PISA 2012 FINANCIAL LITERACY FRAMEWORK

DRAFT SUBJECT TO POSSIBLE REVISION AFTER THE FIELD TRIAL

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PREAMBLE

1. Drafting of the Financial Literacy Framework began after the initial Financial Literacy Expert Group (FEG) meeting, held in Boston from 17-19 June 2010. At that meeting the Consortium presented an options paper [FEG(1006)3.docx], which outlined the typical structure of PISA frameworks. The paper also set out some of the organisers upon which the Financial Literacy Framework might be built, derived from various national publications on financial education and on papers commissioned by the OECD International Network of Financial Education (INFE).

2. The first draft of the framework was sent to the Boston meeting participants at the end of June, and their feedback informed a revised draft, which was released to coincide with the dispatch to National Project Managers of the first bundle of financial literacy items in mid-July (part of Bundle 3 for the PISA 2012 field trial).

3. The framework was further discussed at the second Financial Expert Group meeting 26-28 August 2010 in Paris, and several changes were agreed in light of comments received by the OECD Secretariat from PISA Governing Board Members as well as the experts' deliberations at the meeting.

4. A third draft version was distributed to the Financial Literacy Expert Group for review at its third meeting, at the end of September 2010, and to the National Project Managers as a meeting paper for their Budapest meeting, 3-8 October 2010. This version was substantially revised subsequent to those meetings for presentation to the PISA Governing Board (PGB) at its meeting in Vienna, 1-3 November 2010.

5. This edition includes some minor modifications prompted by PGB comments. The most important is the inclusion of further detail about the relationship between financial literacy and mathematical literacy in PISA.

6. The Financial Literacy Expert Group comprises the following members:

- Jean-Pierre Boisivon, l'Université de Paris II Panthéon-Assas, France
- Diana Crossan, Retirement Commission, New Zealand
- Peter Cuzner, Australian Securities and Investments Commission, Australia
- Jeanne Hogarth, Federal Reserve System, USA
- Dušan Hradil, Ministry of Finance, Czech Republic
- Stan Jones, consultant, Canada
- Sue Lewis, Her Majesty's Treasury, UK
- Annamaria Lusardi (Chair), Dartmouth College and The George Washington University School of Business, USA

7. The Consortium gratefully acknowledges the contributions of the expert group to the development of the framework. We also acknowledge the major contribution of Adele Atkinson and Flore-Anne Messy from the OECD Directorate for Financial and Enterprise Affairs.

INTRODUCTION

The importance of financial literacy[1]

1. In recent years, developed and emerging countries and economies have become increasingly concerned about the level of financial literacy of their citizens. This has stemmed in particular from shrinking public and private support systems, shifting demographic profiles including the ageing of the population, and wide-ranging developments in the financial marketplace. Concern was also heightened by the financial crisis, with the recognition that lack of financial literacy was one of the factors contributing to ill-informed financial decisions and that these decisions could, in turn, have tremendous negative spill-over effects (INFE, 2009b; OECD, 2009a). As a result, financial literacy is now globally acknowledged as an important element of economic and financial stability and development (INFE, 2009b).

2. Aside from the "crisis effect", a series of tangible trends underpin the rising global interest in financial literacy as a key life skill. These can be summarised as follows:

Risk shift

3. There has been a widespread transfer of risk from both governments and employers to individuals. Many governments are reducing or have reduced state-supported pensions, and some are reducing healthcare benefits. Defined contribution pension plans are quickly replacing defined benefit pension plans, shifting onto workers the responsibility to save for their own financial security after retirement. Most surveys show that a majority of workers are unaware of the risks they now have to face, and do not have sufficient knowledge and skill to manage such risks adequately, even if they are aware of them (OECD, 2008). Furthermore, the array of risk that people have to face is increasing: for example, individuals face the risks associated with longevity, credit, financial markets, and out-of-pocket healthcare.

Increased individual responsibility

4. The number of financial decisions that individuals have to make is increasing as a consequence of changes in the market and the economy. For instance, longer life expectancy means individuals need to ensure that they accumulate savings to cover much longer periods of retirement. People also need to assume more responsibility for funding personal or family healthcare needs. Moreover, increasing education costs make it important for parents to plan and invest adequately for their children's education. While these trends are most obvious in developed countries similar issues are also emerging in many developing economies.

Increased supply of a wide range of financial products and services

5. Growing numbers of consumers have access to a wide range of financial products and services, from a variety of providers and delivered through various channels. Both developments in technology and deregulation have resulted in widening access to all kinds of financial products, from current accounts to remittances products, revolving credit and equity portfolios. The products available are becoming more complex, and individuals are required to make comparisons across a number of factors such as the fees charged, interest rates paid or received, length of contract and exposure to risk. They must also identify appropriate providers and delivery channels from the vast array of possibilities, including community groups, traditional financial institutions, online banks and mobile phone companies.

Increased demand for financial products and services

6. Economic and technological developments have brought greater global connectedness and massive changes in communications and financial transactions, as well as in social interactions and consumer behaviour. Such changes have made it more important that

1. Often called "financial capability". The terms are considered synonymous for the purposes of this framework.

individuals be able to interact with financial providers. In particular, consumers often need access to banks in order to make and receive electronic payments such as income, remittances and online transactions, as well as to conduct face-to-face transactions in societies where cash and cheques are no longer favoured. Those who cannot access banks often pay more for cash transactions, using informal financial services such as moneylenders or cheque cashers (see, for example, Kempson, Collard, & Moore, 2005).

7. All of these trends have transferred the responsibility of major financial decisions to individuals. At the same time, they have both enlarged the options for the majority of the population and increased the level of complexity they face. Against this backdrop individuals are expected to be sufficiently financially literate to take the necessary steps to protect themselves and their relatives and ensure their financial well-being.

Potential benefits of financial literacy

8. Existing empirical evidence shows that adults in both developed and emerging economies who have been exposed to financial education are subsequently more likely than others to save and plan for retirement (Bernheim, Garrett, & Maki, 2001; Cole, Sampson, & Zia, 2010; Lusardi, 2009). This evidence suggests a direct causal link between financial education and outcomes; it indicates that improved levels of financial literacy can lead to positive behaviour change.

9. Other research, stemming largely from developed countries, indicates a number of potential benefits of financial literacy. There is mounting evidence that those with higher financial literacy are better able to manage their money, participate in the stock market and perform better on their portfolio choice, and that they are more likely to choose mutual funds with lower fees (Hastings & Tejeda-Ashton, 2008; Hilgert, Hogarth, & Beverly, 2003; Lusardi & Mitchell, 2008; Lusardi & Mitchell, 2006; Stango & Zinman, 2009; van Rooij, Lusardi, & Alessie, 2007; Yoong, 2010). Moreover, those who have greater financial knowledge are more likely to accumulate higher amounts of wealth (Lusardi & Mitchell, 2006).

10. Higher levels of financial literacy have been found to be related not only to asset building but also to debt and debt management, with more financially literate individuals opting for less costly mortgages and avoiding high interest payments and additional fees (Gerardi, Goette, & Meier, 2010; Lusardi & Tufano, 2009a, 2009b; Moore, 2003).

11. In addition to the benefits identified for individuals, financial literacy is important to economic and financial stability for a number of reasons. Financially literate consumers can make more informed decisions and demand higher quality services, which will encourage competition and innovation in the market. They are also less likely to react to market conditions in unpredictable ways, less likely to make unfounded complaints and more likely to take appropriate steps to manage the risks transferred to them. All of these factors will lead to a more efficient financial services sector and potentially less costly financial regulatory and supervisory requirements. They can also ultimately help in reducing government aid (and taxation) aimed at assisting those who have taken unwise financial decisions – or no decision at all.

OECD activities in financial education

12. In 2003, the OECD initiated a far-reaching financial education project to address governments' emerging concern about the potential consequences of low levels of financial literacy. This project is serviced by two OECD Committees: the Committee on Financial Markets (CMF) and the Insurance and Private Pensions Committee (IPPC). The project takes a holistic approach to financial-consumer issues that highlights how, alongside an adequate consumer protection and regulatory framework, financial education has a complementary role to play in promoting the outcome of personal financial literacy.

13. One of the first milestones of the financial education project was the adoption of the *Recommendation on Principles and Good Practices for Financial Education and Awareness* by

the OECD council (OECD, 2005b). Alongside these recommendations, the project published the book *Improving Financial Literacy: Analysis of Issues and Policies* to detail the reasons for focusing on financial education, and to provide a comprehensive and international overview of financial education work being undertaken in various countries at that time (OECD, 2005a). This book also includes principles and good practices for policy makers and other stakeholders seeking to improve levels of financial literacy in their country. It is complemented by a global clearinghouse on financial education, the OECD International Gateway for Financial Education (IGFE) (www.financial-education.org), which gathers data, resources, research and news on financial education issues and programmes from around the world.

14. Recognising the increasingly global nature of financial literacy and education issues, in 2008 the OECD created the International Network on Financial Education (INFE) to benefit from and encompass the experience and expertise of developed and emerging economies. Currently more than 138 public institutions from 68 countries have joined the network. Members meet twice yearly to discuss the latest developments in their country and to develop analytical and comparative studies, methodologies, best practice and guidelines on key priority areas. In this context, both financial education programmes in schools and the international measurement of financial literacy have been identified by the OECD and its network as top priority issues for which dedicated expert subgroups have been created to launch focused data collection and development work.

Financial education for youth and in schools

15. The focus on financial education for youth and in schools is not new. As mentioned, financial literacy is increasingly considered to be an essential life skill, and as early as 2005, the *OECD Recommendation* advised that "financial education should start at school. People should be educated about financial matters as early as possible in their lives" (OECD, 2005b). Two main reasons underpin this recommendation: the importance of focusing on youth, and the efficiency of providing financial education in schools.

Focus on youth

16. Younger generations are not only likely to face ever-increasing complexity in financial products, services and markets, but they are more likely to have to bear more financial risks in adulthood than their parents. In particular, they are likely to bear more responsibility for the planning of their own retirement savings and investments, and the coverage of their healthcare needs; and they will have to deal with more complex and diverse financial products.

17. Because of the changes in the marketplace and pension systems, current generations are unlikely to be able to learn from past generations. They will have to rely on their own knowledge or, given the complexities of new systems, make informed use of professional financial advice. Efforts to improve financial knowledge in the workplace or in other settings can be severely limited by a lack of early exposure to financial education and by a lack of awareness of the benefits of continuing financial education. It is therefore important to provide early opportunities for establishing the foundations of financial literacy.

18. In addition to preparing young people for their adult life, financial education in schools can also address the immediate financial issues facing young people. Many children are consumers of financial services from a young age. It is not uncommon for them to have accounts with access to online payment facilities or to use mobile phones (with various payment options) even before they become teenagers, and it is clear that financial literacy skills would be of benefit to them when using such products. Before leaving school, they may also face decisions about such issues as car insurance, savings products and overdrafts.

19. In many countries, at around the age of 15 to 18, young people (and their parents) face one of their most important financial decisions: that is, whether or not to invest in college or higher education. The gap in wages between college and non-college educated workers has widened in many economies. At the same time, the education costs borne by students and their

families have increased. Figures published in March 2010 in the UK suggest that half of all UK students expected to leave university owing over 15,000 GBP (Smithers, 2010).

20. It is important for people to be financially literate before they engage in major financial transactions and contracts. Financial education programs for young people can be essential in nurturing sound financial knowledge and behaviour in students from a young age, which they can draw on in the coming years (Australian Government Financial Literacy Board, 2009).

Efficiency of providing financial education in schools

21. Research suggests that there is a link between financial literacy and family economic and educational background: those who are more financially literate disproportionately come from highly educated and financially sophisticated families (Lusardi, et al., 2010). In order to provide equality of opportunity, it is important to offer financial education to those who would not otherwise have access to it. Schools are well positioned to advance financial literacy among all demographic groups, which will help to break the cycle of generational financial illiteracy.

22. Recognising both the importance of financial literacy for youth and the unique potential of school programmes to create more skilled and knowledgeable future generations, an increasing number of countries have embarked on the development of financial education programmes. These are either dedicated to youth generally or delivered through schools, and include those at national, regional and local levels as well as pilot exercises. A survey of individual financial literacy schemes supported by the European Commission (Habschick, Seidl, & Evers, 2007) found that most were directed at children and young people, and a broad stock-take exercise launched by the INFE subgroup on financial education in schools demonstrated that amongst the 38 countries/jurisdictions contributing to the survey, 23 had some programmes in schools (INFE, forthcoming).

The need for data

23. Educators, researchers and policy makers need high quality data on levels of financial literacy in order to inform both research and implementation of financial education programmes in schools, as well as financial education strategies, to identify priorities and to measure change across time.

24. Several countries have undertaken national surveys of financial literacy across their adult population and the OECD is currently piloting a questionnaire designed to capture levels of financial literacy amongst adults at an international level (INFE, 2010). However, there are currently very few data on the levels of financial literacy amongst young people under the age of 18, and none that can be compared across countries. This is a serious omission. Young people will soon be adults having to make ever more complex yet critical financial decisions, and the availability of data on their ability to address these challenges is essential to advance our knowledge on how well prepared the young are to face the new and changing economic environment.

25. A robust measure of financial literacy amongst young people will provide information at a national level that can indicate whether the current approach to financial education is effective. In particular, it can help identify issues that need addressing through schools or extra activities or programmes that will enable young people to be properly and equitably equipped to make financial decisions in adulthood. It can also be used as a baseline from which to measure success and review school and other programmes in future years.

26. An international study provides additional benefits to policy makers and other stakeholders. Comparing levels of financial literacy across countries makes it possible to see which countries have the highest levels of financial literacy and begin to identify particularly effective national strategies and good practices. It will also be possible to recognise common challenges and explore the possibility of finding international solutions to the issues faced.

27. Against this backdrop, it is anticipated that the collection of robust and internationally comparable financial literacy data will provide educators, curriculum and resource developers, researchers, policymakers and others with:

- information about gaps in financial knowledge amongst young people that can inform the development of more targeted programmes and policies;
- an indication of the extent to which existing financial education in schools, where provided, is improving levels of financial literacy;
- a means of comparing levels of financial literacy, and thus financial education strategies, across countries;
- the opportunity to identify best practice by looking at the ranking of countries in terms of levels of financial literacy; and, ultimately,
- comparable data over time allowing the assessment of the impact of financial education initiatives in schools and identifying options for ongoing efficiency improvements.

28. There are many other advantages to countries participating in an international measurement exercise. In particular, the development of the financial literacy framework and a set of questions that are applicable across countries will provide national authorities with detailed guidance about the scope and operational definition of financial literacy without having to fund national studies. As noted in the article "Financial Literacy and Education Research Priorities", there is a gap in the research on financial literacy "related to the lack of consistency among researchers in how to define and measure program success. There is a need for researchers to develop a clear understanding of what it means to be 'financially educated'"(Schuchardt, et al., 2009).

The measurement of financial literacy in PISA

29. PISA 2012 will be the first large-scale international study to assess the financial literacy of young people. PISA takes a broad approach to measuring knowledge and skills, moving beyond a school-based focus that is directed at what has been taught, towards assessing the readiness of young people for their life beyond compulsory schooling, and in particular their capacity to use knowledge and skills. PISA collects cognitive and other information from 15-year-olds in many countries and economies. It is thus able to provide a rich set of comparative data that policy makers and other stake-holders can use to make evidence-based decisions. International comparative data on financial literacy can answer questions such as, "How much are young people prepared for the new financial systems that are becoming more global and more complex?" and "Who are the leaders in terms of financial literacy?"

30. As with the core PISA domains of reading, mathematics and science, the main focus of the financial literacy assessment in PISA will be on measuring the proficiency of 15-year-olds in demonstrating and applying knowledge and skills. And like other PISA domains, financial literacy will be assessed using an instrument designed to provide data that are valid, reliable and interpretable.

31. The first step in constructing an assessment that satisfies these three broad criteria is to develop an assessment framework. The main benefit of constructing an assessment framework is improved measurement, as it provides an articulated plan for developing the individual items and designing the instrument that will be used to assess the domain. A further benefit is that it provides a common language for discussion of the domain, and thereby increases understanding of what is being measured. It also promotes an analysis of the kinds of knowledge and skills associated with competency in the domain, and thus provides the groundwork for building a described proficiency scale or scales that can be used to interpret the results.

32. The development of the PISA frameworks can be described as a sequence of the following six steps:

- development of a working definition for the domain and description of the assumptions that underlie that definition;
- identification of a set of key characteristics that should be taken into account when constructing assessment tasks for international use;
- operationalisation of the set of key characteristics that will be used in test construction, with definitions based on existing literature and experience in conducting other large scale assessments;
- evaluation of how to organise the set of tasks constructed in order to report to policy makers and researchers on achievement in each assessment domain for 15-year-old students in participating countries;
- validation of the variables and assessment of the contribution each makes to understanding task difficulty across the various participating countries; and
- preparation of an interpretative reporting scheme for the results.

33. The first four of these steps are outlined in early drafts of this framework in order to guide test development, while the last two will be completed once data from the field trial have been collected and analysed.

DEFINING THE DOMAIN

34. In developing a working definition of financial literacy that can be used to lay down the groundwork for designing an international financial literacy assessment, the expert group looked both to existing PISA domain definitions of literacies, and to articulations of the nature of financial education.

35. PISA conceives of literacy as the capacity of students to apply knowledge and skills in key subject areas and to analyse, reason and communicate effectively as they pose, solve and interpret problems in a variety of situations. PISA is forward looking, focusing on young people's ability to use their knowledge and skills to meet real-life challenges, rather than merely on the extent to which they have mastered specific curricular content (OECD, 2010).

36. In *Recommendation on Principles and Good Practices for Financial Education and Awareness* the OECD defined financial education as "the process by which individuals improve their understanding of financial products and concepts; and through information, instruction and/or objective advice develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being and protection." (OECD, 2005b)

37. The expert group agreed that "understanding", "skills" and the notion of applying understanding and skills ("effective actions") were key elements of this definition. It was recognised, however, that the definition of financial education describes a process – education – rather than an outcome. What was required for the assessment framework was a definition encapsulating the outcome of that process in terms of competency or literacy.

38. The working definition of financial literacy for PISA 2012 is as follows:

> *Financial literacy is knowledge and understanding of financial concepts, and the skills, motivation and confidence to apply such knowledge and understanding in order to make*

effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life.

39. This definition, like other PISA domain definitions, has two parts. The first part refers to the kind of thinking and behaviour that characterises the domain. The second part refers to the purposes for developing the particular literacy.

40. In the following paragraphs, each part of the PISA 2012 definition of financial literacy is considered in turn to help clarify its meaning in relation to the assessment.

Financial literacy …

41. *Literacy* is viewed as an expanding set of knowledge, skills and strategies that individuals build on throughout life, rather than as a fixed quantity, a line to be crossed, with illiteracy on one side and literacy on the other. Literacy involves more than the reproduction of accumulated knowledge, although measuring prior financial knowledge will be an important element in the assessment. It involves also a mobilisation of cognitive and practical skills, and other resources such as attitudes, motivation and values. The PISA 2012 assessment of financial literacy will draw on a range of knowledge and skills associated with development of the capacity to deal with the financial demands of everyday life in contemporary society.

… is knowledge and understanding of financial concepts …

42. Clearly, it cannot be expected that 15-year-olds will have sophisticated knowledge or understanding of the complexities of personal finance. Nevertheless, it can be assumed that they have some awareness of the financial environment that they and their families inhabit. All of them are likely to have been shopping to buy household goods or personal items; some will have taken part in family discussions about money and whether what is wanted is actually needed; and a sizeable proportion of them will have already begun earning and saving. Some students already have experience of financial products through a bank account or a mobile phone contract. A grasp of concepts such as interest, inflation, and value for money are soon going to be, if they are not already, important for their financial well-being. Although the simple reproduction of knowledge is not the cornerstone of PISA assessments, financial literacy is contingent on some knowledge of fundamental elements of the financial world, including financial products such as insurance policies and pensions.

… and the skills, …

43. These skills include such generic cognitive processes as accessing information, comparing and contrasting, extrapolating and evaluating – applied in a financial context. They include basic skills in mathematical literacy such as the ability to calculate a percentage or to convert from one currency to another, and language skills such as the capacity to read and interpret advertising and contractual texts. Additionally, financial literacy involves skill in managing the emotional and psychological factors that influence financial decision making.

… motivation and confidence …

44. Financial literacy involves not only the knowledge, understanding and skills to deal with financial issues, but also non-cognitive attributes: the motivation to seek information and advice in order to engage in financial activities and the confidence to do so. These attributes are considered as a goal of financial education, as well as being instrumental in building financial knowledge and skills.

… to apply such knowledge and understanding in order to make effective decisions …

45. PISA's focus is on the ability to activate knowledge and understanding in real-life situations. In assessing financial literacy, this translates into a measure of young people's ability to transfer and apply what they have learned about personal finance into effective decision-making.

… across a range of financial contexts …

46. Effective financial decisions apply to a range of financial contexts that relate to young people's present daily life and experience, but also to steps they are likely to take in the near future as adults. For example, young people may currently make relatively simple decisions such as how they will use their pocket money or, at most, which mobile phone contract they will choose; but they may soon be faced with major decisions about education and work options with long-term financial consequences.

… to improve the financial well-being of individuals and society …

47. Financial literacy in PISA is conceived of as primarily personal financial literacy, distinguished from economic literacy, which includes both broader concepts such as the theories of demand and supply, market structures and so on. Financial literacy is concerned with the way individuals understand, manage and plan their own and their households' – which often means their families' – financial affairs. It is recognised, however, that good understanding, management and planning on the part of individuals has some collective impact on the wider society – in contributing to national and even global stability, productivity and development.

… and to enable participation in economic life.

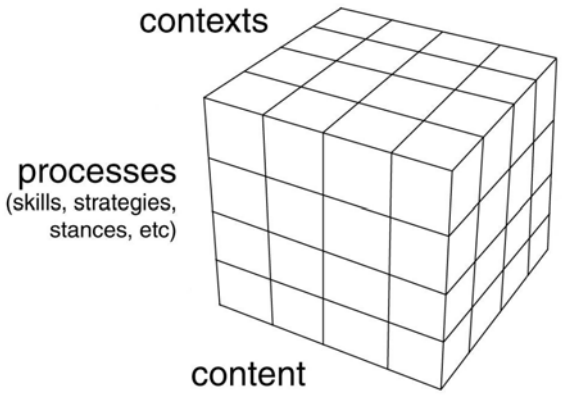
48. Like the other PISA literacy definitions, the definition of financial literacy implies the importance of the individual's role as a thoughtful and engaged member of society. Individuals with a high level of financial literacy are better equipped to make decisions that are of immediate benefit to themselves, and also to constructively support and critique the economic world in which they live.

ORGANISING THE DOMAIN

49. How the domain is represented and organised determines the assessment design, including item development and, ultimately, the evidence about student proficiencies that can be collected and reported. Many elements are part of the concept of financial literacy, not all of which can be taken into account and varied in an assessment such as PISA. It is necessary to select the elements that will best ensure construction of an assessment comprising tasks with an appropriate range of difficulty and a broad coverage of the domain.

50. A review of approaches and rationales adopted in previous large-scale studies, and particularly in PISA, shows that most consider the relevant content, processes and contexts for assessment as they specify what they wish to assess. Content, processes and contexts can be thought of as three different perspectives on the area to be assessed, as shown in Figure 1.

Figure 1: A model for organising the domain for an assessment framework



51. *Content* comprises the areas of knowledge and understandings that are essential in the area of literacy in question.

52. *Processes* describes the mental strategies or approaches that are called upon to negotiate the material.

53. *Contexts* refers to the situations in which the domain knowledge, skills and understandings are applied, ranging from the personal to the global.

54. The steps of identifying and weighting the different elements or categories within each perspective, and then ensuring that the set of tasks in the assessment adequately reflects these categories, are used to ensure coverage and validity of the assessment. The three perspectives are also helpful in thinking about how achievement in the area is to be reported.

Content

55. The content of financial literacy is conceived of as the areas of knowledge and understanding that must be drawn upon in order to perform a particular task. A review of the content of existing financial literacy learning frameworks from a wide range of countries (Australia, Brazil, England, Japan, Malaysia, the Netherlands, New Zealand, Northern Ireland, Scotland, South Africa and the United States) indicated that there is some consensus on the financial literacy content areas (INFE, 2009a; Watson, 2009). The data analysis notably showed that the content of financial education in schools was – albeit with cultural differences – relatively similar, and that it was possible to identify a series of topics commonly included in these frameworks. These form the four content areas for PISA financial literacy: *money and transactions, planning and managing finances, risk and reward,* and *financial landscape*.

Money and transactions

56. This content area focuses on a broad spectrum of personal financial topics such as everyday payments, spending, value for money, bank cards, cheques, bank accounts and currencies. Tasks in this content area might, for example, ask students to show that they:

- understand that money is used to exchange goods and services;
- recognise bank notes and coins;
- can identify different ways to pay for items, in person or via the Internet;
- can calculate correct change;
- can work out which of two consumer items of different sizes would give better value for money, taking into account the individual's specific needs and circumstances;
- recognise that there are various ways of receiving money from other people and transferring money between people or organisations;
- can use cash machines to withdraw cash or to get an account balance;
- can check transactions listed on a bank statement and note any irregularities;
- understand that money can be borrowed or lent, and the reasons for paying or receiving interest; and
- can use a credit or debit card.

Planning and managing finances

57. Income and wealth need planning and managing over both the short term and long term. This content area might include tasks showing whether students:

- can identify various types of income and measures of income (e.g. allowances, salary, commission, benefits, hourly wage, and gross and net income).
- understand what government taxes and benefits are, and their impact on planning and managing finances;
- can draw up a budget to plan regular spending and saving;
- understand how to manipulate various elements of a budget, such as identifying priorities if income does not meet planned expenses, or finding options for reducing expenses or increasing income in order to increase level of savings;
- can plan ahead to pay for future expenses: for example, working out how much needs to be saved each month to make a particular purchase;
- can assess the impact of different spending plans to make informed choices;
- understand the idea of building wealth, the impact of compound interest on savings, and the pros and cons of investment products;
- recognise the benefit of planning for retirement from a young age, and the importance of building reserves to buffer shocks;
- understand the benefits of saving for other long term goals or anticipated changes in circumstance (such as having a baby);
- can assess the investment advantages and disadvantages of building human capital through different types of education and training; and
- understand the purposes of accessing credit and the ways in which expenditure can be smoothed over time through borrowing or saving.

Risk and reward

58. *Risk and reward* is a key area of personal financial literacy, incorporating an understanding of the potential for financial gains or losses across a range of financial contexts, and the ability to identify ways of managing, balancing and covering risks. There are two risks of particular importance in this domain. The first relates to financial losses that an individual cannot bear, such as those caused by catastrophic or repeated costs. The second is the risk inherent in financial products, such as credit agreements with variable interest rates.

59. This content area involves knowing why some methods of saving or investing are more risky than others. It also involves understanding how to limit the risk to personal capital, and the benefits of diversification. It includes recognising that there is a wide range of insurance products that are appropriate for different needs and circumstances. Tasks in this content category might ask for an examination of the potential risks or rewards associated with:

- various types of investment and savings vehicles, including formal financial products and alternative methods of saving (such as buying livestock or gold), and insurance products;

- various forms of credit, including informal and formal credit, unsecured and secured, rotating and fixed term, and those with fixed or variable interest rates;

- default on payment of bills and credit agreements; and

- fluctuations in interest rates and exchange rates, and market volatility.

Financial landscape

60. This content area relates to the character and features of the financial world. It covers knowing the rights and responsibilities of consumers in the financial marketplace and within the general financial environment, and the main implications of financial contracts. Information resources and legal regulation are also topics relevant to this content area. In its broadest sense, *financial landscape* also incorporates an understanding of the consequences of changes in economic conditions and public policies, such as changes in interest rates, inflation, taxation or welfare benefits. Tasks associated with this content area might include assessing whether students:

- understand that individuals have choices in spending and saving and each action can have consequences for the individual and for society;

- understand that buyers and sellers have rights, such as being able to apply for redress;

- understand that buyers and sellers have responsibilities, such as giving accurate information when applying for financial products and being aware of the implications of not doing so;

- recognise the importance of the legal documentation provided when purchasing financial products or services, and the importance of understanding the content;

- can identify whom to ask for advice when choosing financial products, and where to go for help in relation to financial matters;

- can identify which providers are trustworthy, and which products and services are protected through regulation or consumer protection laws;

- recognise how personal financial habits, actions and decisions impact at individual, community, national and international level;

- are aware of the economic climate and understand the impact of policy changes such as reform relating to the funding of post-school training;

- understand how the ability to build wealth or access credit depends on economic factors such as interest rates, inflation and credit scores;

- understand that a range of external factors, such as advertising and peer pressure, can affect peoples' financial choices; and

- are aware of financial crimes such as identity theft and scams and know how to take appropriate precautions.

Processes

61. The process categories relate to cognitive processes. They are used to describe students' ability to recognise and apply concepts relevant to the domain, and to understand, analyse, reason about, evaluate and suggest solutions. In PISA financial literacy, four process categories have been defined: *identify financial information*, *analyse information in a financial*

context, *evaluate financial issues* and *apply financial knowledge and understanding*. While the verbs used here bear some resemblance to those in Bloom's taxonomy (Bloom, 1956), an important distinction is that the processes in the financial literacy construct are not operationalised as a hierarchy of skills, but as parallel essential cognitive approaches, all of which are part of the financially literate individual's repertoire. The order in which the processes are presented here relates to a typical sequence of thought processes and actions, rather than to an order of difficulty or challenge. At the same time it is recognised that financial thinking, decisions and actions are most often dependent on a recursive and interactive blend of the processes described in this section. For the purposes of the assessment, each task is identified with the process that is judged most central to its completion.

Identify financial information

62. This process is engaged when the individual searches and accesses sources of financial information, and identifies or recognises its relevance. In PISA 2012 the information will be in the form of printed texts such as contracts, advertisements, charts, tables, forms and instructions. A typical task might ask students to identify the features of a purchase invoice, or recognise the balance on a bank statement. A more difficult task might involve searching through a contract that uses complex legal language to locate information that explains the consequences of defaulting on loan repayments. This process category is also reflected in tasks that involve recognising financial terminology, such as identifying "inflation" as the term used to describe increasing prices over time.

Analyse information in a financial context

63. This process covers a wide range of cognitive activities undertaken in financial contexts, including interpreting, comparing and contrasting, synthesising, and extrapolating from information that is provided. Essentially it involves recognising something that is not explicit: identifying the underlying assumptions or implications of an issue in a financial context. For example, a task may involve comparing the terms offered by different mobile phone contracts, or working out whether an advertisement for a loan is likely to include unstated conditions.

Evaluate financial issues

64. In this process the focus is on recognising or constructing financial justifications and explanations, drawing on financial knowledge and understandings applied in specified contexts. It involves such cognitive activities as explaining, assessing and generalising. Critical thinking is brought into play in this process, when students must draw on knowledge, logic and plausible reasoning to make sense of and form a view about a finance-related problem. The information that is required to deal with such a problem may be partly provided in the stimulus of the task, but students will need to connect such information with their own prior financial knowledge and understandings. In the PISA context, any information that is required to understand the problem is intended to be within the expected range of experiences of a 15-year-old. For example, it is assumed that 15-year-olds are likely to be able identify with, or imagine, the experience of wanting something that is not essential (such as a new sound system). A task based on this scenario could ask about the factors that might be considered in deciding on the relative financial merits of making a purchase or deferring it, given specified financial circumstances.

Apply financial knowledge and understanding

65. The fourth process picks up a term from the definition of financial literacy: "to apply such [financial] knowledge and understanding". It focuses on taking effective action in a financial setting by using knowledge of financial products and contexts, and understanding of financial concepts. This process is reflected in tasks that involve performing calculations and solving problems, often taking into account multiple conditions. An example of this kind of task is calculating the interest on a loan over two years. This process is also reflected in tasks that require recognition of the relevance of prior knowledge in a specific context. For example, a

task might require the student to work out whether purchasing power will decline or increase over time when prices are changing at a given rate. In this case, knowledge about inflation needs to be applied.

Contexts

66. In building a framework, and the assessment items that will be developed and selected based on this framework, attention is given to the breadth of contexts in which the domain literacy is exercised. Decisions about financial issues are often dependent on the contexts or situations in which the issues present themselves. By situating tasks in a variety of contexts the assessment offers the possibility of connecting with the broadest possible range of individual interests and with the range of situations in which individuals need to function in the 21st century.

67. Certain situations will be more familiar to 15-year-olds than others. In PISA, assessment tasks are framed in situations of general life, which may include but are not confined to school contexts. The focus may be on the individual, family or peer group, on the wider community, or even more widely on a global context.

68. As a starting point, the expert group looked at the contexts used in the Programme for the International Assessment of Adult Competencies (PIAAC) literacy framework: *education and work, home and family, leisure and recreation,* and *community and citizenship* (OECD, 2009b). For the purposes of the financial literacy domain the heading *leisure and recreation* was replaced by *individual* to reflect the fact that many of the financial interactions that young people have are related to themselves as individual consumers, using products such as mobile phones or laptops, as well as accessing leisure facilities or funding recreation. It was further decided to replace *community and citizenship* with *societal*. While *community and citizenship* captures the idea of a perspective wider than the personal, it was felt that the term *community* was not wide enough. *Societal* by contrast implicitly encompasses national and global situations as well as the more local, thus better fitting the potential reach of financial literacy. The contexts identified for the PISA financial literacy assessment are, then, *education and work, home and family, individual* and *societal*.

Education and work

69. The context of *education and work* is of great importance to young people. The educational context is obviously relevant to PISA students, since they are by definition a sample of the school-based population; indeed, many of them will continue in education or training for some time. However, many other 15-year-olds move from school into the labour force within one to two years, and many 15-year-old students, moreover, are engaged in casual employment outside school hours. Therefore, both currently and for the medium term, the occupational context is also relevant for PISA students. Virtually all 15 year olds will be starting to think about financial matters related to both education and work, whether they are spending existing earnings, considering future education options or planning their working life.

70. Typical tasks within this context could include understanding payslips, planning to save for tertiary study, investigating the benefits and risks of taking out a student loan, and participating in workplace saving schemes.

Home and family

71. *Home and family* includes financial issues relating to the costs involved in running a household. Family is the most likely household circumstance for 15-year-olds; however, this category also encompass households that are not based on family relationships, such as the kind of shared accommodation that young people often use shortly after leaving the family home. Tasks within this context may include buying household items or family groceries, keeping records of family spending and making plans for family events. Decisions about budgeting and prioritising spending may also be framed within this context.

Individual

72. The context of the *individual* is important within personal finance since there are many decisions that a person takes entirely for personal benefit or gratification, and many responsibilities that must be borne by individuals. Decisions taken that fit within this context include choosing personal products and services such as clothing, toiletries or haircuts, or buying consumer goods such as electronic or sports equipment, as well as commitments such as season tickets or gym membership. These decisions span essential personal needs, as well as leisure and recreation. Although the decisions made by an individual may be influenced by the family and society, when it comes to opening a bank account or getting a loan it is the individual who has the legal responsibility for such decisions. The context *individual* therefore includes contractual issues around events such as opening a bank account, purchasing consumer goods, paying for recreational activities, and dealing with relevant financial services that are often associated with larger consumption items, such as credit and insurance.

Societal

73. The environment young people are living in is characterised by change, complexity and interdependence. Globalisation is creating new forms of interdependence where actions are subject to economic influences and consequences that stretch well beyond the individual and the local community. While the core of the financial literacy domain is focused on personal finances, the *societal* context recognises that individual financial well-being cannot be entirely separated from the rest of society. Personal financial well-being affects and is affected by the local community, the nation and even global activities. Financial literacy within this context includes matters such as being informed about consumer rights and responsibilities, understanding the purpose of taxes and local government charges, being aware of business interests, and taking into account the role of consumer purchasing power. It extends also to considering financial choices such as donating to non-profit organisations and charities.

Non-cognitive factors

74. The PISA working definition of financial literacy includes the non-cognitive terms *motivation* and *confidence*, attitudes which, according to some, have great influence on money management behaviour (Johnson & Staten, 2010). PISA conceives of financial attitudes and experiences as indicators of financial literacy in their own right. Attitudes and behaviour are also of interest in terms of their interactions with the cognitive elements of financial literacy. Further, information collected about the financial attitudes and behaviour of 15-year-olds will also potentially constitute useful baseline data for any longitudinal investigation of the financial literacy and financial behaviour of adults.

75. The financial literacy expert group identified four non-cognitive factors for focused attention: *access to information and education*, *access to money and financial products*, *attitudes towards and confidence about financial matters*, and *spending and saving behaviour*.

Access to information and education

76. There are various sources of financial information available to students, including friends, parents or other family members, the media and financial institutions. It is useful to know which sources of information are accessed most frequently and to ascertain whether higher levels of financial literacy are associated with particular sources of information. Policy makers can also use this information to ascertain how well messages about financial issues are being communicated, and where to target new interventions.

77. The education and training received by students also varies within and across countries. Information about the extent to which there is a link between levels of financial literacy and financial education inside and outside schools is likely to be particularly useful in shaping education programmes for improving financial literacy.

Access to money and financial products

78. Students who have had greater personal experience dealing with financial matters might be expected to perform better on the cognitive assessment. Those who regularly make decisions about how to manage their own money are likely to know more about financial matters, even if they have not had specific instruction, than those who do not. That experience may come from earning money, from using financial products such as credit and debit cards, or from dealing with the banking system. A key policy question in this area is, "To what extent do real-life experiences of the financial world influence young people's financial literacy?"

Attitudes towards and confidence about financial matters

79. Attitudes are considered important constituents of financial literacy. Moreover, individual preferences are important determinants of financial behaviour and can interact with financial literacy. It is hypothesised that research from behavioural psychology may yield interesting results with regard to financial literacy, and better inform policy makers trying to improve the efficiency of programmes. The following areas in particular have been identified for investigation:

- Risk tolerance: willingness to accept the possibility of a loss in order to achieve greater gain (Barsky, Juster, Kimball, & Shapiro, 1997; Holt & Laury, 2002);
- Time sensitivity: willingness to trade immediate reward for greater gain at a future date (Barsky, et al., 1997; Holt & Laury, 2002);
- Locus of control: belief that one is in control of matters that affect oneself (Rotter, 1966);
- Fatalism: belief that bad things are more likely to happen to oneself than to others; and
- General confidence in financial matters: belief that the individual has enough knowledge and understanding to carry out financial transactions successfully.

Spending and saving behaviour

80. While items on the cognitive assessment will test students' ability to make particular spending and savings decisions, it is also useful to have some measure of what their actual (reported) behaviour is: that is, how students save and spend in practice. PISA financial literacy could provide important evidence on the relationship between financial literacy knowledge and financial behaviour, by looking at the relationship between 15-year-olds' reported behaviour and their results on the cognitive financial literacy assessment.

ASSESSING FINANCIAL LITERACY

81. The previous section has outlined the conceptual framework for financial literacy. The concepts in the framework must in turn be represented in tasks and questions in order to collect evidence of students' proficiency in financial literacy. In this section we discuss the structure of the assessment, the distribution of tasks across the framework variables, and the choice of response formats. This is followed by a short discussion of the impact of knowledge and skills from other domains on financial literacy and the implications for the assessment. To conclude we describe the method by which data about financial attitudes and experience will be collected.

82. The conceptual framework is concerned with mapping the domain, not just for the 2012 assessment, but more broadly. It lays out the definition and the major variables that will be addressed in the assessment instrument. The key ideas have been elaborated through lists of sub-topics and examples in the preceding section. These elaborations should not be construed as a checklist of tasks to be included in the 2012 assessment. As an international option, only one hour of assessment material will be administered in PISA 2012 – not enough to cover every

detail of each variable as described. In future administrations further aspects of the domain will be included in assessment tasks.

83. In addition, sample tasks will be included in later versions of the framework, as will a fuller discussion of the factors affecting item difficulty that will contribute to the building of an interpretive scheme for describing development of proficiency in the domain.

The structure of the assessment

84. One hundred and twenty minutes of financial literacy material will be administered in the field trial, from which 60 minutes of main survey material will be selected. Analysis of completion rates in the field trial will be used to determine the precise number of items that will be included in the main survey: it is anticipated that there will be 30 to 40 items.

85. For the main survey, in countries participating in the financial literacy international option, two student booklets will be added to the core domain paper and pen rotation of 13 booklets. These two additional booklets will comprise two 30-minute clusters of financial literacy and two 30-minute clusters of mathematical literacy (as the major domain for PISA 2102, every sampled student in PISA will be assessed in mathematics). The same two clusters of financial literacy items will appear in the two additional booklets but their positions will be varied. Thus there will be a total of 60 minutes of financial literacy material, with each student selected for the financial literacy sample being administered all 60 minutes.

86. As with other PISA assessment domains, financial literacy items will be grouped in units – typically comprising 1, 2 or 3 items – based around a common stimulus. The selection will aim to include financially-focused stimulus material in diverse formats, including prose, diagrams, tables, charts and illustrations.

87. The assessment will comprise a broad sample of items covering a range of difficulty that will enable the strengths and weaknesses of populations and key subgroups to be measured and described.

Distribution of score points

88. In this section we outline the intended distribution of score points across the categories of the three characteristics discussed in the previous section: content, processes and contexts. The term “score points” is used in preference to “items”, as it is possible that some partial credit items (items which yield more than one score point) will be included. The distributions are expressed in terms of ranges, which at this stage indicate the approximate weighting of the various categories.

89. The expected distribution of score points according to financial literacy content areas is shown in Table 1.

Table 1 Distribution of score points by content

Money and transactions	Planning and managing finances	Risk and reward	Financial landscape	Total
30% - 40%	25% - 35%	15% - 25%	10% - 20%	100%

90. The distribution indicates that *money and transactions* is considered to be to the most immediately relevant content area for15-year-olds.

91. Table 2 shows the expected distribution of score points by the four processes.

Table 2 Distribution of score points by processes

Identify financial information	Analyse information in a financial context	Evaluate financial issues	Apply financial knowledge and understanding	Total
15% - 25%	15% - 25%	25% - 35%	25% - 35%	100%

92. The weighting shows the importance attributed to evaluating financial issues and applying financial knowledge and understanding.

93. Table 3 shows the distribution of score points by the four contexts.

Table 3 Distribution of score points by contexts

Education and work	Home and family	Individual	Societal	Total
10% - 20%	30% - 40%	35% - 45%	5% -15%	100%

94. Consistent with an assessment of personal financial literacy there is a clear emphasis on *individual*, but also a weighting towards the financial interests of the household or family unit. Education and work and societal contexts are given smaller weights, but included in the scheme as they are important elements of financial experience.

Response formats and coding

95. Decisions about the form in which the data are collected – the response formats of the items – are based on what is considered appropriate given the kind of evidence that is being collected, and also on technical and pragmatic considerations. In the financial literacy assessment as in other PISA assessments, two broad types of items will be used: constructed-response items and selected-response items.

96. Constructed-response items require students to generate their own answers. The format of the answer may be a single word or figure, or may be longer: a few sentences or a worked calculation. Constructed-response items that require a more extended answer are ideal for collecting information about students' capacity to explain decisions or demonstrate a process of analysis.

97. Selected-response items require students to choose one or more alternatives from a given set of options. The most common type in this category is the multiple-choice item, which requires the selection of one from a set of options, usually four. A second type of selected-response item is complex multiple choice, in which students respond to a series of "Yes/No"-type questions. Selected-response items are typically regarded as most suitable for assessing items associated with identifying and recognising information, but they are also a useful way of measuring students' understanding of higher-order concepts that they may not easily be able to express themselves.

98. Although particular item formats lend themselves to specific types of questions, care needs to be taken that the artefact of the format in which the item is presented does not confound the interpretation of the results. Research suggests that different groups (for example, boys and girls, and students in different countries) respond differentially to the various item formats. Several research studies on response format effect based on PISA data suggest that there are strong arguments for retaining a mixture of multiple choice and constructed response items. In their study of PISA reading literacy compared with the IEA Reading Literacy Study (IEARLS), Monseur and Lafontaine (2006) found that response format had a significant impact on gender performance. Routitsky and Turner (2003) showed that in PISA mathematics, students at different ability levels performed differentially according to the format of the items used – a finding which, however, varied across countries. In another study, countries were found to show differential equivalence of item difficulties in PISA reading on items in different

formats (Grisay & Monseur, 2007). This finding may relate to the fact that students in different countries are more or less familiar with the particular formats. Including items in a variety of formats is likely to provide a better balance of the types of tasks with which students in classrooms around the world are familiar.

99. When considering the distribution of item formats, the question of resources must be weighed as well as the equity issues discussed in the preceding paragraphs. All except the most simple of constructed-response items are coded by expert judges who must be trained and monitored. Selected response and very short "closed" constructed response items do not require expert coding and therefore demand fewer resources.

100. The proportion of constructed- and selected-response items will be decided taking account of all these considerations. It is anticipated that the majority of the items will not require expert judgement.

101. Most items will be coded dichotomously (full credit or no credit), but if appropriate the coding scheme for an item will allow for partial credit. Partial credit makes possible more nuanced scoring of items. Some answers, even though incomplete, are better than others. If incomplete answers for a particular question indicate a higher level of financial literacy than inaccurate or incorrect answers, a scoring scheme will be devised that allows partial credit for that question.

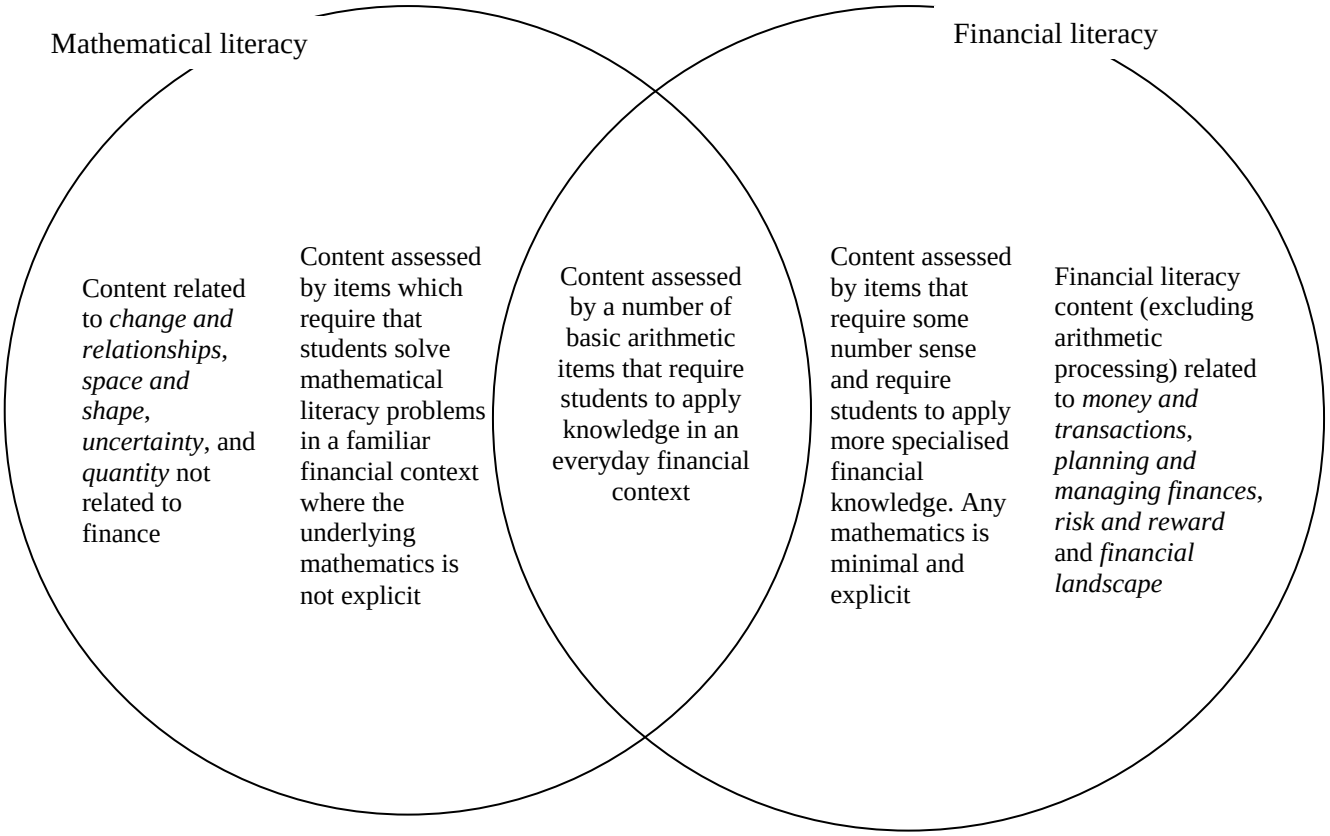
The impact of other domain knowledge and skills on financial literacy

Numeracy Skills

102. A certain level of numeracy (or mathematical literacy) is regarded as a necessary condition of financial literacy. Huston argues that "if an individual struggles with arithmetic skills, this will certainly impact his/her financial literacy. However available tools (e.g. calculators) can compensate for these deficiencies; thus, information directly related to successfully navigating personal finances is a more appropriate focus than numeracy skills for a financial literacy measure." (Huston, 2010) It is therefore common for financial literacy assessments to include items with a mathematical literacy aspect, even though that aspect is not the primary focus of the whole measure. Lusardi et al. reported that, in the 1997 National Longitudinal Survey of Youth conducted in the United States, three financial literacy questions "differentiated well between naive and sophisticated respondents" (Lusardi, Mitchell, & Curto, 2010). Two of the three questions, on interest rates and inflation, required some basic competence in mathematical literacy. Mathematically-related proficiencies such as number sense, familiarity with multiple representations of numbers, and skills in mental calculation, estimation, and the assessment of reasonableness of results are intrinsic to some aspects of financial literacy.

103. On the other hand there are large areas where the content of mathematical literacy and financial literacy do not intersect. Mathematical literacy defines four content areas: *change and relationships, space and shape*, *quantity* and *uncertainty*. Of these, only *quantity* directly intersects with the content of financial literacy. Unlike the mathematical literacy content area *uncertainty*, which requires students to apply probability measures and statistics, in the PISA assessment the financial literacy content area *risk and reward* requires only a general (non-numeric) appreciation of the way financial well-being can be affected by chance and an awareness of the related products and actions to protect against loss. In the financial literacy assessment, the quantity-related proficiencies listed above can be applied to problems requiring more financial knowledge than can be expected in the mathematical literacy assessment. Similarly, knowledge about financial matters and capability in applying such knowledge and reasoning in financial contexts (in the absence of any specifically mathematical content) characterise much of all four content areas of financial literacy: *money and transactions, planning and managing finances, risk and reward* and *financial landscape*. Figure 2 represents the relationship between the content of mathematical literacy and financial literacy in PISA.

Figure 2 Relationship between the content of financial literacy and mathematical literacy in PISA



104. Operationally, there will be few items populating the portion of the diagram where the two circles intersect. In the financial literacy assessment, the nature of the mathematical literacy expected is basic arithmetic: the four operations (addition, subtraction, multiplication and division) with whole numbers, decimals and common percentages. Such arithmetic will occur as an intrinsic part of the financial literacy context and enable financial literacy knowledge to be applied and demonstrated. Use of financial formulae (requiring capability with algebra) is not considered appropriate. Dependence on calculation will be minimised in the assessment; tasks will be framed in such as way as to avoid the need for substantial or repetitive calculation. The calculators used by students in their classrooms and on the PISA mathematics assessment will also be available in the financial literacy assessment, but success in the items will not depend on calculator use.

Reading and Vocabulary

105. It is assumed that all students taking part in the financial literacy assessment will have some basic reading proficiency, even while it is known from previous PISA surveys that reading skill varies widely both within and across countries. To minimise the level of reading literacy required, stimulus material (and task statements) will generally be as clear, simple and brief as possible. In some cases, however, stimulus may deliberately present complex language: the capacity to read and interpret the language of financial documents is regarded as part of financial literacy.

106. Highly technical terminology relating to financial matters will be avoided. The expert group has advised on terms that it judges reasonable to expect 15-year-olds to understand. Some of these terms may become the focus of assessment tasks.

Collecting data about financial attitudes and experience

107. Information about non-cognitive factors related to financial literacy will be collected in a short student questionnaire at the end of the cognitive assessment of financial literacy. Items will address aspects of the four key areas identified for inclusion by the financial literacy expert group: *access to information and education*; *access to money and financial products*; *attitudes towards and confidence about financial matters*; and *spending and saving behaviour*. The questionnaire will comprise a small set of questions that explore the range and types of students' interest in and experience with financial matters.

108. The questions for the short questionnaire will be based on questions from existing national surveys of financial literacy, and may also include some questions adapted from recognised protocols for attitudes and behaviours from behavioural psychology. Additional information that is pertinent to understanding the distribution of financial literacy will be drawn from the standard PISA student background questionnaires. Data about the students' home situation (family socioeconomic status in particular) and school experience may be relevant to understanding their financial literacy results. In addition the school questionnaire, which heads of all schools in the PISA sample are asked to complete, will include a few questions about the availability of financial education for their students, and access to professional development in financial education for their teachers.

REPORTING FINANCIAL LITERACY

109. The data from the financial literacy assessment will be held in a database separate from the main PISA database. This database will include, for the sampled students, their financial literacy and mathematics cognitive results, the financial literacy attitudes and behaviour data from the short questionnaire on financial literacy, and data from the general student questionnaire and school questionnaire.

110. It is anticipated, therefore, that it will be possible to report on financial literacy as an independent result, and on financial literacy in relation to mathematics performance, financial attitudes and behaviour, and in relation to some background variables such as socioeconomic status and immigrant status. The results will also allow the development of further work under the aegis of the OECD Project on Financial Education.

111. The financial literacy cognitive data will be scaled in a similar way to the other PISA data. A description of the modelling technique used for scaling can be found in the PISA 2006 Technical Report (OECD, 2009c).

112. Each item is associated with a particular point on the PISA financial literacy scale that indicates its difficulty, and each student's performance is associated with a particular point on the same scale that indicates the student's estimated proficiency.

113. The relative difficulty of tasks in a test is estimated by considering the proportion of test takers getting each question correct. The relative proficiency of students taking a particular test is estimated by considering the proportion of test items that they answer correctly. A single continuous scale showing the relationship between the difficulty of items and the proficiency of students will be constructed. Because of the relatively small number of items in the financial literacy instrument, there will be too few items on which to base subscales: a single scale of financial literacy proficiency will be constructed.

114. The scale will be divided into levels, according to a set of statistical principles, and then descriptions will be generated based on the tasks that are located within each level, to encapsulate the kinds of skills and knowledge needed to successfully complete those tasks. The scale and set of descriptions are known as a described proficiency scale.

115. By calibrating the difficulty of each item, it will be possible to locate the degree of financial literacy that the item represents. By showing the proficiency of each student on the

same scale, it will be possible to describe the degree of financial literacy that the student possesses. The described proficiency scale will help in interpreting what students' financial literacy scores mean in substantive terms.

116. Following PISA practice, a scale will be constructed having a mean of 500 and a standard deviation of 100 (based on OECD countries' participation). The amount of testing time dedicated to financial literacy in 2012 is the same as that provided for mathematical literacy and scientific literacy in PISA 2000. In light of those precedents, and given the number of tasks in the 2012 assessment (30 to 40), it is expected that it will be possible to identify described levels of proficiency as a first step in reporting how individuals' financial literacy grows and develops, and to enable comparisons of student performance between and within participating countries and economies. The optional assessment of financial literacy in PISA 2012 will provide essential inputs and data for both the PISA programme and the OECD Project on Financial Education.

REFERENCES

Barsky, R. B., Juster, F. T., Kimball, M. S., & Shapiro, M. D. (1997). Preference parameters and behavioural heterogeneity: An experimental approach in the health and retirement study. *Quarterly Journal of Economics, 11*, 537-539.

Bernheim, D., Garrett, D., & Maki, D. (2001). Education and saving: The long-term effects of high school financial curriculum mandates. *Journal of Public Economics, 85*, 435-565.

Bloom, B. S. (Ed.). (1956). *Taxonomy of Educational Objectives: The Classification of Educational Goals*: Susan Fauer Company Inc

Cole, S., Sampson, T., & Zia, B. (2010). Prices or Knowledge? What Drives Demand for Financial Services in Emerging Markets? HBS Working Papers 09-11, forthcoming in *The Journal of Finance*.

Gerardi, K., Goette, L., & Meier, S. (2010). Financial Literacy and Subprime Mortgage Delinquency: Evidence from a Survey Matched to Administrative Data. *Federal Reserve Bank of Atlanta, 2010-10*.

Grisay, A., & Monseur, C. (2007). Measuring the equivalence of item difficulty in the various versions of an international test. *Studies in Educational Evaluation 33*, 69-86.

Habschick, M., Seidl, B., & Evers, J. (2007). *Survey of Financial Literacy Schemes in the EU27*. Hamburg.

Hastings, J., & Tejeda-Ashton, L. (2008). Financial Literacy, Information, and Demand Elasticity: Survey and Experimental Evidence from Mexico. *NBER Working Paper, 14538*.

Hilgert, M. A., Hogarth, J. M., & Beverly, S. G. (2003). Household Financial Management: The Connection Between Knowledge and Behavior. *Federal Reserve Bulletin, 89*(7), 309-322.

Holt, C., & Laury, S. (2002). Risk aversion and incentive effects. *American Economic Review, 95*, 1644-1655.

Huston, S. J. (2010). Measuring financial literacy. *The Journal of Consumer Affairs, 44*(2), 296-316.

INFE. (2009a). *Financial Education Programmes in Schools: Draft Comparative Analysis of Selected Financial Education Learning Frameworks*: International Network on Financial Education.

INFE. (2009b). *Global message on financial education and the crisis*.

INFE. (2010). Financial literacy measurement questions & socio-demographics (INFE(2010)3). International Network on Financial Education.

INFE. (forthcoming). *Revised Compilation of Responses to the Questionnaire Dedicated to Financial Education Programmes at Schools*

Johnson, C., & Staten, M. (2010). *Do inter-temporal preferences trump financial education courses in driving borrowing and payment behaviour?* Paper presented at the 1st Annual Boulder Conference on Consumer Financial Decision Making.

Kempson, E., Collard, S., & Moore, N. (2005). *Measuring financial capability: an exploratory study*. London: Financial Services Authority.

Lafontaine, D., & Monseur, C. (2006). Impact of Test Characteristics on Gender Equity Indicators in the Assessment of Reading Comprehension. University of Liège.

Lusardi, A. (2009). U.S. Household Savings Behavior: The Role of Financial Literacy, Information and Financial Education Programs. In C. Foote, L. Goette & S. Meier (Eds.), *Policymaking Insights from Behavioral Economics* (pp. 109-149): Federal Reserve Bank of Boston.

Lusardi, A., & Mitchell, O. (2008). Planning and Financial Literacy: How Do Women Fare? *American Economic Review, 98*(2), 413-417.

Lusardi, A., & Mitchell, O. S. (2006). Financial Literacy and Planning: Implications for Retirement Wellbeing. MRRC Working Paper 2006-144, forthcoming in A. Lusardi and O. Mitchell (eds.), *Financial Literacy: Implications for Retirement Security and the Financial Marketplace*, Oxford University Press.

Lusardi, A., Mitchell, O. S., & Curto, V. (2010). Financial literacy among the young. *The Journal of Consumer Affairs, 44*(2), 358-380.

Lusardi, A., & Tufano, P. (2009a). Debt Literacy, Financial Experiences, and Overindebtedness. NBER Working Paper n. 14808.
Lusardi, A., & Tufano, P. (2009b). Teach Workers about the Perils of Debt. *Harvard Business Review* (November), 22-24.
Moore, D. (2003). *Survey of Financial Literacy in Washington State: Knowledge, Behavior, Attitudes, and Experiences*: Social and Economic Sciences Research Center, Washington State University.
OECD. (2005a). *Improving Financial Literacy: Analysis of Issues and Policies*: OECD.
OECD. (2005b). *Recommendation on Principles and Good Practices for Financial Education and Awareness*: OECD, Directorate for Financial and Enterprise Affairs.
OECD. (2008). *Improving Financial Education and Awareness on Insurance and Private Pensions*: OECD Publishing.
OECD. (2009a). Financial literacy and consumer protection: overlooked aspects of the crisis. from http://www.financial-education.org/dataoecd/32/3/43138294.pdf
OECD. (2009b). PIAAC Literacy: A Conceptual Framework, OECD Education Working Paper No. 34. Available from http://www.olis.oecd.org/olis/2009doc.nsf/LinkTo/NT00006EDA/$FILE/JT03274637.PDF
OECD. (2009c). *PISA 2006 Technical Report*. Paris: OECD.
OECD. (2010). *PISA 2009 Framework: Key Competencies in Reading, Mathematics and Science*. Paris: OECD.
Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs, 80* (1, Whole No. 609).
Routitsky, A., & Turner, R. (2003). *Item format types and their influences on cross-national comparisons of student performance.* Paper presented at the annual meeting of the American Educational Research Association (AERA).
Schuchardt, J., Hanna, S. D., Hira, T. K., Lyons, A. C., Palmer, L., & Xiao, J. J. (2009). Financial Literacy and Education Research Priorities. *Journal of Financial Counseling and Planning, 20*(1).
Stango, V., & Zinman, J. (2009). Exponential Growth Bias and Household Finance. *Journal of Finance, 64*, 2807-2849.
van Rooij, M. A., Lusardi, A., & Alessie, R. (2007). Financial Literacy and Stock Market Participation. MRRC Working Paper 2007-162, forthcoming *Journal of Financial Economics*.
Watson, S. (2009). Financial education programmes in schools: comparative analysis of selected financial education learning frameworks (INFE(2009)19). International Network on Financial Education.
Yoong, J. (2010). Financial Illiteracy and Stock Market Participation: Evidence from the RAND American Life Panel. *Pension Research Council Working Paper, 2010*(29), forthcoming in A. Lusardi and O. Mitchell (eds), *Financial Literacy: Implications for Retirement Security and the Financial Marketplace*, Oxford University Press.