

A POST-KEYNESIAN CRITIQUE ON MAINSTREAM FINANCIAL EDUCATION

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Abstract

Financial education has attracted increased attention from governments, think tanks and international institutions in the past years. Nonetheless, the prevalent policies and practices in the field usually assume a very narrow analytical framework. This paper analyses financial education policy proposals from a post-Keynesian theoretical perspective. Most practices assume that financial education, by transferring knowledge and information to people, promotes financial capability, improving individual decisions. Our analysis shows, however, that a disregard for basic elements related to the functioning of the financial system, such as uncertainty and Minsky's financial cycles, may compromise any financial decision. The conclusion is that financial education policies require the acknowledgement of the uncertain and imbalanced environment in which the financial decisions are made and cannot be restricted solely to the qualification of individuals.

Keywords: Financial education; Financial capability; Fundamental uncertainty; Minsky cycle, mainstream approach; Post-Keynesian approach.

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1. Introduction

Over the last fifteen years, public policy proposals related to financial education have become increasingly popular and received support from political and academic players both in developed and in developing countries (OECD, 2015). In general, the case for financial education programs is that they would be a key instrument in the transmission of knowledge and necessary information and, henceforth, it would boost the financial capability of individuals. According to this approach, diverse groups of individuals would learn how to handle finance properly, mitigate income instability and use more accurately the variety of products and services available in the financial system, which would contribute to protect or multiply their wealth (OECD, 2005).

However, this kind of proposal has also been object of a series of critiques (Willis, 2008; Guérin, Morvant-Roux and Villarreal, 2013). Even by acknowledging the importance of promoting financial education, one understands that the provision of financial literacy courses among families will not unambiguously make their decisions more qualified. Such critiques can be made by exploring distinct theoretical foundations, such as Behaviorism, Anthropology, Sociology, Economics and Consumer Law, whose emphases can be different. However, a novel contribution can be made by approaching financial education through the assessment of the financial system in the contemporary economy as an open system, which contemplates elements of fundamental uncertainty and of economic cycles. The main argument is that financial education, while attempting to shape the financial behavior of individuals without profoundly considering the treatment of the factors cited above, constitutes an inefficient tool that may even generate negative results for the financial life of families, such as increased indebtedness, asset loss, and a higher propensity to engage with fraudulent activities.

Thus, this paper offers a critical analysis to the mainstream view on financial education and capability. Alongside the novelty in dealing with financial education through the perspective of uncertainty and economic cycles, the importance of this study comes precisely from the necessity of a more encompassing treatment for both financial education and capability in the specialized literature, even among the existing critical approaches. A more realistic and systemic approach, in which uncertainty and herd behavior play a role, would be more effective in informing public policy and help it become more attuned to the workings of the contemporary financial system.

The paper is divided into six sections: the second one discusses the relationship between financial education and capability. This is an essential first step to exploring how financial education promotes financial capability, casting light upon the basic approach to the matter. Section 3 presents the main characteristics of the mainstream proposal for financial education, analyzing some practical experiences. The fourth one introduces some fundamental elements in which to base a critical analysis: the nature of the contemporary financial system, elements of uncertainty and the workings of the economic cycle. The fifth section points out reasons for the inefficiency and risks of traditional financial education proposals in disregarding those elements. The sixth section gathers the main conclusions, pointing out the main characteristics that should compose plans for raising financial education and capabilities.

2. Financial education and Financial Capability

In more general terms, financial education refers to instructions involving the transference of knowledge and theoretical skills to promote financial literacy. Financial capability, in turn, is a broader concept that contemplates knowledge, skills, and practical attitudes for financial decision-making (Sherraden, 2010). Therefore, financial education provides the knowledge that might promote individual capabilities to access and use financial services, improving financial behavior. Kaiser et al. (2020) evaluated the causal effects of financial education on over 160,000 individuals through a meta-analysis of 76 randomized experiments. The authors found that financial education programs have, on average, positive causal effects on financial knowledge and downstream financial behaviors.

Xiao and O'Neill (2016) discuss the effectiveness of financial education in improving financial literacy, behavior, and capability. Previous research suggests financial education can improve financial knowledge and promote recommended financial practices. High school and college financial education programs were found to increase financial capability, with some studies showing positive effects on savings rates, net worth, and credit scores. In order to evaluate the interrelationship among financial education, capability, and behavior, several studies focus on analyzing the availability of financial education to young students and the promotion of improved sets of financial behavior (Walstad et al., 2010; Fan and Chatterjee, 2018). These studies suggest that financial education promotes financial capability by increasing financial literacy, fostering desirable financial behavior at early ages, and improving

financial satisfaction, mainly when provided to young children and accompanied by meaningful financial services.

Research shows that workplace financial education programs positively impact retirement savings plans and financial knowledge (Xiao and O’Neill, 2016). Regarding financial education for adults, involving parents and hands-on applications can significantly affect financial knowledge, behavior, and satisfaction (Lyons et al., 2006). It is also important to note that financial education is crucial for those with lower education and income (Wagner, 2019).

While some studies suggest that financial education has little impact on financial literacy and behavior, others argue that government should focus on consumer protection rather than education. According to Willis (2008), financial literacy education is less effective than ensuring consumer protection. Gale and Levine (2011) found that traditional approaches to financial literacy, such as employer-based, school-based, credit counseling, or community-based, have yet to show strong evidence of having a positive and substantial impact. A meta-analysis by Fernandes et al. (2014) found that interventions to improve financial literacy explained only 0.1% of the variance in financial behavior. Despite these findings, researchers still believe financial education is necessary and can be improved to make it more effective.

Financial education and capabilities are, thus, intrinsically related. Therefore, analyzing financial education approaches might cast some light on financial capability development and household financial decision-making. According to Martin (2007), studies on household financial decisions usually mimic research on corporate finance without incorporating the uniqueness and complexity of household decisions. Moreover, such an ill-founded approach usually incorporates prescriptions on good financial behavior instead of analyzing whether households’ actual financial actions and decisions are appropriate. When analyzing financial education programs, studies focus on the effects of objective financial literacy (direct questions applied in surveys), subjective financial literacy (relative comparisons between individuals’ responses), desirable financial behavior (point-based indexes compared to a pre-determined set of good financial decisions), and perceived financial capability (individuals’ self-assessment). Therefore, most approaches to the matter rest on a pre-determined financial model that gives rise to what can be called a “mainstream proposal for financial education,” which assumes reducing information asymmetry so that

individuals can make better-informed decisions over a life cycle to generate improved well-being over time.

3. The Mainstream Proposal for Financial Education

Financial education for ordinary people (non-specialists) has been raised as an instrument of universal public policy to the promotion of financial capability by a broad and heterogeneous group of players, from public policy makers, academic researchers, to financial system members. Although singularly, the array of existing proposals may present particularities, in which it is possible to identify several elements in common, reason why they constitute what is here denominated “mainstream approach to financial education”.

Lusardi and Mitchell (2014) developed a model for lifelong savings that considers financial literacy. The model assumes that a rational and well-informed individual will manage their optimal saving pattern based on variations in consumption over time. Consumer preferences, economic environment, and social safety net benefits are all factors that determine a life cycle optimization process. This model is based on the conventional microeconomic approach to saving and consumption decisions, requiring individuals to have the capacity to undertake complex economic calculations and expertise in dealing with financial markets. The authors believe financial education improves human capital, making financial knowledge a form of human capital promoting development.

It is also essential to consider the Delavande et al. (2008) model, which proposes a two-period system for saving and investing in assets with varying levels of risk. This model assumes that increasing financial knowledge leads to increased human capital, meaning that individuals will seek financial education to optimize their investment returns. This knowledge allows for better asset allocation and surpasses advice from high-end financial advisers. Other related models explore household asset allocation and the impact of financial literacy. To simulate their model, Lusardi and Mitchell (2014) considered borrowing limitations, mortality risk, demographics, stock market returns, and unexpected changes in earnings and health. They found that financial literacy is developed over time and is crucial for optimal financial management¹. Investing in financial education benefits individuals as it equips them with the necessary knowledge to manage their finances and outperform those who do not.

¹ In respect to financial education, it may be noteworthy to recognize that consumer behavior should consider the diverse circumstances of individuals with varying income levels over time. The mainstream approach suggests that financial education should alter spending habits to increase savings and wealth accumulation over

Generally speaking, there are three consensual elements in this approach: first, the recognition of a generalized scenario of low financial literacy in contemporary society, which reaches extreme proportions for certain sociodemographic groups (especially women, poor people, poorly educated individuals and certain ethnic profiles). Such characteristics are present in most models, such as in Lusardi and Mitchell's (2014). Second, the low financial literacy finds itself statistically correlated to financial behaviors labeled as "inadequate" (population with a low financial literacy – capability - level neither save and nor use the best products and services on the market) a factor that leads to low financial performance (and no accumulation of patrimony). Martin's (2007) discusses such issues, focusing on the evaluation of actual financial behavior instead of analyzing compliance to ideal behavior. Finally, the assumption that financial education fosters financial literacy and capability, which translate into financial behaviors considered "adequate" to promote gains in welfare, whose effects tend to extend themselves towards greater market stability (Atkinson, 2008; Lusardi and Mitchell, 2007; OECD, 2005).

The mainstream approach to financial education is, thus, primarily based on a very specific view. One can generally contend that the approach hinges on a) instrumentalism, b) individualism, c) a model of hyper-rationality where agents are optimizers, and d) an economic core based on scarcity and allocation. In such tradition, the truth of a theoretical statement has no bearing, aprioristically, as assumptions must be drawn in order to allow precise predictions and help compute values for equilibria positions. This instrumentalism is based on methodological individualism, where research starts at the level of an isolated individual that optimizes pre-defined functions in a full competition mode that enables optimum results (Pressman, 2007). In such basic structure, economic agents operate under a hyper-model-consistent rationality: they collect all information over all different states of nature and possible actions, guaranteeing knowledge over all possible outcomes, which are calculated at probabilistic degrees. Complex conditional probabilities are established for each outcome, which are then given monetary values. Alongside a pre-defined system of (well-behaved) preferences, the agents choose the action to optimize the outcome. In this process,

time, regardless. However, there might be some inflexibility of marginal propensities to consume for specific income levels over time (Canbary and Grant, 2019). Income shocks may also generate diverse results when consumer preferences are non-homothetic (Baker and Yannelis, 2015). This suggestion implies that the relationship between saving behavior and intertemporal household decisions in neoclassical models following the Ramsey-Cass-Koopmans tradition may need to be revised as a tool for financial education models. One may observe a low variability in marginal propensities to consume for low-income levels, raising concerns about financial education courses' effectiveness in changing the spending habits of those with limited financial resources.

the chosen action is compared to other possible actions in a backward induction reasoning, requiring substantial computations (Lavoie, 2014).

In terms of financial education, the theoretical assumption behind such logic is that people behave primarily based on knowledge and available information for the sake of their own optimal financial welfare. Thus, one assumes that financial education, by transferring proper knowledge and information, fully promotes financial capability, which results in more successful decisions, and, consequently, in better personal financial performance. Besides that, by empowering the (financial) consumer, financial education promotes greater and better access and use of information, reducing existing asymmetries and even promoting market self-regulation, resulting in benefits that extend to the functioning of the financial system (Lusardi, 2000; Braunstein and Welch, 2002; O'Connell, 2007).

In more objective terms, the mainstream argument is that financial education will make individuals aware of the need for taking on an “adequate” behavior, which encompasses the planning and adoption of better ways of managing household budget and finances, in the form of expenses, savings/insurance, investment, and income generation. From there on, individuals would know how to distinguish essential expenses from unnecessary ones (by reducing or eliminating them) and will be attentive to patrimonial planning (pieces of land, real-estate, and durable goods). Moreover, individuals would also be more capable of managing the expenses that compose their families' life cycle (parties, children's birth, care of the elderly, education, health, retirement and death) by assessing the best resource allotment options (if, and in which conditions, it is convenient to get some financing), without jeopardizing future income and capacity for indebtedness. Financially educated individuals are thus attentive to hiring social security plans and insurances (personal and patrimonial ones) that would ensure a safety net in the possible occurrence of foreseen or unforeseen financial shocks (unemployment, death, serious illnesses, natural accidents or abrupt income decrease). Finally, such people will also be able to choose the best ways of obtaining income, by assessing the most adequate ways of inserting themselves in the labor market (OECD, 2005; Kempson et al., 2004).

To illustrate an example of the organization of standard financial education courses, we will analyze the Brazilian National Strategy for Financial Education (NSFE) based on the standards set up by the International Network on Financial Education (OECD/INFE). We focus on two financial education programs for vulnerable and priority adult audiences: women who receive federal conditional cash transfers (Bolsa Familia - PBF) and retirees with

a monthly income between one and two minimum wages. Additionally, we explore the official master plan of the Brazilian NSFE, which outlines the specific topics that should be covered in financial education for adults at different levels.

The programs designed for vulnerable people are central to the Brazilian NSFE. As such, a wide range of instructional materials for courses and workshops are available on the official NSFE website, including posters, audio, and video resources, and even a detailed guide for instructors conducting the workshops (AEF-Brasil, s.d.). These materials include fictional stories in the form of TV shows, which offer practical lessons related to the daily financial decisions of the two target audiences, as well as supporting materials and resources.

The PBF workshops cover various financial topics, such as saving and financial planning for current, future, or emergency expenses, managing household budgets, tracking expenses and income, understanding debt and its calculations, and promoting responsible spending habits. The material also includes a glossary of basic financial concepts like savings, credit/debit cards, banks, cooperatives, and financial institutions. It is important to note that the material does not reference inappropriate behaviors by financial agents or institutions that would create a conflict of interest between parties or point to asymmetry in the consumer-provider relationship. The material does not mention uncertainty or economic cycles either. In cases where insufficient money or debt problems arise, the material generally illustrates “inadequate” behavior by the individual, like making excessive expenses, incorrect calculations, or insufficient market research. The material only mentions financial consumer protection agencies for cases of indebtedness and default, which is not explored in the video footage.

For retirees, the framework is quite similar, with a few minor updates. The content primarily focuses on managing household finances such as expenses and income sources, controlling debt and making comparisons (especially payroll-deductible loans, which strongly impact this demographic group), and financial planning. While videos still depict elderly individuals in negative financial situations due to poor decision-making, the instructor’s guide acknowledges that seniors may also experience abuse, harassment, or fraud from acquaintances, family members, companies, or financial institutions. In such cases, the instructor should advise them to seek support from consumer protection and defense agencies.

The Brazilian NSFE’s master plan (CONEF, 2017) contains a long list of topics that can be covered in adult financial education programs. The suggested content includes the

workings of the National Financial System, consumer rights and responsibilities, mindful spending, critical analysis of advertising and propaganda, and even topics related to unfair credit practices. The aim is to encourage consumers to adopt responsible financial behavior. However, the material does not address the power imbalance between financial institutions and their customers, potential conflicts of interest, different uncertainties, or economic cycles.

In a global analysis of the Brazilian NSFEE material, it is essential to specify that, even considering elements of a more critical nature, more than these are required once frauds, scams, or inappropriate postures of agents or financial institutions are always associated with practices that disrespect the consumer protection code. However, on no occasion do the evaluated materials deal with trivial aspects of the potential conflict of interest - exacerbated by the asymmetrical relationship - between consumers and market institutions, namely, the selling of products and services, even if this implies restrictions on consumers' financial well-being. The conflict of interest does not necessarily relate to a posture contrary to the consumer's legislation. Instead, it can emerge in a market relationship between the consumer and provider. This absence justifies the organizational configuration of NSFEE, which assigns a central role to private financial institutions in its execution as if their interests were always harmonious with those of (potential) consumers. Knowing possible conflicts of interest is essential for citizens - as consumers - to perceive that not all products offered by an agent or financial institution are favorable for their financial well-being, even if this does not involve dishonesty on the latter's part².

In summary, despite the optimism expressed by authors that suggest financial education would lead to the above positive results, in practical terms, the education initiatives work in a limited way, which is acknowledged even by its supporters (Lusardi, 2008; Mandell, 2008). The reasons behind such poor performance would be, on one hand, the expressive low-literacy levels of the general population, both in developed and developing countries, which would demand a more extensive levelling over time. On the other hand, the workload and, consequently, the content and the duration of educational initiatives are modest (Duflo and Saez, 2003). Fernandes et al., (2014) evaluated a comprehensive list of financial

² One aspect that can be improved in the content matrix is the inclusion of applied lessons on the Brazilian economy. The current content is presented abstractly and lacks specific historical contexts. This approach does not provide a comprehensive understanding of crucial aspects of government decisions that directly impact citizens' financial well-being. For instance, it does not explore the effects of voting on bills or decisions made by the Central Bank. By incorporating more specific examples, such as the impact of labor legislation or specific economic policies, the content can be more relevant and beneficial to learners.

education practices in the literature. According to them, most of the studies do not find either any real impact of financial education practices or are characterized by significant methodological fragilities, due to either a short-term view or a narrow focus of the initiatives.

On a broader sense, the mainstream proposal for financial education is focused on the consumer as the single object of the action (educational policy), which invariably shifts the whole analysis, discussion, and possible interventions to a single agent in a process that is definitely systemic and dynamic by nature. As presented further on, the problems of financial education are not just due to its practical applicability, but they also come from the composition of systemic processes that are dynamic, interchangeable, and prone to reversals. The following section explores ways to improve financial education models by incorporating consistent rationality with the environment and a more comprehensive approach. This enhanced model considers financial behaviors during uncertain situations and non-stable economic cycles.

4. Contributions to the Critical Analysis

The mainstream proposal for financial education has been receiving critiques concerning its goals and basic assumptions by many authors (Sherraden, 2010; Willis, 2008). Basically, the most common critiques follow three strands: the first is based on (new) behavioral economics' approach; a second one points out to the historical context of greater complexity and instability of the contemporary familial life; finally, a third one highlights anthropological aspects, referring to the consumer society.

The behaviorist critique highlights biases that influence individual decisions in an unforeseen way, distancing them from the results expected by mainstream financial education. The argument is that individuals are susceptible to the influence of a series of factors, which results in rather disparate decisions, depending on each situation (Willis, 2008). A historical contextualization of the last decades points out to issues related to an environment of greater financial complexity and instability. This new context is marked by three pillars: (i) the weakening of the welfare-state institutions; (ii) the de-structuring of the labor market and the reversal of social security legislations; and (iii) the de-regulation of the activities of the financial sector (Gloukoviezoff, 2007; Servet and Saiag, 2013). Consequently, through time, the scenario is more and more characterized by income instability, as well as the growing dependency of households on the goods and services offered by financial institutions.

Finally, the third pillar points out to the contradiction within the primordial goal of the mainstream financial education, promoting a specific pattern of financial behavior for households (as net income savers), in strong opposition to the culture of the consumer society. Thus, the critique is embodied by the view that a financial education effort would be insignificant when compared to the real dimension of the encouraging initiatives of the contemporary consumer society (Kiviat and Morduch, 2012; Guérin et al., 2013).

4.1. Incorporating systemic views in financial education studies

In order to enable the incorporation of a series of important elements for the critical analysis of the mainstream financial education, one must assume that financial capability of an individual cannot be analyzed in an isolated environment, as it is done by the mainstream approach. Alternatively, one should presume that every individual is part of a wider socioeconomic system, whose nature can involve complexities and barriers that constrain individual actions and, therefore, financial capabilities. In this sense, financial education programs must include a more encompassing approach to provide a more diversified set of tools to deal with financial decision-making by households.

As a first approach, the systemic approach for financial education and capability can be explored via the concepts of closed and open systems, concerning the nature of the agents and their behaviors (Chick, 2004). The closed system would be the one used by the mainstream approach, in which the relationship between the agents and the determination of their behaviors are stable elements, that can be identified and predicted in a complete way (even though under a stochastic way). The mainstream logic assumes that the financial behavior of people is built, predominantly, by the accumulation of knowledge and information, which can be achieved by enhancing financial education. On the other hand, a more systemic approach considers the world as an open system, in which it is not possible to identify, over time, all the relevant variables and, consequently, one cannot determine, beforehand and precisely, the behavior of the agents, such as the very future performance of the system, which would invalidate the mainstream logic.

In practical terms, when it comes to the nature of the financial system, one should acknowledge the broad imbalance of forces between financial institutions and most of its customers in a relationship that might bring conflict of interests to the fore. First of all, such conflict accrues from the roles played in that relationship: the financial institutions represent the active part and, therefore, command the financial activity, deciding if a given person can

or cannot be their client and which products this client can have access to (credit cards, overdrafts, among others) and under which conditions (price, collaterals, maturities), determining, his or her degree of financial inclusion (Gloukoviezzoff, 2007; Dymski, 2005). Such asymmetry of decision-making power invariably reduces the capability of the financial consumer to make structural changes in the system.

Secondly, disparities in the information set available for the agents (complete inexistence or lack of information) reflects the abovementioned imbalance, conditioning decisions from a power struggle that is, by nature, unequal. Whereas the ordinary customer, for example, may get to hold a bank loan, a bank usually manages a significant part of its clients' wealth. Thus, the client must unilaterally trust the management of his patrimony by the institution since he can neither have access to (confidential) market information nor time to monitor promptly whether the behavior of the financial manager is adequate or it deviates from what would be desirable, non-stipulated by the financial contracts (Llewellyn, 1999; Goodhart et al., 1998). This lack of knowledge about the complete set of available information happens not only to clients, but also among potential instructors involved with financial education initiatives.

One potential issue is the conflict of interests, which may have unequal consequences for families. It should not be assumed that financial institutions share the same welfare goals as their clients, as this is not always true. Some authors argue that the relationship between financial institutions and clients is not always smooth (Mann, 2010). When the primary goal of a financial institution is to make a profit in a market-driven environment, it is easy to see why conflicts of interest can occur. Financial institutions may encourage their clients to purchase various financial services, particularly those that promote spending, such as credit cards, overdraft banking, loans, and mortgages. This kind of promotion can lead to customers spending money not aligning with their long-term welfare goals. In addition, financial institutions may strongly incentivize financial consumption, such as by setting sales targets for employees or promoting minimum credit card payments. Ultimately, the refusal of a financial institution to retain clients who are over-indebted due to various reasons is a significant example of this conflict (Dymski, 2005).

4.2. Dynamics in financial education: Fundamental Uncertainty and Economic Cycles

This subsection explores two other fundamental concepts that support a critical analysis of financial education. The first one is the concept of fundamental uncertainty, according to which individuals are unaware of the possible courses of action or future states of the world, leading to unknown probabilities and uncertain knowledge when agents take decisions (Lavoie, 2014). In an uncertain world, decision-making operates through reasonable rationality, based on the environment faced by the agents. Any strategy taken assumes the limitations of the human mind and the complexities imposed by the tasks to be done and the setting in which tasks will be performed. This ‘ecological’ rationality is dependent on short-cut decisions processes that can solve problems in little time and information. Uncertainty surrounding the future value of an asset can pose a significant challenge when it comes to making decisions. In fact, it may even render decision-making impossible. In the case of financial assets – increasingly present in the current decision-making of households – this instability is even greater, for not only does its value depend on the evolution of the fundamentals it may represent, but also on the speculative movements of the financial market. Consequently, as it will be presented up next, one can neither determine with precision, a priori, what the intrinsic value of a financial asset is, nor what the future trajectory of its price is going to be by the time of its negotiation. Therefore, financial education should be reviewed to account for decision-making in an uncertain world.

The second concept refers to the various growth cycle stages faced by an economy marked by uncertainty. That interpretation is made by exploring the endogenous instability of economic cycles. The cycle poses in each of its stages a distinct behavioral positioning of the agents, given the degree of instability of the system. Thus, one may assume that personal financial behavior – as the other institutional agents of an economy – will differ according to the observable stages of expansion, boom, stagnation, and recession in an economy, accepting or rejecting decisions that involve future fundamental uncertainty. This means that, facing the various financial-economic cycles, there is no way to establish pre-given strict rules of financial behavior, as suggested in the mainstream view, that remain unchanged throughout different stages of the cycle.

4.2.1. The Nature of Fundamental Uncertainty

The uncertainty of future events is a common theme in economic and business studies, at least since the first quarter of the 20th century, especially for its impact on the behavior of the agents. However, the concept of uncertainty is not used consensually, either because a same given term can refer to different situations, or because similar cases get various denominations, facts that occur even among authors on the same theoretical approach. In its typology, Dequech (2011) uses three qualifications, either in an isolated or a combined way, in order to differentiate the concepts of uncertainty commonly present in literature: weak or strong uncertainty; procedural or substantive uncertainty; and ambiguity or fundamental uncertainty.

The weak uncertainty describes cases in which the economic agents know – or act as if they did – the complete, unique, probabilistic distribution of the possible and mutually exclusive results of a given event. This, for example, is the case of unbiased gambling, when the gambler knows what the possible outcomes are and what the probability associated to each of these results is, before the placing of his bet. The weak uncertainty, however, simply describes whether a given result will occur or not, within an array of results with well-known statistical probabilities.

The strong uncertainty, in opposition, is the case of decisions in which the agent does not hold beforehand, for a number of reasons, the complete knowledge on the possible results of a given event and, especially, on the unique, additive, probabilistic distribution of those – at least in a totally reliable way. In this case, the agent must make conjectures to fill in the blanks that he deems missing (Carvalho, 2015).

The strong uncertainty is a broad category that can be broken down into a series of cases. Firstly, the strong uncertainty differentiates itself according to a second qualifier of the typology: procedural and/or substantive. When it comes to procedural uncertainty, it stems from the agent's personal struggle to process the available information, which would characterize a scenario of complexity. This complexity is relative, since it can be about cognitive limitations, computational capabilities, lack of access to a proper technological instrument necessary to the processing of existing information, the degree of interrelationship among sets of information, or even the interdependence on a simultaneous or further positioning (decision-making) of a set of other players. Two extreme cases can occur with strong procedural uncertainty: i) as being a difficulty for some less sophisticated

players, the procedural uncertainty can simply be a case of weak uncertainty; ii) although its problem is the processing of available information, this does not imply their completeness (Dequech, 2011).

The cases of strong substantive uncertainty happen when the agents do not have the whole set of information required to establish the array of possible results that may occur from an event associated to its decision or, especially, from the complete probabilistic distribution of such results. This can be caused by two different situations: ambiguity or fundamental uncertainty, composing the third qualifier to the typology.

In the case of ambiguity, the lack of part or all relevant information is consequence of a series of factors that hinder or prevent its dissemination and access. An example is the case of market secrets or conflict of interests, in which one of the involved parts has control over the set or part of the existing information, not making them publicly available – or just partially – to the other interested part. The decision-making agent, therefore, by not having all relevant information, is not capable of producing a complete probability distribution analysis to the expected results and, thus, does not fully and reliably know what the results of a given event may be.

Finally, the fundamental uncertainty applies to cases in which the absence of information does not come from its concealment or unilateral unavailability, but from its own inexistence, at least during the decision-making moment. Such inexistence is explained when future reality is not just composed by an array of possibilities of pre-established results, but by new facts that may always be created – by a series of players and, to a lesser or a greater extent, by the very act involved in the decision-making – over time, irrefutably altering future reality. That constitutes the so-called structural changes or crucial decisions that, once made by agents with creative capability, enable the construction of new future scenarios, through transformations that cannot be simply unmade (Crotty, 1994; Carvalho, 1998).

An example of structural change and fundamental uncertainty is the case of financial innovation, in which a product is launched, with no general knowledge beforehand, whether it will gain the market's trust or not. If so, it will cause structural changes once it increases its value and attracts even more demand. Consequently, the fundamental uncertainty is intrinsic to the economic environment, precisely to the importance of making decisions on future events, which do not rule out the possibility of crucial decisions and structural changes.

Once the concept of fundamental uncertainty is defined, one must assess what its consequences are to the formation of expectations and decision-making by the agents. In overall terms, Keynes himself argued that there is a difference between the formation of long-term and short-term expectations, under fundamental uncertainty. Short-term includes everyday decisions made repetitively and on lower amounts considering the agent's income. Those decisions do not require a great predicting effort, since they are subjected to assessment and review over short periods and the possibility of a great rupture is too small. Given those features, the decisions usually follow a routine pattern, with repetitions and small alterations that might be deemed necessary, based on recent micro and macro-economic results (Carvalho, 1998; 2015).

The long-term decisions, on the other hand, involve possession and retention of non-liquid, relatively expensive assets over time, before generating some income. In this case, the fundamental uncertainty is much more relevant, especially because i) they are constituted – and/or might be affected – by decisions which are crucial to a greater or a lesser degree, therefore, they do not have a reliable frame of reference on future performance; ii) they can't be assessed and corrected in short periods of time and without burden, because there is no way to estimate their results and; iii) in case a negative and unexpected event happens, such decision might become a failure, even though it had been considered, for a long time and based on available information at the time, as an excellent opportunity (Dymski, 2004; Crotty, 1994).

When faced with fundamental uncertainty, agents would tend to make more conservative choices for their long-term decisions. However, it is not advisable for agents to invest their entire portfolio in low-liquidity assets, even with high revenue potential, as this can expose them to undesired future scenarios. It is best to reduce exposure to such scenarios, even if they seem unlikely according to their expectations (Carvalho, 1992). Over time, societies develop institutional practices to minimize the effects of fundamental uncertainty on agents' expectations and decisions, which helps avoid constant instability. Institutions can be formal (such as regulation, laws, and contracts) or informal (such as habits and routines) and establish procedural rules of behavior and mindsets that promote stability and predictability. Thus, the institutions, on the one hand, provide information – allegedly qualified – on the status of the world, such as expected trends and trajectories, and on what the average behavior of other agents (including the government) must be; on the other hand, they operate on the development of cognitive skills, influencing the way the agents organize

themselves, select and interpret available information and, thus, make (financial) decisions (Crocco, 1999; Dequech, 2001; 2011).

Some limits of the relative stability caused by the institutions must be mentioned. The first issue is that it operates as a procedural guide of influence, but not as a complete form of control over the agents (even in cases that they impose legal sanctions to a noncompliance). As consequence, thought and action deviations by the agents are fully possible, such as the case of technological innovations or the financial speculation itself, when a given action bets on some performance outside the previously imagined trajectory. The second issue, as consequence to the first one, is that reality does not lose its nature of incorporating structural changes, reason why – to a greater or a lesser degree – the institutions themselves suffer or must suffer changes for a better adaptation to the new reality (Dequech, 2009). Finally, the third issue is that the institutions need to prevent the occurrence of instability crises in the economy. Although they successfully operate on the action and formation of long-term expectations during growth periods, they might even operate in periods of economic cycle reversal and increased uncertainty. However, the possibility of not following conventions will increase as the institutional influence over agents diminishes. That is where another critical contribution comes in handy, referring to the financial-economic cycle discussed in the following subsection.

4.2.2. The Economic and Financial Cycle

In his body of work, Hyman Minsky (1975, 1986) demonstrated how the cyclical process of growth occurs through different stages coming from financial instability under fundamental uncertainty. The particular interest of this paper is in how financial education initiatives must consider the changes of expectation formation and financial behavior of the agents facing the perception of fundamental uncertainty, in each stage of the economic cycle.

For such an analysis, one may start from the point that, in a financial economy, agents continuously make decisions on the composition of their portfolios of assets and liabilities, pondering the search for potential revenues in an environment of fundamental uncertainty. Given the dimensions of the multiplier effect on the economy, the cyclical process is determined by investment decisions. Thus, investors opt for the purchase of non-liquid assets in case optimistic expectations indicate the generation of future revenues. Given an optimistic scenario, the tendency is that investment in many areas and sectors has potential for future revenues, even under uncertain conditions (Minsky, 1975; Carvalho, 1992).

Businesses' risk-taking behavior is influenced by what was termed Kalecki's principle of increasing risk. This cyclically-led behavior means businesses tend to take on more risk when profit margins increase, and when profit margins decrease, they become more cautious. This behavioral pattern creates a cyclical pattern where increased profits lead to more risky investments, resulting in decreased profits and decreased investment. Kalecki's theory highlights the interdependence between profits and investment, thus offering a new element to evaluate financial decisions.

According to Minsky (1986), along with the production and income growth process, new investment is expected, followed more and more by the firms' exhaustion of their capacity for self-financing. With continuous production and income growth, investment is likely to increase. However, self-financing capacity decreases, prompting businesses to seek bank loans or issue stocks, which is more likely to happen in an optimistic economic growth and asset valuation scenario. This stimulates financial expansion and consumer spending, further strengthening the growth process and asset valuation. One must notice that this movement does not only happen with the direct financing of companies, but also of families, whose income is also on a growth trajectory. Within this context, there is expansion of consumer expenditures, as well as stock purchases, which strengthen the growth process, asset valuation and indebtedness (Dymski, 2004; Minsky, 1986; Llewellyn, 1999).

At a more mature stage, which constitutes the peak of the economic boom, corporate and household indebtedness rates are relatively high, coupled with riskier and more costly investments that require longer terms and, therefore, many rounds of re-financing. This process supports itself since economic growth is maintained or expanded (Brunnermeier et al., 2009; Sobreira, 2005; Carvalho, 1992). However, facing unexpected losses and signs of reversion on the scenario of macroeconomic growth – out of either having reached the limits of the existing capacity or other reasons, such as monetary policy reversals – the evaluation of assets, in general terms, will undergo immediate review by the financial market. Changing evaluations will cause a drop in assets' values and a consequent rise in the debt/revenue ratio of the families, companies, and asset holders. The maintenance of negative expectations concerning the economic scenario enhances the risk of insolvency, for it will stimulate the joint attempt by the financial agents to dispose of the assets of lower liquidity to bear their obligations and attempt to minimize the effects of the deflation of assets.

The main conclusion is that the cycle of economic growth is endogenous: its path and predicted inflections are induced by the behavior of the economic agents. During the stages of economic growth, the options by the agents for non-liquid assets and a higher rate of indebtedness not only do justify but it is also necessary for the improvement of the optimistic perspectives of wealth accumulation, even if one takes – to a higher or a lower degree of awareness – a certain degree of risk. The opposite happens at the reversal stage of this scenario, with growth decrease and asset deflation punishing those who opted to retain non-liquid assets. Finally, it is worth mentioning that, given the fundamental uncertainty, one cannot expect agents to systematically anticipate the end of each one of those stages (Froud et al., 2010).

The analytical framework of economic cycles is undoubtedly fundamental for comprehending financial education programs and initiatives. A historical example can illustrate how the rupture within the economic growth cycle affects the families' assets portfolio, and thus should play a part in how financial education programs address financial behavior. It is the case of Sweden, whose social security reform, implemented in 2000, encouraged workers to create their own funds' portfolio from a list of more than 450 options, a standard option among those. After an extensive advertising campaign, two-thirds of the contributors opted for funds whose average portfolio was overly aggressive, composed of more than 96% of stocks – mainly of high-tech companies – against 82% on the standard option. With the financial crisis that hit the high-tech sector, the result of 2003 indicated that, on average, the selected funds by two-thirds of the contributors had losses of 39.6% against a 30% loss by the standard option (Cronqvist and Thaler, 2004).

5. The Inadequacy of the Mainstream Financial Education Framework

This section aims to pinpoint some inadequacies of the mainstream approach to financial education and how considering these matters may impact the promotion of adequate financial capability. Some studies suggest that promoting financial capability involves improving personal financial knowledge, expanding access to financial policies and services, and enhancing information and communication infrastructure (Mushtaq and Bruneau, 2019; Huang et al., 2013). The idea is that financial education should acknowledge and address uncertainty and the ups and downs of the economy. However, it is essential to emphasize the importance of a solid and diversified institutional framework (regulatory and advisory) in improving financial literacy and supporting new capabilities.

Let us assume that uncertainty, explained in section 4.2.1, is a concept that should be part of the analytical categories involved in financial education and decision-making. In that case, the mainstream approach to financial education, addressed in section 3, as it considers well-informed agents capable of calculating risk in different scenarios (hyperrationality), must be overcome by adopting the uncertainty typology presented. Initially, let us consider an approximation between approaches. It is possible, then, for analytical purposes only, that the mainstream approach could assume a conception of weak uncertainty, in which there are sets of information that are not yet available but can be discovered, specifically through education and financial capacity building. In the same sense, in cases where financially educated agents find this information but cannot use it, uncertainty becomes an ambiguity and, therefore, is still subject to adjustments for appropriate purposes, either through more financial education or solutions that consider cognitive aspects (behavioral economics). Alternatively, suppose agents, even financially educated ones, do not find the necessary information. In that case, the weak uncertainty becomes the “strong” type, and, in this case, the conventional approach to financial education does not hold.

In a context where agents are making decisions under weak uncertainty, it is still possible to make an optimal decision under the mainstream approach. This result is possible because the outcomes of the decision are limited and have a known probability distribution. However, if there is even a tiny amount of uncertainty, it can be challenging to understand the situation and accurately interpret the available information. Additionally, if more information is needed to decide, even a tiny amount of uncertainty can quickly become ambiguous, making it difficult to make the best decision. These scenarios can significantly impede one's decision-making abilities.

Mainstream financial education could successfully deal with these two categories of uncertainty once it fills in the knowledge and information gaps, converting them into weak uncertainty with the abovementioned properties. However, as previously explained, there are some doubts about whether this goal can be achieved through a simple pedagogical structure focused on ordinary people – as pointed out in the literature – in order to deal with complexity and conflict of interests, which are both present in a systemic and dynamic view of the functioning of financial markets³. We contend that even disregarding the doubts on

³ It has been discovered through the Brazilian NSFEE's experiences that the courses offered only address weak uncertainty or calculable risk at best. This approach gives a false sense of security about making optimal decisions. It is evident in the ENEF master plan that there is no clear distinction made between risk and uncertainty, although they assume differences might be in place: “[...] no distinction is made between risk and

the capacity to treat conventional financial education as procedural uncertainty and ambiguity, it would be unacceptable to state the same about fundamental uncertainty, which is also present in a significant part of financial and economic decisions.

At the basis of the fundamental uncertainty, there is the assumption that reality is something subjected to structural transformations, which enables the creation of results and unimaginable scenarios, especially in the long-term case. Within this theoretical perspective, one cannot presume that the agents are able, for example, to analyze with perfection whether a given variation of a market asset price is based on real fundamentals or not, or just responds to speculative movements, supported by existing knowledge and information – even if all of them are available (Dymski 2004; Dow 1996). This happens because the market value of an asset is not determined by natural and intrinsic properties to it, but by the perception and interest of agents, in a way that the decision is not only made based on one's own expectations, but also on other agents' (Dequech, 2001).

The consequences to this improper treatment of fundamental uncertainty by the mainstream financial education can be dire. Exactly for considering the intrinsic existence of an optimal decision – based on a set of assumptions – the mainstream financial education eliminates the capacity of perception by the agent about fundamental uncertainty. When confronted with uncertainty, it becomes crucial for agents to exercise caution in decision-making, which involves acknowledging the possibility of non-existent information and taking measures to mitigate potential risks. In situations of excessive optimism, fundamental uncertainty would require agents to maintain a diverse portfolio that includes both liquid and non-liquid assets while also being mindful of debt financing. Conversely, it is prudent to adopt a conservative approach in times of economic stagnation by prioritizing liquid assets and avoiding liabilities. Thus, even though agents are neither capable of identifying the ex-post value of a market asset in the distant future, nor noticing the inflexions of a growth cycle in advance, they must be aware of such incapability, in order not to become an easy target during euphoric environments of economic boom, which tend to assume that the growth stage is endless (Minsky, 1975).

More specifically on the ideal financial behavior proposed by the mainstream approach to financial education, many conclusions can also be drawn from the introduction of the economic cycles to the analysis. Firstly, the target behaviors usually proposed in

uncertainty, despite the guidance of some economists such as Frank Knight.” (CONEF, 2017, p.75, authors' own translation)

financial education programs are not always compatible with the economic-financial cycle of expansion or reversal. One cannot disregard, for example, that during the stages of economic expansion, people are stimulated, via expansion of the credit – by the government, industry, or financial sector – to make consumption expenditures and accumulate indebtedness, in conjunctures of relatively low interest rates, exploring people's behavioral biases and consumer desires. In this environment, it is difficult to expect that financial education be successful when trying to convince most people to behave conservatively towards their expenditures.

Secondly, the incompatibility also occurs with a more aggressive behavior, foretold in order to guide the use of savings. According to the economic cycle, the accumulation of capital, which happens during the growth stages, is followed more and more by aggressive behavior by different economic agents – from the market operators to the consumer families. However, during the slowdown stages of the economy (stagnation and recession), such behavior tends to promote low or even negative revenues to its investors – as the previously mentioned social security taxpayers in Sweden. A more conservative financial stance, allocating the saved amount to higher-liquidity assets, even if of lower expected revenue, tends to be the prevailing behavior, as previously presented. In that sense, financial education needs improvements in its basic theoretical approach to promote more sensible capabilities. Moreover, as agents may still make ill-informed decisions, institutional elements must be in place to provide better transactional infrastructure, including financial consumer protection and regulatory instances over the financial system. However, as noted above, institutions to support financial capabilities should be prone to changes and adaptations, as there are several limitations to maintaining economic stability. While institutions can guide and influence agents, they cannot fully control their actions or prevent deviations, such as financial innovations or speculation. Furthermore, institutions must adapt to structural changes in the economy, and they cannot prevent instability crises during economic cycle reversals when uncertainty is high. While institutions can influence long-term expectations during periods of growth, they may have limited power during economic downturns.

6. Preliminary Conclusions: Towards more enticing Financial Education Policies

This paper elaborated a critical analysis to mainstream financial education programs, in special, based on fundamentals referring to systemic and dynamic attributes of

financial markets, which are usually of the selective, excluding, and conflicting nature. Under such a systemic approach, it has been claimed that there is no balance of forces between ordinary people and financial institutions. The latter holds the strength to take on an active role of command in the selection and categorization of their clients, in a relationship that might become conflicting rather often. As a result, such approach states that the promotion of financial education cannot restrict itself to an individual treatment but must be expanded to the entire financial system instead (demand, supply and supply regulation). It would be necessary to go beyond basic financial education to implement strict government regulation on the actions of different actors, in order to provide greater security to and equal balance among the parts involved in these conflictual market relationships. Most developing countries still lack financial consumer codes and strong institutions to deal with financial issues.

The paper also brought up two important contributions for the analysis of financial education stemming from the concepts of fundamental uncertainty and the analysis of economic cycles. Such concepts are relevant to demonstrate the impossibility – and not just difficulty – for the families to achieve optimal results in the financial market, after taking part in mainstream financial education initiatives. On the one side, by departing from the assumption of a hyper-rational agent, one can better embody a realistic decision process into financial education policies. Individuals must be presented with different uncertain-environment scenarios in different perspectives, and financial education initiatives must encompass each case separately. These cases must consider not only the euphoric periods of the economic cycle, but it must also consider financial prospects lead by speculation and the unavoidable downturns. Financial education programs should be then based on those prerogatives instead of promoting empty illusions. Moreover, rather than assigning all the information collection and processing to the individual, financial education programs could be more attuned to individual needs if institutional advisory centers are implemented as places for the dissemination of information, financial conventions and other fundamental information.

The presented diagnosis in this paper implies substantial impacts on the expected format of public policies to the financial capability of the individuals. A proposal on the theme cannot be restricted to the formation of qualifications and capabilities (skill, knowledge, information and orientation). On the contrary, it must contemplate, as a necessary condition, the construction of a favorable environment, from the service's

provision point of view, in order for the qualification of individuals to have their own potential to develop.

In short, the elaboration of a national financial capability plan must be composed by many instruments other than financial education. It must consider the inter-relation among agents, as the financial system has an active command over actions in the market, in a power struggle unequivocally imbalanced. Thus, primarily, a financial capability plan must promote the restructuring of the financial sector supply to households, via regulation directives and a consumer rights protection system, focused on simplicity, transparency, and shared accountability for the consumption of financial products. Only then, at a second stage, the plan must intensify actions of qualification, orientation, and information to individuals, via education and mainly financial advising.

It is also presumed, therefore, that information is unavailable at many complexity levels. Within such uncertainty context, one understands that financial education programs must be applied in order to fulfill more basic objectives, whether they are instructive actions on financial concepts and causalities, information on consumer's rights or access to financial advising. The advising, on the other hand, must be provided by specialists, so that it contemplates more complex issues on the lives of the individuals, via information and orientation, with possible follow-up and supervision to direr cases.

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