other conditions 0.3696) is justified by the higher expenditures that depress the NRCF and diminish consumer capacity to face unexpected financial problems. Significant differences are also shown by profession. The data show how manual workers, students and the unemployed are significantly much more exposed to the risk of financial distress than managers (-0.1193), clerks (-0.2295) and teachers (-0.4037). The large gap that separates married couples from the separated (0.3533) and divorced (0.3397) is highly consistent with prior research (Canner and Lockett 1991; Black and Morgan 1999; Fay, Hurst, and White 2002; Lane 1969; Stavins 2000).

## CONCLUSIONS

The present study investigates the potential increase of the cognitive and decision making skills of consumers that are considering taking a new loan and are potentially exposed to financial distress risk. Thanks to the adoption of accounting methods, the tailor-made analysis of periodic cash flows, allows consumers to determine their own financial capacity and the “room” for additional finance. A logistic regression model applied to a reference sample is used to give the consumer a measure of his or her personal risk of financial distress; socio-demographic-behaviour profile is related to that risk. The final result is a decision making tool which combines the two models described and, because of this, it is able to consider each individual own characteristics and to situate the judgement on financial sustainability.

As variables were chosen through an analysis of previous research, and results obtained in the empirical verifications are consistent with the latter, our model can be, indeed, considered robust; the low levels of data entry and the availability of the information requested facilitate the model’s use even by those that do not have a high level of financial know-how. Similarly, the use of an assessment scale of 0-10, once more grants interpretational simplicity to the results.

On the conceptual level, the present study supports the idea that financial counselling can be provided also via non-human interfaces (such as web-based solutions) and that it can also broaden the effects of financial education thus strengthening consumer protection. Compared with education, counselling is better adapted to the needs of adult consumers who are difficult to reach with school-based educational programmes and who have a low availability to attend regular classes (especially when compared with youngsters). The importance of addressing adults and not only students is amplified by the risks arising in a situation where levels of financial literacy are low, financial systems are increasingly complex and consumers tend to be autonomous in their decision making process.

The possibility for consumers to use the model repeatedly, modifying the input data (income, entertainment spending, the repayment rates of the loan the individual is requesting, etc.) turns the model into a tool for financial education in itself. Simulating different financial behaviours and having the possibility to check the effects that such behaviours would have upon the risk of incurring financial distress helps the consumer to improve his or her perception of risk and to quantify the advantages linked to more financially responsible behaviours.

From the theoretical perspective, the study supports the hypothesis that financial capability can be implemented by an accounting approach. The tool, as a formal budget, represents a step forward the mental budget approach analyzed by the literature.

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