Economic and Financial Education: Concepts, Goals and Measurement

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A review of the literature and of specific education initiatives reveals a broad range of approaches to economic and financial education. What knowledge areas and skills are targeted and how content is presented very much depends on the motives and goals of the various education providers. Central banks, for instance, provide economic and financial education basically for five reasons: (1) to enhance the effectiveness of monetary policy, (2) to ensure the smooth functioning of financial markets, (3) to support sustainable economic policies, (4) to promote economic and financial literacy as a public good and, (5) by doing so, build their reputation and promote acceptance for their actions. Economic and financial literacy tests have generally uncovered substantial knowledge gaps among citizens. Yet given the methodological deficiencies of the existing analyses, test scores must be interpreted with caution. Improving methodology remains a challenge for future research.

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1 Introduction

Efforts to teach economic and personal finance to consumers have been stepped up across the world in recent years. Government agencies, central banks, consumer advocate organizations, employer and employee representatives, nonprofit organizations as well as commercial financial service providers run numerous educational programs to raise public understanding of macroeconomic fundamentals and to enhance people's financial capability.[1]

Economic education research (May, 2003) tends to revolve around the case for integrating economic and financial education into basic school curricula. However, the education initiatives referred to in this paper differ from school-focused educational programs in a number of aspects. First, these programs are not (or not exclusively) integrated into an institutional framework like school curricula but rather use a variety of other channels (such as the mass media, courses and information campaigns) to reach target groups. Second, the rationale for these programs is more comprehensive; they are intended to support the achievement of broad-based economic policy goals rather than being limited to the provision of basic literacy skills at the school level. Finally, economic policy-motivated research will raise questions different from those typically studied by the established strand of economic education research.

Against this backdrop, this contribution provides a structured overview of definitions used for economic and financial education, of underlying educational targets and of test methods used to evaluate the effectiveness of such activities. Another purpose of the article is to juxtapose the practical approaches to economic and financial education with academic research in the field. To this end, section 2 provides an overview of the

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[1] *The term "economic education" encompasses programs geared toward business and management skills as well as economic and personal finance topics. In this contribution we concentrate on the provision of economic education and on its links and overlaps with financial education. Our principal focus on economic and financial education notwithstanding, some of the educational programs discussed also cover aspects of business education.*

broad spectrum of current economic and financial education initiatives and discusses the relevant academic literature. This review is expanded into an investigation of the motives and goals of providers of economic and financial education in section 3. Section 4 treats the special interest of central banks in economic and financial education. Section 5 reviews tests and test scores on consumers' economic and financial literacy, also discussing the limitations of such tests in the process. Section 6 concludes.

2 Definitions

Programs to enhance the financial capability of consumers have been launched in large numbers in recent years. They supplement a variety of programs introduced earlier to promote public understanding of basic economic issues. Neatly distinguishing between the two sets of programs is not easy; education initiatives typically lie on a continuum that ranges from a special financial focus to a general economic orientation. Distinctions easily blur also between the specific knowledge areas and skills the various providers of education hope to target with their initiatives. To identify the nuances and characteristics of this continuum and to better understand its content, we have compared the definitions of economic and financial education used across a variety of selected initiatives and papers.

What is meant by economic and financial education, and how do the many terms used in this context relate to each other? The chart below shows the most important collocations used in the literature.

Collocations in the field of economic and financial education

economic	education
	literacy
financial	capability
	awareness

Source: OeNB.

The first obvious difference is between terms that relate to the teaching activities of education providers (education) and terms that relate to the skills to be developed in target groups (literacy, capability, awareness). These terms give initial insights into the underlying conceptions regarding the interaction between providers of education and the general or specific audiences addressed. Yet the vague connotations these terms evoke only provide limited insights into the concept of economic and financial education, in no small part because past usage has apparently been rather inconsistent.

We expect to derive a more detailed understanding of the terms from the definitions used in the mission statements of education initiatives or in academic papers. To this effect, we have analyzed around 50 initiatives and papers, including key initiatives of the public sector, seminal research papers and some of the numerous private sector initiatives. To provide a structured overview of the heterogeneous connotations of the various definitions, we have grouped the definitions in three sections.

2.1 Knowledge, Understanding, Awareness, Decision-Making Capability

More or less all definitions of financial education invoke the idea of *enhancing literacy* (i.e. knowledge), *creating understanding* and *building decision-making capability* in the area of personal finance. Knowledge and understanding mostly relate to financial service products and their characteristics. Decision-making capability relates to the ability to put that knowledge to practical use in selecting a product. These definitions revolve around the consumer who has to choose among financial service products.

Some definitions also include the concept of *awareness*, either in the sense of recognizing the need to use the services of financial service providers (Ford and Jones, 2006), or in the sense of knowing about the range of products available (Mason and Wilson, 2000; OECD, 2005).

2.2 Interaction among Agents

A second group of elements supplements the knowledge, awareness and capability connotations reflected by most definitions and broadens the definitions to include the dimension that describes consumers' interaction with other agents. Such definitions see the act of consuming financial services as part of a process in which the interaction among the various agents involved has a decisive influence on how consumers act – even though consumers remain the key target of the educational efforts.

These elements include:

– *Confidence* (CEA, 2007; CFEE, n.d.; FSA, 2004; OECD, 2005): This aspect refers to measures instilling confidence into consumers that their transactions with financial service providers will be conducted in a correct, transparent and fair manner, and that they stand to benefit from seeking the services of finance professionals.
– *Knowing where to look for guidance and advice* (NEFE, n.d.; OECD, 2005): Knowing whom to approach for information and assistance eases the decision-making burden placed on consumers. Mobilizing experts for support may, to some extent, be an alternative to acquiring knowledge oneself.
– *Knowing one's rights* (BDA, 1998; Financial Literacy and Education Commission, 2006; Wilmink, 2007): As protection against fraud and abuse, knowing one's rights may also be a partial substitute for knowing how to navigate the sea of financial products.
– *Communicating and articulating one's needs* (Codice, 2007; Commerzbank, 2004; FSA, 2004; FTE, 2005; NEFE, n.d.; Reifner, 2006; Vitt, 2000): This element refers to the ability to articulate knowledge gained to the best of one's interest in communicating with other agents. The respective definitions typically relate to the negotiations between financial service providers and users; in addition, this concept may refer to the ability to form and articulate an informed opinion in discussing basic economic and framework conditions.
– *Social consequences and responsibility* (AdFLAG, 2000; Australian Ministerial Council, 2006; Gemein-

same Initiative, 2000; EASP, 2005; Government of Canada Policy Research Initiative, 2006; La finance pour tous, 2007; Reifner, 2006; U.K. Department, 2000): Economic and financial education is also meant to raise awareness for the consequences and secondary effects of one's actions for third parties. This concept relates to roles and responsibilities in society.

– *Access to financial services* (CSD, 2006; Ford and Jones, 2006): Gaining access to financial products and services may not be easy, and may in fact be impossible, especially for the poor ("financial exclusion"). People who are effectively excluded from financial services will have little use for knowledge about finances.

2.3 Social Context

A third category of connotations conveyed by some definitions of economic and financial education relates to the broader social context of which the financial services industry is part.

– *Values and attitudes* (Australian Ministerial Council, 2006; EASP, 2005; FTE, 2005; Gemeinsame Initiative, 2000; Park, 2006; Reifner, 2006; Walstad, 2006): Definitions containing this element refer to the political conditions under which individuals take decisions. Educating citizens and consumers to choose and act, which is what financial education initiatives are typically aimed at, only makes sense when framework conditions and citizens' values are in line with each other.
– *Economic reasoning* (FTE, 2005; NCEE, n.d.): Some general (not financial market-related) economic education programs see the need to teach an economic way of thinking along the lines of the economic model of rational decision-making.
– *Judgment capacity in economic (policy) matters* (BDA, 1998): This element addresses consumers in their capacity as political citizens, participants and agents in democratic processes.
– *Raising awareness for relationships* between the personal sphere and the economy as a whole (JASS, n.d.; UFFE, n.d.; WIDE, n.d.).
– *Skills and knowledge in matters unrelated to navigating the financial services market*, such as the skills needed to run a business, or an understanding of tax and budget policies (pfeg, 2005).

As we can see, the concept of economic and financial education is highly heterogeneous. The various providers of education naturally target different goals and have different interests, which shape the programs they run and which also affect how they define their mission.

3 The Case for Providing Economic and Financial Education – An Overview of Educational Targets

Economic and financial education is offered by a wide range of institutions, including international organizations, government agencies, businesses and business associations, trade unions, nongovernmental organizations (NGOs), foundations, financial regulators and central banks. Between them, they offer or advocate a wide variety of programs, courses and resources. Provided the individual institutions expressly state educational targets, their measures may be considered to pursue one of three types of goals: While all programs reach out to individual consumers, they are designed to ultimately benefit either the individuals themselves, or the functioning of the financial market, or the economy and society as a whole.

3.1 Supporting Individuals in Reaching Personal Goals

A first group of targets avails itself of measures that support individuals in reaching personal (finance) goals. The case for raising literacy to this effect is typically made by foundations, international organizations or government agencies (CSD, 2006; FTE, 2005; Ilves, 2007; NCEE, n.d.; NEFE, n.d.; OECD, 2005; U.K. Department, 2000).

3.2 Enhancing Market Performance

A second group of educational targets relates to improving the way in which the market for financial services works. Here, economic and financial education is seen as a structural policy tool that contributes to remedying financial sector problems by prompting consumers to change their behavior: Preventing consumers from accumulating excessive debt (OECD, 2005a) or educating consumers to change their saving and investment behavior (CitiGroup Foundation, n.d.; La finance pour tous, 2007; NEFE, n.d.) are concerns that nonprofit foundations and commercial businesses alike advocate.

Strengthening the demand side and advancing regulatory goals by empowering consumers to take informed decisions is an aspiration shared above all by public institutions (Bernanke, 2006; FSA, 2004; La finance pour tous, 2007; Gopinath, 2006; Ilves, 2007; Park, 2006). A number of programs specifically mention the goal of increasing consumer mobility in the sense of increasing their propensity to change providers (Financial Literacy and Education Commission, 2006; Ilves, 2007). Furthermore, as especially public and private financial sector agents often emphasize, who are consumers more discriminating in their product choice encourage competition in the market for financial services (Bernanke, 2006; Commerzbank, 2004; Stark, 2006). An aspect highlighted especially by central banks is the improvement of the information processing capacity of markets (Bernanke, 2006; Filar, 2006; Park, 2006; Stark, 2006). After all, a rise in the market's information processing capacity contributes to an effective transmission of monetary policy measures. Consumer advocates and financial service providers, finally, see financial education measures as having repercussions on the financial industry itself, as they raise industry awareness for the need to offer better quality (Korczak, 2007; Reifner, 2006).

A number of companies and business associations hope to derive practical benefits from consumers' financial literacy, namely to find financially competent consumers more responsive to their product marketing measures (pfeg, 2005; Commerzbank, 2004). Several initiatives see, above all, the promise of capital markets becoming more attractive for financially literate investors (EASP, 2005; Government of Canada Policy Research Initiative, 2006). Last but not least, some initiatives advocate financial education as a way to tackle the prolems of financial exclusion (Gopinath, 2006; NCRC, n.d.; Reifner, 2006).

3.3 Contributing to Shaping Economic and Social Order

A third group of educational goals is very broadly based: The respective providers, typically sponsors of general economic education initiatives, share the vision of contributing to the economic and social order, and of influencing the debate shaping the latter.

As a case in point, the economic education programs of capacity-building NGOs advocating a participatory style of learning see the exchange of information and experience among participants as an important milestone in the learning process (Debt and Development Coalition Ireland, n.d.; WIDE, n.d.). A number of NGOs (Debt and Development Coalition Ireland, n.d.; WIDE, n.d.) as well as private and public initiatives (Codice, 2007; FTE, 2005; Gemeinsame Initiative, 2000) hope to enhance political participation through economic education and information.

The understanding of the concept of participation very much depends on institutional interests: Initiatives launched by trade unions, NGOs and consumer advocates, for instance, are often aimed at encouraging consumers to seek social change or are designed to build their critical ability (Debt and Development Coalition Ireland, n.d.; JASS, n.d.; Reifner, 2006; UFFE, n.d.). In contrast, institutions pursuing corporate or public interests will typically be concerned about public acceptance of market rules and change processes (reforms) (Australian Ministerial Council, 2006; BDA, 1998; Filar, 2006; FTE, 2005; Walstad, 2006). Especially central banks see educational efforts as measures to foster a better understanding of how monetary policy affects the economy, thus building public support for monetary policy action (Park, 2006; Stark, 2006; Walstad, 2006) – see also section 4. A very practical dimension of participation and literacy, finally, is enabling consumers to be more capable, competent and self-reliant in financial matters (Australian Ministerial Council, 2006; EASP, 2005; FSA, 2004; Gemeinsame Initiative, 2000).

In a nutshell, designing economic and financial education programs invariably involves value judgments – such programs are, to a large extent, about conveying those values. Both aspects are closely related to the position the providers of education have in the economy and to their views of the economic system. At the same time, national differences in the structural and regulatory framework of economic systems shape the design of educational programs and their priorities.

In other words, it would be wrong to jump to the conclusion that economic and financial education is merely about closing knowledge gaps identified in target groups. Doing something about the lack of public understanding is only one of several possible motives for launching education initiatives. Other starting points are the fact that the general public and economic experts apply different yardsticks, have different perceptions about economic fundamentals and different preferences, and see economic and social roles differently. Finally, there may be the goal of putting judgments made by politicians or the mass media into the proper perspective.

Thus, the rationale for economic and financial education is not restricted to correcting an "objective" information deficit (see section 5) or to fulfilling an explicit wish for such education on the part of target groups (as evidenced, for instance, by survey results). Motives for building the economic and financial capability of consumers are to be found just as much in the interests of the providers of education. These motives are rather heterogeneous, which helps explain the wide range of definitions of economic and financial education, and the range of issues covered.

4 Why Central Banks Care about Economic and Financial Education

A rising number of central banks proactively run educational programs, with an ever broader and deeper scope, to help citizens understand how the economy works and to offer them guidance in personal finance matters (Fluch, 2007). A number of authors have looked specifically into the underlying motives of central banks (Bernanke, 2006; Greenspan, 2003; Hartmann et al., 2000; Hogarth, 2007; Park, 2006; Stark, 2006; Walstad, 1998, 1999, 2006; Watts, 1998). Their analyses show that central banks provide economic and financial education basically for five reasons: (1) to enhance the effectiveness of monetary policy, (2) to ensure the smooth functioning of financial markets, (3) to support sustainable economic policies, (4) to promote economic and financial literacy as a public good and, by doing so, (5) to build their reputation and promote acceptance for their actions. In this respect, central banks' motives for providing economic and financial education basically match those described in sections 2.1 and 2.3.

4.1 Enhancing the Effectiveness of Monetary Policy

A first group of arguments for economic and financial education relates to monetary policy and how it works. Consumers who grasp economic fundamentals will be more receptive to central bank communication on (1) monetary policy targets, (2) the underlying monetary strategy, and (3) monetary policy action.

(1) Mobilizing public support for monetary policy targets

Educating citizens about monetary policy targets basically consists in explaining the primary goal of price stability most central banks have come to pursue explicitly (or sometimes implicitly) and in ensuring broad and sustained support for that goal among the general public. Public support for the primary goal of maintaining price stability requires an understanding of the economic impact of monetary policy and of the adverse effects of higher inflation on the economy. Unless people are aware of how complex the nominal and real economic effects of monetary policy are (multiple transmission channels, uncertainty about the strength and lags of effects from interest rate adjustments), they will not be able to comprehend the possibilities and limitations of monetary policymaking.

The statutory goal of a central bank to guarantee price stability may, by extension, be understood to include a mandate for a communication strategy that will secure sustained public support for this goal. Such proactive communication appears to be warranted especially in times of low inflation rates, in which the economic cost of inflation may fade into oblivion. Fluch et al. (2007) show e.g. for

Austria that older people who have experienced periods of high inflation feel more strongly about keeping inflation rates as low as they are than young people who have no such memories.

In addition, central banks share information on their price stability target also with a view to anchoring inflation expectations by publishing a concrete inflation target (Svensson, 2007). Thus, publishing an inflation target – or, in the case of the Eurosystem, a quantitative definition of price stability – is not only intended to "justify" the central bank's policy in relation to the publicly announced target measure and to hold the central bank accountable; this measure is also intended to give economic agents clear guidance as they plan ahead. The purpose of these measures is to reduce uncertainty, lower inflation risk premia and increase the potential for noninflationary growth.

(2) Fostering a better understanding of monetary policy strategy

Central banks may explicitly formulate a monetary policy strategy for a number of reasons. First, an explicit strategy increases the transparency of monetary policy decisions and thus makes monetary policy more predictable: By avoiding surprises, the central bank thus helps reduce planning uncertainty for economic agents.

Second, *systematically* taking into consideration specific indicators or possible intermediate monetary policy targets projects competence, a structured approach and the reliance on scientific evidence in monetary policy decision-making. This is designed to enhance confidence in the central bank's competence and in the credibility of its stability policy, which should in turn anchor inflation expectations, with the positive effects outlined above.

For those two effects to materialize, however, the people to whom such information is addressed need to be economically literate in the first place. This is where a third dimension of the monetary policy strategy comes into play: Publishing a monetary policy strategy is a stepping point for proactively offering information resources and educational programs, and may thus be seen as an economic education measure in its own right. After all, the elements of this strategy are repeated consistently (which is very important in a federal central banking system such as the Eurosystem) in many speeches and through numerous media channels, thus providing an occasion for anchoring indicators that are relevant for monetary policy in citizens' minds.

(3) Enhancing the transparency of, and effective communication on, monetary policy action

By providing information, including detailed explanations, on monetary policy decisions, central banks provide economic agents with the signals they need to plan their economic activities. Yet economic agents have to have a basic understanding of economics and monetary policy fundamentals to be able to meaningfully decode such information and the way it changes over time. Central banks' goal of communicating their monetary policy actions in an effective and transparent manner implies the need for economically literate audiences. This is why central banks care about enhancing citizens' economic literacy. One way to build economic literacy is to explain the fundamentals of monetary policymaking and to continue to offer explanations when the central bank takes action; another key to communicating effectively will be to use clear and understandable language.

4.2 Contributing to a Smoother Operation of Financial Markets

Central banks launching personal finance education initiatives often put forth two arguments for doing so. First, consumers who are aware of the range of financial products and who understand the basic concepts of financing will be able to take better informed investment and financing decisions. Customers who are able to shop around promote competition. This creates incentives for the financial industry to come up with innovations and makes the industry more efficient. As monetary policy is contingent on the effective transmission of key interest rate changes through the financial system to the economy, central banks clearly see the merits of raising financial market efficiency by building the financial capability of consumers.

A second aspect relates to the stability of the financial system or of parts thereof. Empowering consumers to make informed judgments should make them more likely to make sensible choices and better able to control their financial future. For instance, the risk that households become overindebted should sink, as should the probability that crisis incidents pose a threat to the stability of the financial system.

Better educated and more responsible consumers are less likely to take wrong financial decisions and more likely to recognize unfavorable deals. In this respect, the economic education efforts of central banks may also enhance consumer protection. This may be an indirect side effect at some central banks and an explicit goal at others.

4.3 Supporting Sustainable Economic Policies

Central banks have an interest in keeping other areas of economic policy from undermining the goal of maintaining price stability. They also have an interest in measures that ease the absorption of economic shocks and that strengthen potential growth. Even though central banks do not have any decision-making power in the relevant areas – fiscal and structural policies – they can support the economic policy debate that precedes and accompanies the policy decision-making process with the arguments they put forth. In the words of Watts (1998): *"… improving the economic literacy of those who vote can strengthen the position of elected and appointed officials who work for good economic policies, and against bad ones."*

In the area of fiscal policy, central banks call for policies that leave sufficient room for maneuver to cushion periods of weak economic activity, and to minimize fiscal policy-induced inflation pressures (e.g. policymakers banking on the economy outgrowing its debt burden). This is why it is important, from a central bank perspective, for the electorate to be aware of the economic effects of a high budget deficit and debt burden.

With regard to structural policy, central banks have an interest in product and labor markets being able to absorb shocks smoothly, so as to keep the need for offsetting business cycle policies low. At the same time, smoothly operating product and labor markets enable higher potential growth and lower structural noninflationary unemployment. Central banks can support reforms in this area by effectively communicating arguments for the positive long-term effects of reform efforts.

4.4 Supporting the Public Good "Economic and Financial Literacy"

The case for central bank initiatives to build consumers' economic and financial literacy outlined above results directly from the specific tasks and goals of a central bank. At the same time, one may argue that central banks, being public institutions with substantial economics know-how, are particularly well placed to promote the public good of economic and financial literacy as an integral part of basic education.

One advantage that central banks may have over other agents with commercial or political interests is that consumers expect central banks to provide neutral, nonpartisan information.

4.5 Building a Reputation and Promoting Acceptance of Central Banks' Actions

For central banks, in turn, economic and financial education initiatives are a chance to reinforce their position as recognized experts in the field of economics. By providing useful services and high-quality information and education resources, central banks may build confidence and credibility, which will in turn serve the fulfillment of their monetary policy tasks.

5 Possibilities and Limitations of Measuring Economic Literacy

Given the broad range of economic education initiatives launched in recent years, it is surprising that the literature on economic literacy measurement is comparatively limited as yet. After all, baseline surveys to establish the initial state of economic literacy and tests to measure knowledge gains ought to be an integral part of every economic education initiative: Every education initiative needs to start out by identifying existing knowledge gaps among the general public and flag target groups that may be in need of special support. Once the programs are up and running, it is likewise important to evaluate their success and effectiveness, and to establish a system of quality assurance to ensure that decisions about continuing the initiative are informed, to spot potential for improvement and to establish best practice catalogues. Programs need to be assessed not only against their costs but also against potential alternative approaches to achieving the same goal.

5.1 Which Method is Adequate for Evaluating Education Programs Depends on the Underlying Target?

As it is generally no easy task to measure educational attainment and progress, it is even more important to clearly define educational targets already in the design phase. After all, the most adequate method of measuring and evaluating literacy depends on the target and the target group. Take the definitions of economic and financial education outlined in section 2:

– If the primary aim of an educational initiative is to enhance the *knowledge and understanding* of economic and financial concepts, success can be measured with knowledge reproduction and comprehension questions, for instance with multiple choice tests. One option is to use internationally recognized standardized tests such as the U.S. Test of Economic Literacy (TEL), which will be discussed in greater detail in section 5.2. Such tests have the advantage of being tried-and-true solutions and internationally comparable.

– Courses aimed at building consumers' *confidence* in their decision-making capabilities can be evaluated on the basis of surveys on subjective satisfaction and confidence before and after course participation. The tools of choice for this purpose may be standardized tests or open-ended questions. Yet when respondents' subjective assessment is not complemented with an analysis of actual changes in behavior, there is a risk that the sustainable effects will be overrated immediately after course completion.
– In case an educational initiative is aimed at influencing *values and attitudes*, surveys will bring shifts in opinion to light.
– Very often the overarching goal of enhancing knowledge, building confidence and influencing attitudes is bringing about *behavioral changes*, such as an increase in the saving ratio or in the number of bank connections, an increase in private saving for retirement, or a decrease in the ratio of delinquent loans. Frequently, these changes can be used as indicators that may be measured directly or with surveys. In the case of the above example, it is important to check whether there has indeed been an increase in net saving rather than a shift in funds. Moreover, it is anything but easy to establish a direct causality between observed behavioral changes and a given educational initiative.

As a case in point for the importance of clearly defining the target and the selection of adequate evaluation methods, take the following example: Every other year, U.S. high school students are multiple choice-tested for their ability to make informed financial choices under the so-called Jump$tart Survey. Mandell (2006) finds that while financial literacy classes did not necessarily make a real difference in knowledge relating to students' financial decisions, they did raise students' propensity to save and thus triggered the desired behavioral change after all. In other words, measuring the effectiveness of educational initiatives with tests alone would be misleading.

Lyons and Scherpf (2004) give another example of how an inadequate measure for the success of an educational initiative may lead to wrong conclusions. The goal of the U.S. Money Smart program is to encourage unbanked participants to open a bank account. Yet the decision not to open an account may be the result of rational reasoning, based for instance on a cost-benefit analysis. Thus it would be wrong to measure the success of the program on the basis of newly opened bank accounts; much rather, it would be important to measure whether the program has succeeded in building the necessary skills for the underlying decision-making process.

Evaluations may be undertaken in the form of a before and after comparison or with the help of a suitable control group. This may be a comparable group of persons who have not benefited from a given education measure. The problem with such an approach is that it may lead to a causality conflict: In case participation is voluntary or associated with considerable effort, participants are likely to differ systematically from dropouts or people not interested in the course in the first place, for instance with regard to welfare level, income, household status, educational attainment, age, motivation or initial knowledge (Lusardi and Mitchell, 2007). This may trigger an upward bias of results, which might be unveiled through an analysis of course dropouts and nonparticipants in comparison with successful participants.

A different scenario would be that a course specifically targets a group of persons who exhibit large knowledge gaps or undesired behavioral patterns. Such a scenario may skew the effects of the program downward. If the control group does not exhibit reasonably similar characteristics, the comparison may even show a negative correlation between course participation and literacy or behavior, even if the education measures proved to be a success with the given target group (Bernheim and Garrett, 2003; Bayer et al., 1996).

To properly evaluate a firmly established education program, finally, it would make sense to confirm the short-term effects with an analysis of the long-term effects. In practice, it is very difficult to get information from course participants several years after participation. Bernheim et al. (2001) is one of the few surveys that has looked into the long-term benefit of economics courses at U.S. schools in respect of students' saving behavior. This survey was made possible by the fact that a number of states made economics a required course at different periods in time. The authors conclude that exposure to an economics curriculum does lead to higher saving and wealth accumulation in students' adult lives, especially in the case of children whose parents were not above-average savers.

It may prove even more difficult to subject a positive correlation between literacy or course participation and money management skills to a causality test, because active financial market participation itself increases financial knowledge. Given such prior exposure, a positive correlation between education and financial market data may lead to biased conclusions about causality. Kotlikoff and Bernheim (2001) is one of the few studies that find explicit evidence of a direct link between an economics curriculum and higher private saving for retirement.

Despite all these recommendations, the success of educational programs is de facto measured most often on the basis of input data (number of participants and courses) rather than output data. Thus, a survey among staff of U.S. financial education providers (Lyons et al., 2005) finds that three-quarters of all evaluations use the number of participants as an indicator for success, but less than half use actual changes in behavior. Often, the success of educational measures is never evaluated comprehensively because of a lack of expert knowledge, staff, resources and time.

5.2 Example: Test of Economic Literacy

The Test of Economic Literacy (TEL) is a standardized and internationally recognized test that was designed to measure high school students' understanding of economics. The test, first used in 1978, was developed by Soper and Walstad (1987) in the U.S.A. Since the initial applications of the TEL first evidenced large knowledge gaps, the test has been used on a regular basis, both to test students in exams and to evaluate the effectiveness of high school curricula. The test consists of 46 multiple choice questions and covers four content categories: fundamental economic concepts, microeconomic concepts, macroeconomic concepts and international economic concepts. Results are typically presented as the ratio of correct answers, but a number of papers (e.g. Lietz and Kotte, 2000) also employ different weights, depending on the difficulty of the questions. In this paper, we will use the TEL to illustrate some problems typically inherent in knowledge tests. Box 1 shows three of the TEL questions.

Since the TEL measures the understanding of basic economic concepts, it is principally suited for international comparisons. Thus, there also exists a German version of the TEL, the so-called Wirtschaftskundlicher Bildungs-Test (WBT), produced by Beck and Krumm (1990) to test the literacy of German, Austrian and Swiss high school students. International comparisons need to take into consideration aspects of linguistic equivalence (e.g. English speakers are a lot more familiar with the term "resources" than German speakers are with "Ressourcen"). Moreover, sample comparisons of student answers – even if the students are of the same age – need to take account of differences in school systems and curricula. Judging from faculty opinions and test scores, Beck and Krumm (1994) find the German version of the TEL to principally have a good indicator quality for both Austria and Germany.

The big advantage of the TEL is that it is a tried and tested approach, and that its questions are standardized internationally. Moreover, the multiple choice procedure ensures a substantial degree of objectivity in assessment. At the same time, the TEL has also been criticized for a number of weaknesses, such as the ideological bias of some questions (Nelson and Sheffrin, 1991). As a case in point, the second question in box 1 (what is the main precondition for a smoothly operating market economy) comes with answer C (active competition in the marketplace) as the "right" answer, while the other answers (regulatory framework conditions, or a minimum degree of social responsibility) might be just as compelling when argued properly. Or note the distinct mindset that the wording of the third question reflects.

Box 1

Examples of TEL Questions

(Correct Answers Bolded)

Unexpected inflation is most likely to benefit

a. Persons living on fixed pensions.
b. Life insurance policyholders.
c. Savings bank depositors.
d. People who owe money.

Which of the following is the most essential for a market economy?

a. Effective labor unions.
b. Good government regulation.
c. Active competition in the marketplace.
d. Responsible action by business leaders.

In a market economy, the public interest is likely to be served even when individuals pursue their own private economic goals because of
a. The operation of competitive markets.
b. The social responsibility of business leaders.
c. Careful planning and coordination of market activity.
d. Individuals who understand what is in the public interest.

Source: Krumm (1992), Nelson and Sheffrin (1991).

Lüdecke-Plümer and Sczesny (1998) have compared TEL scores, among others, for the U.S.A., the U.K., Austria, Germany and Switzerland as well as the Republic of Korea. Their comparison shows that typically less than half of all questions drew correct answers (Austria 44%, Germany and Switzerland 45%, U.S.A. 48%); in the Republic of Korea the correct score reached as much as 52%. The U.K. leads the ranking with a correct score of 64%, but this may be explained with a bias in the sample toward schools of higher education. In the German-speaking countries, the tests unveiled significant knowledge gaps especially in the area of international economic relations. Across all countries subject to the review, graduates of economics courses had better scores than students without prior exposure to economics issues.

Beck and Krumm (1994) compare the test scores for Austria, Germany and the U.S.A. In this analysis, Austria fares best, and the U.S.A. fares worst. Yet the gap between the strongest and the weakest subgroup (by school types) is more than twice as big in the two German-speaking countries than in the U.S.A., so that the weakest U.S. students still have a better score than the weakest Austrian students. This pattern may reflect the different schooling systems, as the education system is a lot more heterogeneous in German-speaking than in English-speaking countries. Above all apprentices attending vocational schools produce negative outliers.

Having undertaken additional analyses on the basis of TEL tests in Germany, Lüdecke and Sczesny (1998) arrive at the following results, which roughly coincide with findings for the U.S.A. (e.g. Walstad and Rebeck, 2001) and other international studies (e.g. for Australia by Lietz and Kotte, 2000).

– Basic economic literacy improves with age (test participants were typically between 16 and 18), irrespective of targeted exposure to economic education. This would imply that economic literacy is largely fostered by active participation in the economy. Economics courses may accelerate this process, but the knowledge gain will hit a "saturation threshold" sooner or later.
– Students in high school-equivalent schools ("Gymnasium") and in commercial schools fare better than students in vocational schools, secondary schools ranking below high schools ("Realschule") and apprentices.
– Lower test scores for female students than for male students have been attributed to social and cultural factors, cognitive determinants and interest in economics issues, but also to the fact that economic stereotypes tend to be male-dominated. What might also play a role is that female students tend to do worse on multiple choice tests, so that this type of test overstates gender differences (Walstad and Robson, 1997).[2] Yet typically, gender differences tend to be smaller than differences within each gender group.

Box 2

Knowledge Surveys and Knowledge Tests in Austria

Apart from the standardized, widespread Test on Economic Literacy, similar tests have been used in Austria to measure the economic literacy of Austrian citizens. The following list provides an overview of the most recent studies on economic literacy in Austria. Readers interested in a comprehensive overview of earlier research into the economic literacy of Austrians are referred to Hartmann et al. (2000).

– *According to a survey by* ***GfK Austria*** *(2006) with a sample of 4,500 respondents, 53% rated their understanding of economic fundamentals in the range between "rather bad" and "very bad," which is in fact a deterioration compared with a similar survey conducted in 2003.*
– *According to a survey conducted by the Institut für Bildungsforschung der Wirtschaft (**ibw,** 2006) among 3,300 final year students, 63% of the respondents considered themselves very well or reasonably well informed about the international economy, with the most optimistic answers reported by students of commercial colleges or schools. 60% of the students report to follow economic topics with principal or high interest. What is interesting is that this self-evaluation often diverges substantially from the scores in a knowledge test based on 20 knowledge and comprehension questions. Commercial college students tended to do best at such tests, whereas commercial school students – contrary to their self-assessment – tended to do worst. However, an accurate interpretation needs to reflect that it takes five years to graduate from commercial colleges but only a minimum of three years to graduate from commercial schools. As has been indicated above, basic economic literacy rises with age and independently of schooling, through active participation in the economy. In the ibw survey, too, female students generally did worse than their male colleagues. At the same time, the scores of students with a migration background do not deviate signi-*

[2] *As a case in point, female students tend to leave questions unanswered if they are unsure, so that their success ratio is even below the guessing probability in some instances (Katschnig and Hanisch, 2004).*

ficantly. This is in contrast to U.S. surveys (Soper and Walstad, 1987), according to which African-American or Latin-American immigrants tended to do worse than students without a migration background.

- ***Katschnig and Hanisch** (2004) compare the economic knowledge of 2,179 graduates in Austria, Germany, the Czech Republic and Hungary based on 12 (partly TEL) questions, paying particular attention to the good translatability of the questions. They find the graduates' economic knowledge to be inadequate in general. The weak results in the Czech Republic and in Hungary are partly attributed to the insufficient technical skills of faculty, whose economic attitudes had been shaped in the times of the Iron Curtain. Female graduates do significantly worse than their male counterparts, especially in Austria.*
- *In 2006, the **Viennese Chamber of Labor** commissioned depth interviews with 28 employees and 6 apprentices, with the aim of assessing their financial literacy (Prantner et al., 2006). While generally the respondents were pretty well informed about the particulars of taking out and overdrawing a loan, they were less knowledgeable about interest rate adjustment clauses or effective borrowing costs. Based on that survey, consumers' knowledge of mutual funds is estimated to be inadequate for taking competent purchase decisions.*
- *A study commissioned by the **Kuratorium Wirtschaftskompetenz für Europa** uses the European Business Competence* Licence (EBC*L) – based on 16 knowledge and 4 comprehension questions plus 1 case study question – to evaluate the level of business capability in Austria, Germany and Switzerland (Ortner et al., 2006). Without studying specifically for the test, as little as 15% of the 342 participants were able to come up with correct answers for more than half of all questions – a score that is rather striking, given that 95% of the sample respondents had graduated from secondary school, and that 70% were part-time students, mostly at technical/vocational colleges. At the same time, respondents rated economic literacy as a very important job skill.*

6 Conclusions

This paper shows that the concept of economic and financial education may be defined in very different ways. The available educational programs are designed to influence either individual decision-making, interaction among economic agents, or individuals' attitude towards the socio-economic environment. Institutions running educational programs may do so for a broad range of reasons, which in turn determine what knowledge areas or skills they hope to develop and the manner in which they do so. In addition, the topics covered and the way the message is put across will also depend on the target audiences selected.

Central banks take on a special role in fostering economic understanding and building economic skills, given their role as economic policymakers and public institutions. As central banks enjoy statutory independence, they have a vital interest in communicating their monetary policy goals and strategies and their monetary policy decisions in a clear manner to support sustained public acceptance of stability-oriented monetary policies and at the same time to anchor inflation expectations, both of which are crucial for the successful implementation of their goals. Effective central bank communication is moreover meant to reduce economic agents' uncertainty in decision-making. Last but not least, central banks seek to promote the efficiency and stability of the financial system and offer guidance in personal finance issues with their financial education initiatives.

The economic education debate reflects a range of didactic approaches to building economic capability: situation- and problem-oriented approaches, as a result of which the topics covered are tailored to participants' role in the economic process, action-oriented approaches, as well as approaches which derive their choice of educational content from economic theory (Weber, 2001). The economic theory-oriented approach is complicated by the fact that economists' opinions are divided on many theoretical and economic policy issues (Chase, 1977; Fuchs et al., 1997). This notwithstanding, most economists share the view that irrespective of economic policy differences, all schools of economic theory recognize fundamental conceptual and analytical categories as well as given facts (Tobin, 1986).

This understanding motivates the use of standardized multiple choice tests to measure the economic knowledge of participants. But measuring the economic literacy of consumers or the effectiveness of educational efforts is difficult in practice. For one thing, the most adequate method of measuring and evaluating literacy depends on the educational target and the target group. For another thing, it is difficult to establish a direct link between educational programs and observed changes in behavior. Against the backdrop of an intensifying public debate on economic and financial education and a host of surveys uncovering consumers' knowledge deficits, improving measurement methods would suggest itself as a meaningful focus for future research.

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