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RESEARCH PAPER

Literacy and Financial Education: Private Providers, Public Certification and Political Preferences

Carolina Guerini[1] · **Donato Masciandaro**[2] · **Alessia Papini**[3]

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Abstract
Financial education can influence the level of financial literacy. In many countries public authorities implement financial education policy by means of *ex ante* certification of both private and public providers of education activities. This article uses political economy, educational marketing and text analysis as complementary tools to offer a positive analysis of such setting. Being financial education a credence good and given the key assumption that financial literacy is a country state–contingent endowment that deteriorates, as a consequence of innovation, the third-party certification can be considered as a strategic governance solution. Yet, when a public agency acts as third-party certifier, political and bureaucratic incentives shape its action. In particular, political activism in financial education can be motivated by financial instability worries. Such theoretical relationship is empirically confirmed applying text analyses, and using financial education narrative as a proxy for activism both for the politicians of the European Parliament and the bureaucrats of the ECB in the period 1997–2024.

Keywords Financial education · Financial literacy · Political economy · Education marketing · Text analysis · European Parliament and ECB

JEL Classification D72 · G28 · G53 · L15 · M3

From August 2023 Donato Masciandaro is also Director of the Italian Edufin Committee. The views expressed in this article are those of the author and are not the responsibility of the Italian Minister/Ministry of Economy and Finance.

✉ Donato Masciandaro
donato.masciandaro@unibocconi.it

1 Cattaneo University LIUC and SDA Bocconi University, Milan, Italy

2 Department of Economics and Baffi Centre, Bocconi University, and SUERF, Milan, Italy

3 Baffi Centre, Bocconi University, Milan, Italy

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1 Introduction

In many countries in the last years the governments in charge established public bodies that implement financial education policy by means of *ex ante* certification of both private and public providers.

Notably, financial education and literacy can contribute to individuals' participation in financial, economic and social life, as well as to their financial well-being (Oecd 2015) and due to their impact on confidence and trust in financial markets and institutions, that are key for safe macroeconomic growth, the topics are subjected to public intervention, as financial consumer protection and/or financial inclusion.

In fact, governments can change the social welfare influencing the quality of financial education through licencing or certification. In the first case, given that a producer cannot offer education without a licence, licencing represents a device for entry regulation that is widely used to regulate education (Svorny 2000; El-Khawas 2001; Eaton 2003; Stannek and Ziegele 2005; Lohmar and Eckhard 2007; Mause 2008). Certification, on the other hand, is a softer quality signalling tool. We have public certification when a public institution is in charge in issuing guidelines, or recognitions, that certify financial education initiatives offered to local citizens. More clearly, certification doesn't prevent entry, and it legally occurs when a producer can offer education also without being certified (Kleiner 2000; Kleiner and Krueger 2013).

Given these insights and the recent popularity of financial literacy as a research field (Arthur 2012; Stolper and Walter 2017; Goyal and Kumar 2021; Lusardi and Mitchell 2023), including the critical views (Willis 2011; Hasting et al. 2013; Clarke 2015), this paper addresses the question of whether and under which conditions, a public certifier can increase the social welfare. In addressing that issue, the analysis outlines as well the motivations that favour certification, the unsolved issues and the rationale behind the institutional solution preferred by most OECD and non-OECD countries, that opted for the external certification solution issued by a competent authority.

The article is organised as follows. Section 2 outlines reasons that motivate public intervention in the field of financial education. Section 3 offers an analysis of the results obtained in the recent experience of an advanced economy—Italy in the years from 2019 to 2023—that support the key general assumptions of the study: both private and public players can be producers of financial education initiatives and a public agency can act as third-party certifier. Then (Sects. 4 and 5), the private cost–benefit analysis that motivates activism in financial education is outlined. Such an activism implies a quality disclosure issue, that can be addressed through a third-part certification. The following analysis (Sect. 6) demonstrates that if a public body implements the certifier role, political capture risks can influence the certification action; such risks can be minimized through the independence of the public certifier. Section 7 offers evidences on the distinct preferences of politicians and bureaucrats using text analysis. This part highlights the relation between political activism and macroeconomic situation. Section 8 reports on the main conclusions and perspectives for future research.

2 Financial Education as a Field of Public Intervention

The importance of financial education is universally recognized. Financial education can help enhance financial literacy by increasing financial knowledge, skills and attitudes. In turn, this can contribute to individuals' participation in financial, economic and social life, as well as to their financial well-being (OECD 2015).

As a potential complement to financial inclusion and financial consumer protection, as well as to financial advice (Mazzoli et al. 2024), financial education is also important to generate confidence and trust in financial markets and institutions. This is key for safe macroeconomic growth. In case of trust, citizens expect that, on average, financial exchanges are dependable as the firms and professionals involved in the production and distribution of financial services and products are reliable. Reliability means performing actions that are beneficial or, at least, not detrimental for consumers given these actors' financial literacy and the state of consumer protection (Sirdeshmukh et al. 2002; Guiso 2010; Sapienza and Zingales 2012; van Esterik-Plasmeijer and van Raaij 2017). Moreover, one further link between trust endowment and financial literacy lies in the possibility that low literacy may trigger financial crises (Boeri and Guiso 2008; Guiso 2010).

This can have several positive macroeconomic and financial consequences (Hastings et al. 2013; Lusardi and Mitchell 2023; Goedkoop et al. 2023; Oehler et al. 2024). Though the iterative relation between trust and financial literacy should be further researched, empirical evidence shows that financial literacy can be positively associated with more trust in financial institutions and supervisory authorities (Hansen 2012; van der Cruijsen et al. 2021a; Nitoi and Pochea 2024), notwistanding it worth mentioning that trust in supervisory institutions, as the central banks are, can be associated with preferences for political parties, where agnostic citizens trust more (Hayo and Meon 2024).

At the same time, financial literacy is an endowment of a country that can improve or deteriorate. The special character of the financial literacy endowment lies in the fact that the deterioration processes that can harm any education effort can negatively affect financial literacy and carry the associated problems. Lack of attention (Loewenstein and Wojtowicz 2023), obsolescence of financial literacy—which becomes more likely the more financial-device phenomena occur (BIS 2021)—but also opportunistic and illegal behaviours among financial producers can all reduce trust (Guiso 2010; Sapienza and Zingales 2012), in a world where disinformation is even more present (Stiglitz and Kosenko 2024a, 2024b).

In this perspective, financial illiteracy can be harmful. In the financial industry, customers cannot verify the quality of financial services without incurring some costs, as such services are credence goods (Dulleck and Kerschbamer 2006). All else equal, a high level of financial illiteracy allows unfair, unskilled and criminal actors to offer their services, thereby increasing the likelihood of citizens unconsciously engaging in excessive risk-taking. The negative effects of technological applications in financial services—"Fintech dark side" (Ozili 2020; Tok and Heng 2022; Foguesatto et al. 2024)—such as fraud and criminal activities (Faccia et al. 2020), cybersecurity vulnerabilities (Buckley et al. 2019; Khan et al. 2023; Li et al. 2023), debt traps (Yue et al. 2022) has been progressively uncovered and discussed.

In other words, the suitability of individuals' financial literacy endowment is state contingent, as financial customers' knowledge needs to be continuously updated via financial education (OECD 2018, 2022; EBA 2020; BIS 2021; ESAS 2023). Moreover, financial education is a credence good that can be produced by both private agents and public institutions. Thus, the more financial education can be considered a credence good, the more quality disclosure is needed. In this perspective, two possible complementary roles for private and public actors can be identified in any country: private firms and institutions elicit customers' financial education needs and deliver education programmes, while the public authorities should act as a third party that certificates education quality.

As soon as policy makers have recognized financial education as a necessary antidote to the increasing complexity of consumers' financial decisions, the national strategy has embraced the decision about the responsibilities to be exerted by different official public bodies and the means preferred by them as to coordinate the national strategy. Whereas national strategy can be defined as a holistic approach aimed at financially empowering consumers and investors through enhanced financial protection and/or adequate financial inclusion measures or -more broadly- at promoting the development of sound and fair financial markets and supporting financial stability, the added value provided by working groups and consultative committees is certainly differentiated (Grifoni and Messy 2012).

Working group, steering group and/ or consultative committee serve to discuss the national strategy and assist its development. As such—in front of the complexity of financial education- they are often engaged in defining and monitoring quality standards, and consequently certify financial education quality provided by private and public firms (BIS 2014; World Bank 2014 and 2021), as documented in Sect. 3.

3 Financial Education and Public Certification: The European Setting and the Italian Case

As mentioned before, both private and public players can deliver financial education initiatives. At the same time -from a strategic governance point of view—a public agency can act as third-party certifier. This is also the case of Italy, where a Committee was established in 2017 with the function to coordinate financial education activities (Anderloni and Moro 2023).

Before offering an overview of the Italian case, a comparative analysis of the strategic governance of twenty-seven European countries—both OECD (blue countries) and non- OECD members (red countries)- shows that in all but two of them (green countries) financial education is subjected to external certification issued by a competent authority (Fig. 1). In those countries a public agency qualifies the initiatives supplied by financial education providers.

More, the public agency in charge of certification in the twenty-seven countries that offer a public certification of financial education activities (Table 1, see the Appendix for further details), is composed by central banks representatives (77% of the cases), other financial supervisory authorities (55% of the cases), ministries (66% of the cases) and other public authorities ((59% of the cases).

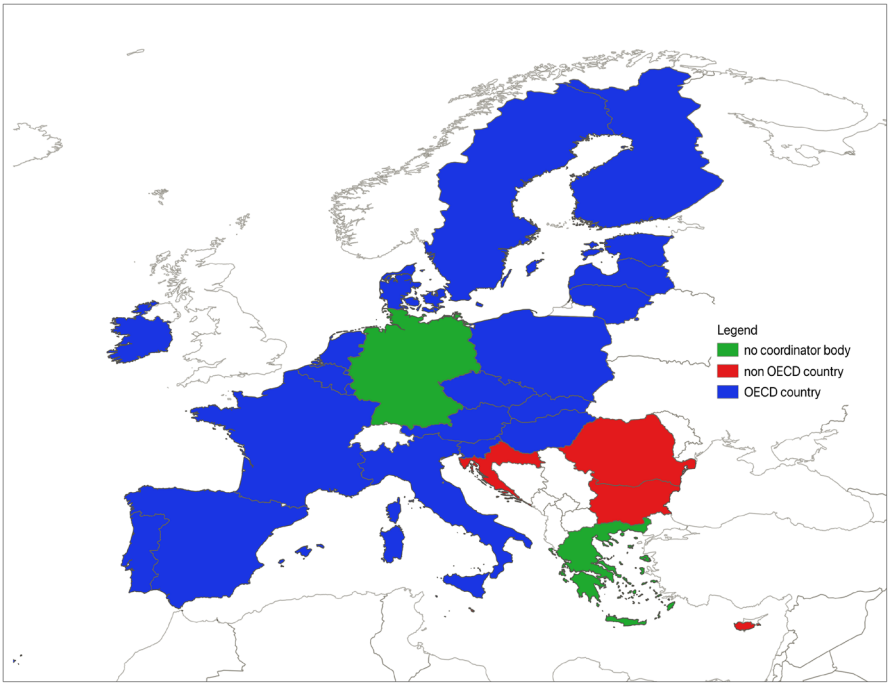

Fig. 1 Countries that offer a public certification of financial education activities (2023)

As far as Italy is concerned, it is worth noting, as well, that the establishment of a public body for financial education was motivated by the fact that, in terms of financial literacy, Italy's ranking in the sample of advanced economies is relatively low (Di Salvatore et al. 2018; D'Alessio et al. 2021; European Commission 2023; Lamboglia et al. 2023).

The examination of the financial education initiatives promoted by private and public entities in Italy is exclusively refers to activities undertaken during October, as Edufin Committee promotes, so far, every year in that period a *Financial Education Month* (FEM). Both private and public players can ask the Committee to use the *FEM brand* disseminating the initiatives aimed at increasing financial literacy and ensuring the efficient planning of personal and family resources. The use of the brand is released by the appointed Committee if the initiative's design and implementation are consistent with well-defined, systematic guidelines established by the Commission when it launched the FEM programme. Therefore, the FEM activities can be defined as third-party public certification.

An overview of the financial education activities offered over a time period of five years (2019–2023) provides a picture of the engagement of private and public entities, as well as an indication of the number and types of financial education initiatives. It highlights the important role of private firms as organisers (Fig. 2). The number of private participating agents grew from 2019 to 2021 (the peak year in this regard), while the number of public institutions involved was generally constant.

Table 1 Financial Education Public Bodies: Stakeholders and Certification Activity

Country	Financial education institution	CB Involvement	Supervision Authorities involvement	Ministries involvement	External stakeholders	GMW certification
Austria	Austrian National Bank	Yes	No	Yes	Yes	Yes
Belgium	Financial Services and Markets Authority	Yes	Yes	Yes	Yes	Yes
Bulgaria	Junior Achievement Bulgaria	No	No	Yes	Yes	Yes
Croatia	Ministry of Finance	Yes	Yes	Yes	Yes	Yes
Cyprus	Central Bank of Cyprus	Yes	Yes	Yes	Yes	Yes
Czech Republic	Ministry of Finance	Yes	yes (CB)	Yes	Yes	Yes
Denmark	Finance Denmark	Yes	Yes	Yes	Yes	Yes
Estonia	Ministry of Finance	Yes	Yes	Yes	Yes	Yes
Finland	Finnish Foundation for Share Promotion	Yes	Yes	Yes	Yes	Yes
France	Bank of France	Yes	No	Yes	Yes	Yes
Germany		Yes	No	Yes	Yes	Yes
Greece	Bank of Greece	Yes	yes (CB)	No	Yes	Yes
Hungary	Ministry of Finance	Not directly	No	Yes	Yes	Yes
Ireland	Money Advice & Budgeting Service (MABS)	No	No	No	No	Yes
Italy	Financial Education Committee	Yes	Yes	Yes	Yes	Yes
Latvia	Financial and Capital Market Commission/Bank of Latvia (Latvijas Banka)	Yes	Yes	No	Yes	Yes
Lithuania	Bank of Lithuania	Yes	No	No	Yes	Yes

Table 1 (continued)

Country	Financial education institution	CB Involvement	Supervision Authorities involvement	Ministries involvement	External stakeholders	GMW certification
Luxemburg	ABBL					Yes
Malta	Ministry for Education, Sport, Youth, Research and Innovation, Directorate for Learning Learning and Assessment Programmes (DLAP), Home Economics Seminar Centre	Yes	No	Yes	Yes	Yes
The Netherlands	Money Wise	Yes	Yes	Yes	Yes	Yes
Poland	Polish Financial Supervision Authority	Yes	No	Yes	Yes	Yes
Portugal	NPFE – Portuguese National Plan for Financial Education (led by the Banco de Portugal, the ASF-Autoridade de Supervisão de Seguros e Fundos de Pensões and the CMVM -Comissão do Mercado de Valores Mobiliários)	Yes	Yes	No	Yes	Yes
Romania	The National Bank of Romania	Yes	Yes	No	Yes	Yes
Slovakia	National Bank of Slovakia	Yes	Yes (CB)	No	Yes	Yes
Slovenia	National Education Institute of Republic of Slovenia	Yes	No	Yes	Yes	Yes
Spain	Banco de España, the National Securities Market Commission (CNMV) and the Ministry of Economic Affairs and Digital Transformation (MAETD)	Yes	Yes	Yes	Yes	Yes
Sweden	Swedish Financial Supervisory Authority (Finansinspektionen)	No	Yes	No	Yes	Yes

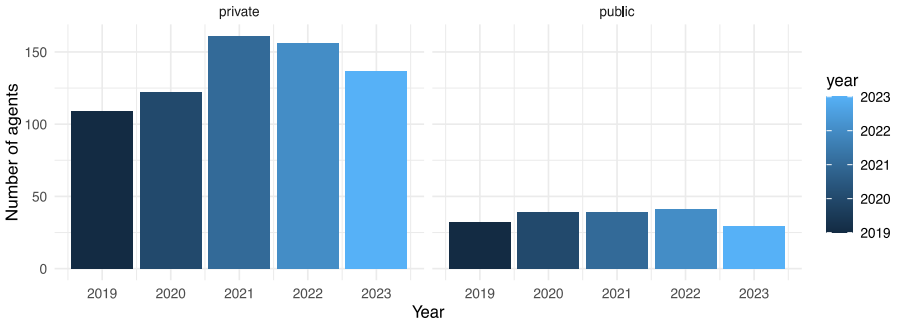

Fig. 2 Number of proponents—private firms and public institutions (2019–2023). Source: Authors' Elaboration on Edufin Committee data, 2019–2023

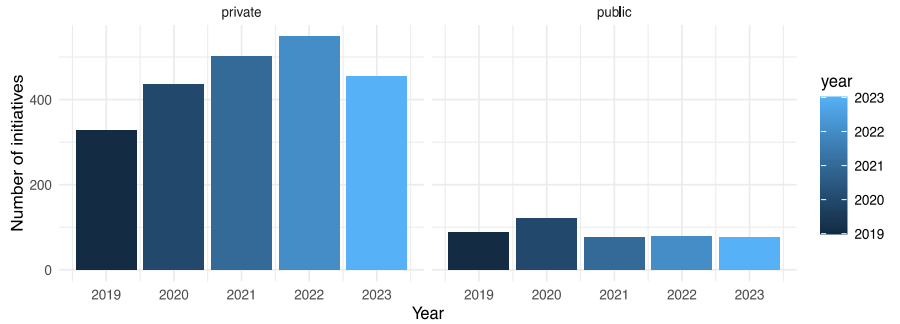

Fig. 3 Number of initiatives launched by private firms and public institutions (2019–2023). Source: Authors' Elaboration on Edufin Committee data, 2019–2023

Similarly, the number of public and private initiatives undertaken in the same timeframe grew and then decreased over time (Fig. 3). Notably, private entities offered the highest number of financial education initiatives in 2022, while public institutions did so in 2020. In 2022, which represents the peak, 628 financial literacy initiatives were offered to participating targets.

In general, a high number of financial education initiatives were offered to the Italian Community in the month of October, reaching 531 in 2023.

It is also possible to depict the composition of the proponents. Five clusters emerge:

- *Cluster a* is composed of for-profit firms that offer financial services, social security or insurance products. This cluster includes banks, insurance companies, stock markets, financial agents or consultants, and financial intermediaries licensed under national and European laws on financial or payment services for commercial purposes;
- *Cluster b* is composed of non-financial enterprises that offer financial, social security or insurance education for profit as professional entities that organise financial education for third parties, consultancy agencies, communication agencies, agencies that managed websites and social-media platforms;

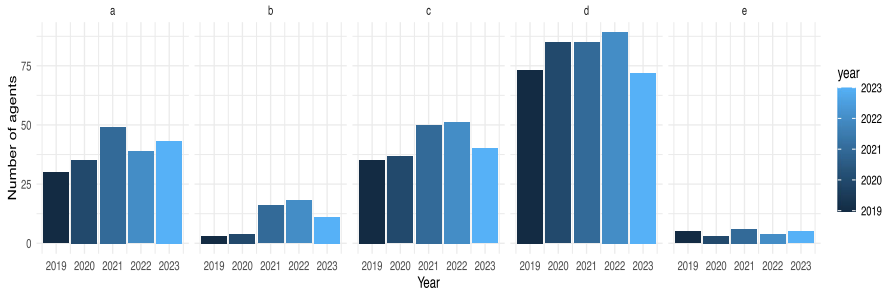

Fig. 4 Number of proponents per cluster (2019–2023). Source: Authors' Elaboration on Edufin Committee data, 2019–2023

- *Cluster c* comprises non-profit proponents linked to the financial industry as associations and foundations backed by banks, insurance or financial companies; private and public welfare institutions; third-sector associations, NGOs, consumer bodies, trade unions and research institutions; and municipalities, regions and other public bodies.
- *Cluster d* is composed by institutions and *non* profit organization that do not operate in the financial industry such as third sector associations, NGOs, consumer associations, trade unions, research institutions, Commons, Regions and other public institutions.
- *Cluste*r *e* includes the Edufin Committee, its components and the CDP (Deposit and Loans Fund) institution.[1]

The most important cluster in terms of number of proponents is (d)—is composed by non-profit organisations linked to the financial industry. In contrast, cluster (b) is the least crowded. Figure 4 also indicates an increase in the number of for-profit entities involved in education initiatives and an increase in the number of institutions in cluster (e).

An examination of the number of initiatives *per* type of proponent (Fig. 5) highlights the overwhelming role of Cluster (e). In 2023, the number of events launched by the Edufin Committee and other organisations in this cluster reached 305, thereby pointing to the cluster's rapidly growing role.

Given the number of initiatives, cluster (c) is also highly relevant over the focal period, especially in 2022. In this case, the growing number of initiatives was sustained by an increase in the number of institutions offering financial education to Italian citizens in October.

[1] Cassa Depositi e Prestiti was founded in **1850** by the Parliament of the Kingdom of Sardinia and has supported the Italian economy through the various stages of its history, responding to the challenges of development from the reunification of Italy to today, giving a **substantial contribution to Italy's transformation** from a predominantly agricultural country to a modern economy based on industry and services.

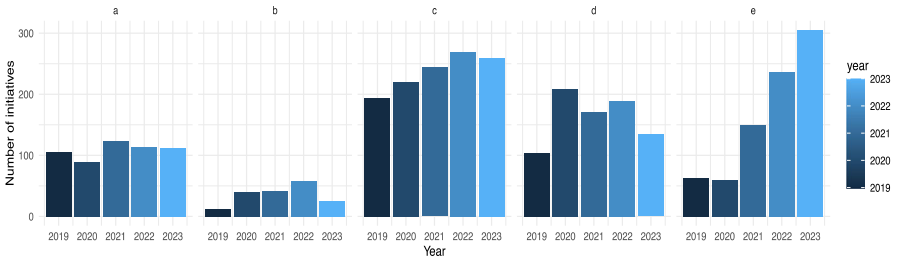

Fig. 5 Number of initiatives developed by each cluster (2019–2023). Source: Authors' Elaboration on Edufin Committee data, 2019–2023

4 Private Providers, Education Marketing and Quality Disclosure

While financial education can be delivered by both private agents and public institutions, focusing on private firms allows to uncover, in a more clear and systematic way, the issue that characterizes the supply of financial education: quality disclosure. Such an issue, in turn, can be addressed using a third- party certification.

On the one hand, in a market economy, a high financial-trust endowment of a given population has several positive macroeconomic consequences (Hastings et al. 2013; Lusardi and Mitchell 2023). Moreover, given that any financial exchange entails promises (Jaffer et al 2014), and given that citizens completely and systematically understand such promises, financial literacy plays a crucial role in strengthening financial trust (Hansen 2012; van der Cruijsen et al. 2021a).

On the other hand, it must be stressed that financial illiteracy is harmful. In the financial industry, customers cannot, without incurring some costs, verify the quality of financial services, as such services are credence goods (Dulleck and Kerschbamer 2006). Therefore, it is likely that financial illiteracy are correlated with fraud phenomena (Zheng et al. 2024).

In light of this knowledge asymmetry between producers and consumers, financial operators can be categorised as fair/skilled or unfair/unskilled (Berk and van Binsbergen 2022), and as honest or criminal (Barone and Masciandaro 2019). All else equal, a high level of financial illiteracy allows unfair, unskilled, and criminal actors to offer their services, thereby increasing the likelihood that citizens unconsciously engage in excessive risk-taking, and/or they bear excessive costs (Reuter and Schoar 2024). On this respect, it is worth noting that also skilled producers can implement unfair actions, for example charging higher interest rates to relatively less educated consumers (Bacchiocchi et al. 2024). Moreover, emerging technologies are fuelling the capacity of unskilled and criminal actors to involve citizens in their risky and/or illegal businesses (Teja 2023).

Therefore, four key assumptions emerge: (1) financial literacy can be considered as an endowment of a public resource that can be maintained or deteriorate; (2) the financial education policy can influence such endowment, taking into account, that (3) education is a credence good, and that (4) the corresponding quality certification

problems can be addressed using a public agency, acknowledging that both political and bureaucratic capture risks can arise.

Those four assumptions can be captured in a simple and general way, merging a specific application of a general setting in which a policy can influence the endowment of an exhaustible public resource (Harstad 2023), with a framework where such resource is a limited credence good (Berk and Van Binsbergen 2022).

Introducing the temporal dimension, at any time t, the size of financial literacy for a given population is S_t. The effect of the education policy is $x_t \in (0,1)$, where (Eq. 1):

$$S_{t+1} = (1 - x_t)S_t. \tag{1}$$

The more the public education policy is effective, the more the financial literacy knowledge of the citizens will be suitable for their needs. In other words, the financial education flow maintain the financial literacy stock at its optimal level. The opposite is true: the more education policy is ineffective, the more likely will be the financial literacy obsolescence. The intuition is straightforward: the flow of education can change the stock of financial literacy (Bellocchi and Travaglini 2024), addressing the obsolescence problem. It is worth noting that we could assume a more optimistic view, without any loss in terms of results: the financial education policy can improve the financial literacy endowment, i.e. $x_t \in (-1,1)$.

But the definition of the public policy will depend on the features of the financial education market. In such a market, the key feature is the asymmetric information between the users and the producers, which characterizes any market for educational services (Swangler 1978; Cave et al. 1992; McPherson and Winston 1993; Mause 2007).

In other words, the specialness of financial education is due to the fact that, depending on its quality, which is unknown and heterogeneous, it influences the individual well-being both positively and negatively.

Such a situation can be analysed considering that in any moment t, where for the moment the temporal subscript is eliminated for the sake of notation simplicity—in the above mentioned population of agents, a fraction u—where $u \in [0,1]$—would like to become users of financial education to improve their financial literacy. The more the financial literacy can become obsolete, the more the fraction of users will be closer to one. In other words, such agents give value to financial education (Bellocchi and Travaglini 2024).

In this population, another fraction, σ, where $0 < \sigma < 1$, are agents in the form of "high quality (HQ)" educators with skills that allow them to offer financial education. Each user must find an educator who will provide education.

When the demand for education is higher than the supply—which implies $\sigma < u$—the value of this service will be high relative to alternative activities. In such situation, some users, who are unskilled agents, would like to become "low quality (LQ)" educators. These agents know that they do not have the adequate skills to offer education, but they nevertheless do so in order to gain the value.

To capture, in the simplest way, the fact that relatively short supply characterises the financial education market, we assume that any educator can serve only one user. Therefore, the fraction σ becomes the maximum share of the population that can earn

a HQ education. Each user maximises his expected utility from education, and invests time and effort in the education experience.

The above description of the financial education market allows us to discuss in a systematic way the education policy issues that arise when private firms and/or professionals decide to implement a financial education activity. There are three main aspects that appear to be highly relevant in this sense, and ask for coherent policy measures:

1. private firms operating in the financial industry may view education as a way to involve potential customers in a typical supplier-customer relationship on the basis of well-known marketing paradigms;
2. even if this is not the case, the outcome of such educational programmes may be uncertain, due to the absence of an effective education planning approach or due to the metrics employed to verify its effectiveness. As clarified later discussing quality assessment issues in financial education services, quality assurance is complex and influences the seller's preferred manner of quality disclosure;
3. finally, a lack of trust in the private firm in charge of education activities and/or in national financial institutions, along with general wariness of sales pitches, may prevent priority targets from becoming involved in financial education.

Starting from the first point, the financial services industry is highly regulated and must adhere to protect customers' interests. Nevertheless, financial services marketing uses various strategies and techniques to create and drive awareness of financial products, and to capture leads and convert them into loyal customers through ongoing marketing campaigns. As such, marketing activities are at the heart of narrow-scope or institutional trust, which defines people's trust in the financial firm providing the services they use.

Given the proliferation of education initiatives in response to the low levels of financial literacy and its heterogeneity across the population (Lusardi and Mitchell 2023), another relevant task accomplished by private firms is "needs' elicitation". Nevertheless, also in this case various obstacles often prevent the perception of a need by potential targets or customers and numerous techniques could avoid one of the most important obstacles to financial literacy upgrade (Pacheco et al. 2018) and resistant targets engagement (Stolper and Walters 2017).

Moreover, *educational marketing*—which involves offering education on specific topics or industries, and on the value of the benefits customers can derive from using a product or service to guide their purchasing decisions—is often a means to initiate a relation with potential customers. As such, education marketing is an important part of the marketing activities of private institutions operating in the financial industry.

If financial education is not seen as an independent activity in the sales funnel, customers will likely choose the offerings of the "educator". *Funnel* strategies and marketing policies based on *buyer persona* profiles—essentially detailed representations of the target customers—are specifically designed to achieve this goal. In a supplier-customer relation, while digital marketing paradigms offer clear advantages, a conflict of interest may arise whenever potential customers are attracted through educational initiatives. For the sake of both generality and simplicity, in our analysis

we will consider the specific issue of the conflicts of interest as a component that influences the overall quality of financial education.

Bester and Dahm (2018) show that the first best can always be obtained if diagnosis and treatment can be separated by contracting with two different experts—a diagnosis expert and a provision expert. Intuitively, this could eliminate experts' incentives to make an inappropriate treatment recommendation, as they will not reap any financial benefits from doing so. The direct involvement of private stakeholders in financial education initiatives should be designed and developed in a way that ensure educational activities can be clearly distinguished from commercial and marketing activities.

Even if well-executed educational marketing programmes cut through the incessant drumbeat of low-value, high-volume marketing "noise" and credibly position companies with the coveted status of "trusted advisor" (Manea and Purcaru 2017), undertreatment or mistreatment are always possible with credence goods. Along these lines, as Inderst and Ottaviani (2012) and Anagol et al. (2017) show, issues of quality assessment and disclosure arise. In our focal context, diagnosis should address the issues of quality assessment and quality disclosure, which could, in turn, increase welfare even if service features remain unchanged.

Going in more depth, the effect of financial literacy on the quality of individuals' financial decisions is difficult to determine and private firms are rarely involved in the use of advanced education evaluation metrics. The mentioned behaviour is due to several reasons, and the complexity of quality assessment is one of them. Analysing, consequently, the issue of diagnosis and quality assessment new considerations and insights arise.

Financial education providers do not often disclosure quality for several reasons, that are quite different in terms of nature. Theory predicts that firms are more likely to offer quality disclosures if related costs are lower, product quality is higher or the expected benefits of disclosure are greater, conditional on quality and disclosure costs (Alwardat et al. 2019).

More, in front of the purported benefit of disclosure as a facilitator of better matches between consumers and products, some authors have argued that the nature of the response depends on whether the disclosed information is easy to access and understand, and whether consumers pay attention to disclosures. In this regard, one should also consider that *technical or functional* quality and *perceived quality* may be distant. As quality itself is objectively hard to define in relation to services due to their immateriality, it will be affected only partially by the way services are defined and distributed, whereas the overall features, the perception and the experience of the consumer will exert a relevant role.

Thus, in the operative environment, *ex post* quality assessment tend to be conceptually referred to and actually synthetized in terms of customer experience (Van Ryzin et al. 2007; Vigoda-Gadot and Yuval 2003). The customer's experience in the educational field is, thus, often measured by private firms engaged in educational programmes on the basis of an net promoter score (NPS) (Reichheld 2003), that represents the simplest comparative way of acknowledging quality from a customer-centric perspective.

Focusing on the customer experience concept, the consideration of education and learning as a process forces us to assure attention to the quality of the learning experience and the context in which learning takes place. Bitner's (1992) *servicescape* model stresses dimensions of the *physical environment* in which the service takes place. Other scholars have expanded the concept by adding dimensions of the *social* environment (Zeithaml and Zeithaml 1984; Lin et al. 2020) and emotional aspects. In this respect, physical (technical and functional) and perceived quality are linked, as the *servicescap*e may be digital, and delivery channels and omnichannel planning could increase educational effectiveness. Moreover, interest in the service interaction and how service experiences shape trust goes beyond a passive evaluation of trustworthiness towards process-based trust, as stressed by Nikolova et al (2015) and Berg and Johansson (2020).

As a solution, given the complexity of the issues of quality assessment and disclosure, UNESCO suggested a simplified education-quality framework based on five dimensions. This framework offers a mixed system of quality assessment that properly combines a priori and *ex-post* features (Unesco 2004, p. 36, in Unesco 2023).

Finally—referring to the third concern linked with the involvement of private entities in financial education—additional considerations can be added with respect to the issue of trust in financial institutions and its link to education, as well as the relations among narrow-scope trust, broad-scope trust and social trust (Sirdeshmukh et al. 2002, Hansen 2012, Van Esterik-Plasmeijer and Van Raaij 2017, Van der Cruijsen et al. 2021b). Trust plays a role in education in numerous ways. It arises from the complex interplay of beliefs, expectations, experiences and situational aspects. The willingness to subject oneself to another's actions relies on the perception of that actor's *trustworthiness*. Perceived trustworthiness can lead to *trusting practices* on the part of the trusting party—that is, behaviour that is based on trust (Alarcon et al. 2017, Colquitt et al. 2007, Bormann and Thies 2019).

Focusing on the link between institutional trust and education, additional relations emerge. Institutional trust is composed of two subtypes. *Trust toward institutions* reflects the perceived effectiveness and efficiency of the institutional order in accomplishing the guiding principles of an institution (Lepsius 2017). *Trust because of institutions* refers to "the background of institutional safeguards influencing … decision making and actions" (Bachmann 2018, p. 219; Zucker 1986, p. 61; Borman et al. 2021). On the one hand, institutional trust plays a role in ensuring access to planned events and educational involvement, and in allowing for the diffusion of financial knowledge and a potential increase in financial literacy. On the other hand, institutional safeguards may be favoured by political interventions.

General social trust, as conceived in this context, is an important outcome of political intervention and influences institutional trust. Therefore, our understanding of the development of trust should embrace the reciprocal relationships between the micro and macro perspectives (Lumineau and Schilke 2018), as trust is an inherently multilevel phenomenon. Nevertheless, although most researchers agree that trust forms the foundation for educational processes and contributes to educational attainment, this research field has not yet been investigated in detail.

Vice versa, from a marketing perspective, it's not questionable that brand identity and brand purpose of private firms engaged in financial education represent the main

drivers of trust (Ronson and Farkuhar 2014; Berry 2000; Stensaker and D'Andrea 2007) and influence customer preference. Thus, brand associations, reputation and purpose should be considered if the quality assessment if referred to the initiative's proponent, or if one questions how to favour access to private initiatives.

5 Addressing Quality Heterogeneity: the Third- Party Certification Solution

In the light of the above discussion, we can reach three conclusions. First, private firms and professionals can have incentives to produce financial education. Second, the quality of financial education will be heterogeneous. Third, being financial education a credence good, a quality disclosure issue systematically arises. Therefore, social welfare can be strengthened finding a device that improves quality disclosure. Such a device can be the establishment of a third-party certifier, that systematically evaluates the good's quality (Cason and Gangadharan 2002; Baksi and Bose 2007; Dranove and Jin 2010; Farhi et al. 2013).

The certification agency's goal is to produce the distinguishing features of disclosure: the dissemination of information about the product's quality and the use of standardised assessments**.** This ensures the third-party role of the certifier(s), who identify themselves as separate from the producers (Dranove and Jin 2010). The link between social welfare and the existence of a third-party certifier can be highlighted going ahead with our analytical framework.

In order to calculate the social value of financial education, we assume that the net expected utility discounts the value of the education service that any producer earns in supplying education, transforming in monetary terms any kind of individual value.

Therefore, we can call $F(x)$ the general cumulative consumer utility with its density function $f(x)$ and $b(c) \in [0,1]$ the specific value for a user b in obtaining a financial education. Hence, we would define $b(c)$ as the specific form that the generic function $f(x)$ takes in the contest of financial education.

For the sake of simplicity, let us assume that the financial education value is uniformly distributed among citizens, so $b(c) = c$, acknowledging that a further step should be to consider also dishomogenous users, for example in terms of demographic characteristics, as well as objective and subjective knowledge (Chin and Williams 2020). Any financial education experience implies a value exchange between a user who invests—at least in terms of the costs related to the amount of time needed to get education (Bacchiocchi et al. 2024)—and an educator who gains.

Here, two situations can arise. First, if the users can observe the quality of the educators, only σ HD educators will be active, LQ educators cannot exist by definition and σ users will be satisfied. Therefore, the gain of any educator will be $E(1-\sigma)$, and σ measures the number of consumers whose willingness to be educated at least matches the value of the education: $E(u) \geq E(1-\sigma)$. The total social surplus (TSS), which measures the difference between the social value and the social investment in

financial education, is equal to (Eq. 2):

$$TSS = \int_{1-\sigma}^{1} b(x)dx - b(1-\sigma)\sigma \geq 0 \tag{2}$$

At the same time, the lower the supply of HQ educators in this situation, the lower the number of satisfied users and the consumer surplus will be.

Second, if the quality of the educators is unknown, the utility of an agency that acts as certifier plays a crucial role. In fact, producers themselves seek external endorsements from third-party actors because such endorsements reduce the uncertainty surrounding their capabilities and quality (Rao 1994). Endorsements decrease information asymmetries regarding the firm's inherent quality, especially in uncertain markets (Sanders and Boivie 2004). Third-party certification is a type of signal that external stakeholders can easily recognise. In addition, it enables stakeholders to assess capabilities that they cannot measure (Rao 1994). Third-party accreditations and certifications can also provide legitimacy or signal trustworthiness about an organisation and its products or services. With few exceptions, the vast majority of research on these labels focuses on their benefits. Assuming that certification is needed to find financial education consumers, how to describe the certifier role?

The certifier develops a certification test, which acts as a signal for the users. At the same time, the certifier's information set is imperfect. Therefore, the HQ skilled educators will pass the certification test with a probability of q—HQ threshold—while the LQ unskilled educators will pass with a probability of p—LQ threshold—and obviously $0 \ll p < q \ll 1$. Without loss of generality, we assume that the certifier can design the test influencing the two thresholds in a orthogonal way.

Then the probability of being skilled given that the educator passes the certification test is (Eq. 3):

$$\pi^H = \frac{q\sigma}{q\sigma + p} \tag{3}$$

While the probability of being skilled, given that the producer failed, the certification test is (Eq. 4):

$$\pi^L = \frac{(1-q)\sigma}{(1-q)\sigma + (1-p)} \tag{4}$$

The number of educators who pass the certification test is $q + p$, which implies that in equilibrium the total user surplus (TUS) is equal to the total net benefit (Eq. 5):

$$\text{TUS} = \int_{1-q\sigma-p}^{1} (\pi^H c - (\pi^H - \pi^L)(1 - q\sigma - p))dc + \pi^L \int_{0}^{1-\sigma q-p} cdc \tag{5}$$

Now two situations can arise, depending on the social value the LQ educators are going to produce:

1) The LQ educators produce low, but positive social gains: in this case the test design goal is to avoid harsher certification test, that can decrease the social welfare. In fact, assuming that the certification test is such that all HQ educators pass the exam, on average the financial education value will increase, having still a probability different from zero that LQ educators pass the exam, the total surplus (TS) will be (Eq. 6):

$$TS = \pi^H \int_{1-q\sigma-p}^{1} (c - (1 - q\sigma - p))dc = \frac{\pi^H}{2}\pi^H(p+\sigma)^2 = \frac{\sigma(p+\sigma)}{2} \quad (6)$$

Then, the certifier's goal becomes evident: the more its certification test is harsh—higher q—the more likely false negatives will be—i.e. HQ educators fail the certification test. More over another result emerges: the lower is the probability that LQ educators pass the test—successful LQ educators—the lower the social outcome will be, given that the marginal demand of financial education—i.e. the demand which is satisfied by successful LQ educators- will remain unsatisfied.

2) The LQ educators produce social losses: in this case, given the HQ threshold, the test design goal is to avoid that LQ producers can offer financial education, having as social value target (SVT) that will be exclusively associated with the HQ educator activity (Eq. 7):

$$SVT = \pi^H \int_{1-q\sigma}^{1} (c - (1 - q\sigma))dc = \frac{\sigma^2}{2} \quad (7)$$

Then, it is evident that, from the social welfare point of view the goal of the third-party certifier shall be to define a certification policy $[q,\ p] = x$, that identifies the optimal values of both the financial education thresholds. In turn, the certification policy can influence the country financial literacy, that, as it has been already discussed above, can be considered as an endowment of a public resource that can be maintained or deteriorate. Now, if the adopted perspective is the social optimal one, the case for a public certifier naturally arises.

6 Public Certification as Financial Education Policy: Quality Disclosure and Political Capture Risks

Planning and implementing national strategies that are better suited to achieving behavioural changes is one of the tasks of public policy. They can ensure greater accountability and visibility to the public, as well as whole-of-government recognition (OECD 2015). At the same time, the decision about the government structure is vital in terms of effectiveness. In this case the main choices seek, generally, to facilitate the implementation phase by separating directive/executive and supervisory roles (OECD 2015). As clarified earlier, between supervisory roles, that of the certifier represents a specific entity responsible for the evaluation, monitoring and audit of the national financial education strategy and its programmes.

The starting point in analysing the role of a public institution that acts a third-party certifier, designs and implements a financial education policy, is to assume that this institution has been delegated from the politicians in charge. Moreover, we assume that the country under observation is a democracy.

Therefore, all else equal, the elected government can view the protection of the literacy endowment as its own mission and, consequently, be active in designing and implementing financial education policies that can strengthen financial literacy, delegating such as role to a public certifier. Under this perspective a crucial question arises: is the political relevance of financial education policies consistent with the abovementioned importance of financial literacy in the scientific debate? In a sense, a financial literacy paradox seems to have emerged. More specifically, despite the increasing importance of the financial literacy issue in research and the fact that some governments have introduced active financial education policies (Lusardi and Mitchell 2023; Horn 2017), the concrete design and implementation of such policies appear quite heterogeneous. Our analysis offers a political-economy explanation for this development.

If the relationships between the politicians and the public certifier is designed consistently with a principal-agent setting (Aghion et al. 2004; Alesina and Tabellini 2007), the goal function of the public certifier will be influenced by the politicians' incentives.

How can we describe the politicians who are part of the incumbent government? In general, two types of cases can be analysed. The *helping-hand view* (Pigou 1938) assumes that the politician acts as a social planner and wishes to please all inhabitants rather than a particular constituency or lobby (Shleifer and Vishny 1998). In contrast, according to the *grabbing-hand view*, politicians are motivated by a desire to please specific, well-defined voters in order to increase their support. In our case, we use the helping-hand view as a benchmark for evaluating the actual behaviour of a politician, taking the political costs and benefits of an economic-policy choice into account. Notably, being the helping-hand politicians in any case career concerned players (i.e., they care about consensus in order to remain in charge) they acknowledge that constituencies in the population exist, and that can matter too.

At the beginning of any electoral period, the politicians in charge acknowledge the existence of uncertainty in the political game. The politicians decide on the extent of their financial education activism, which will preserve the literacy endowment that will be inherited by the next government. As we discuss below, any activism decision carries both political benefits and costs, as certain constituencies within the population are likely to be in favour of and against financial literacy, and as any policy implies the use of public resources with a corresponding opportunity cost. Therefore, the politicians in charge will discount the uncertainty of remaining in power.

Some citizen constituencies, which are the users that we analysed in the previous sections, may view financial education policies as a positive social investment that can reduce the deterioration of financial literacy. These constituencies are motivated by the fact that the literacy endowment, through its links with public trust, can have positive economic effects. First, a higher level of trust increases financial stability (Guiso 2010) in normal times, and reduces the likelihood of extraordinary times caused by systemic banking and financial crises (Bacchiocchi et al. 2022). Second, a higher level of trust

is associated with the expansion of the banking and financial industry as a whole, with positive spill overs in terms of savings and investments (Jaffer et al. 2014).

With regard to public constituencies, the activities of the supervisory authorities will be more effective if financial literacy and trust are correlated (Van der Cruijsen et al. 2021a). The same is true for any public institution involved in the design and implementation of financial education policies. With respect to private constituencies, and consistent with the analysis in the previous section, if we assume that HQ skilled professionals benefit from information disclosure (Grossman 1981; Berk and van Binsbergen 2022) and that the effectiveness of disclosure increases as financial literacy improves, then skilled professionals can be a financial education constituency.

Yet, in order to build a complete political cost–benefit analysis, we must acknowledge that the politician in charge may benefit from financial education inaction. In general, politicians prefer the status quo when loss aversion characterises their goal functions. In such situations, inaction becomes the optimal economic policy strategy (Alesina and Passarelli 2019). Loss-averse politicians are an extreme case of conservative players—"pigeons"—as they dislike any kind of active policy (Favaretto and Masciandaro 2016). In the behavioural literature, given the status quo, individuals perceive outcomes as gains or losses, and losses loom larger than gains (Kahneman and Tversky 1988).

Loss aversion has increasingly been viewed as relevant to explaining political behaviour (Quattrone and Tversky 1988; Berejikian 1997; Druckman and Lupia 2000; Mercer 2005; Soroka 2014, Sheffer et al. 2018). In our case, if the politicians in charge feel that activism in financial education policy may have more political costs than benefits, they may view inaction as the optimal strategy given the scarce availability of public resources.

Moreover, politicians can view inaction as optimal if they are influenced by financially illiterate constituencies. In other words, inaction in designing and implementing financial education policies may be convenient for the politicians in charge. Such inaction can be facilitated by the fact that financial education is a credence good, as highlighted in the previous section. Politicians may have superior information on the quality of the good that they are going to provide, as in the case of public infrastructure (Dulleck et al. 2015) or budgetary issues (Dulleck and Wigger 2015). Therefore, they can calibrate the quality of the financial education policy in a way that fits their own cost–benefit analysis.

On the other hand, constituencies in the same population may explicitly or implicitly view financial education policies as useless or costly, or even view financial illiteracy as beneficial. To understand why some individuals may view inaction in financial education policies as beneficial, we must acknowledge that financial illiteracy can increase the activities of unskilled, unfair or illegal actors, which are the LQ educators that we analysed in the previous sections.

If we view any financial producers that gain from interacting with naïve citizens as unskilled/unfair actors, we can assume that those operators will favour higher levels of financial illiteracy. In parallel, some skilled consumers would like to live in a world characterised by high financial illiteracy, as this would facilitate fraudulent conduct in networks where the melding of technology and financial services is calibrated to accommodate citizens who, on average, are naïve (Griffin et al. 2023; Bian et al. 2023).

In general, the relevance of such actors can depend on other policy drivers, such as financial regulation. The presence of unskilled/unfair actors in a given country can be influenced but not completely eliminated by financial-regulation devices, such as disclosure obligations (Inderst and Ottaviani 2012) that historically characterized the protection of financial users (McAlexander and Scammon 1988), as well as licensing requirements, or finally certification processes. For decades information disclosure has been a crucial part of the policymaker's regulatory toolbox (Ben-Shahar and Schneider 2004).

Moreover, constituencies and/or individuals may oppose financial education for genuine conceptual reasons. They may, for instance, be non-users that question whether education can effectively improve households' financial knowledge, or stress that the belief in the effectiveness of education lacks empirical support, that an endemic gap exists between the velocity of change in the financial markets and the state of consumers' skills and that, in general, resource scarcity characterises financial educators' activities (Willis 2011).

Under these assumptions, it is possible to show that the politician's level of activism in implementing financial education policies is positively associated with financial-instability risks, financial-illiteracy costs and the planning horizon of the politician in charge. With regard to the latter, and consistent with a general result, a longer time horizon, lower psychological attitudes towards the status quo, and a higher probability of re-election increase financial education efforts.

At the beginning of any period, the politicians in charge acknowledge the existence of uncertainty in the political game. The politicians in power decide on the extent of their financial education activism, which will preserve the financial literacy endowment that will be inherited by the next government. We assume that the overall re-election probability is independent from financial education performance, which seems to be a realistic hypothesis. At the same time, the politicians in charge know that their financial- education activism is associated with both political gains and political costs.

Let us assume that the value of financial education for conserving financial literacy that the politician discount in her analysis is (Eq. 8):

$$B = \frac{b}{(1 - \partial)} \tag{8}$$

As the setting is dynamic, the lowercase letter is the pre-discounted value, while the uppercase letter is the present value, which includes the time-discount factor, where $0 < \partial < 1$. The more the politician is a myopic agent (i.e., the time discount factor is close to one), the higher the present values of the political benefits and costs will be.

Furthermore, let us assume that the value of financial education is (Eq. 9):

$$B_1 > B_0 > 0; \Delta_b = B_1 - B_0 > 0, \tag{9}$$

where B_1 is the benefit for the politician in charge and B_0 is the benefit for a politician not in power, signalling that being in power matters for an individual. Δ_b is a metric measuring how the politician in charge benefits from actively in pursuing financial-education policies.

In order to build a complete political cost–benefit analysis, we must acknowledge that the politician in charge may benefit from financial- education inaction. Assume that inaction in financial- education policy automatically implies higher financial illiteracy and that the value of financial illiteracy is (Eq. 10):

$$A_1 > A_0 > 0; \Delta_a = A_1 - A_0 > 0 \tag{10}$$

where A_1 is the benefit for the politician in charge and A_0 is the benefit for a politician not in power. Δ_a is a metric measuring how the politician in charge benefits from not pursuing financial education policies. As we already commented above, the benefits of political inaction can be motivated using two arguments: behavioural biases and capture.

If inaction in financial education policy implies higher financial illiteracy, we can assume that the value of financial illiteracy is (Eq. 11):

$$A_1 = \frac{a_1}{(1 - \partial)} \tag{11}$$

Again the lowercase letter is the initial pre-discounted value, while the uppercase letter is the present value that includes the myopia factor. Therefore, the more the politician in charge prefers the status quo and/or is captured, the more we can assume (regardless of the potential benefits of financial literacy) that (Eq. 12):

$$A_0 > B \tag{12}$$

However, the politicians know that inaction in financial literacy is not cost-free, as financial instability is more likely. We assume that the financial instability costs are associated with the level of inaction and with the endowment of financial literacy (Eq. 13):

$$\frac{c}{2} x_t^2 S_t. \tag{13}$$

The intuition is straightforward: instability costs are associated with the financial education inaction, taking how relevant financial literacy is for a given population into account: the higher is financial literacy, the more conscious citizens will be on how costly financial instability is, if a crisis occurs.

As we have considered potentially relevant drivers, we can determine the politician's goal function. In order to identify a policy benchmark, we can start from the helping-hand perspective. Let us describe the social planner's choice in terms of stationary equilibrium. In equilibrium, for the politician, the helping hand's expected value, V_{HH}, is associated with the socially optimal level of a given steady-state level of inaction, x_s, which is independent from the literacy endowment (Harstad 2023) (Eq. 14):

$$V_{HH} = \frac{x_s A^* + (1 - x_s) b - x_s^2 \frac{c}{2}}{1 - \partial(1 - x_s)}, \tag{14}$$

where the social gain for inaction, A^*, is a weighted average of the expected gains for a politician (i.e., to be either in charge, A_1, or not in charge, A_0).

The corresponding inaction level, x^*, that optimizes the social expected value is minimized at a steady-state level $x_s = x^*$ can be either zero, or it can be positive depending on the expected costs and benefits, and given the politician's myopia (Eq. 15):

$$x^* = \sqrt{\frac{(1-\partial)^2}{\partial^2} + 2\frac{(1-\partial)}{\partial}\frac{(A^* - B)}{c}} - \frac{1-\partial}{\partial}. \tag{15}$$

However, the politicians in charge at any moment in time do not have the social planner's perspective. Instead, their grabbing-hand perspective implies that being part of the incumbent government matters for each of them. Consequently, it is possible to identify the optimal inaction, x_t, as well as its structural drivers.

In equilibrium, for the politician, the grabbing-hand expected value, V_{GH}, is associated with the potential gains of being in charge, all else equal (Eq. 16):

$$V_{GH} = \frac{x_s A_1 + (1-x_s)b - x_s^2 \frac{c}{2}}{1 - \partial(1-x_s)} \tag{16}$$

and (Eq. 17):

$x_* = \frac{(A_1 - b - \partial v_p(x_s))}{c}$. (17).

Actual financial education activism tends to be higher when the instability costs and the literacy gains are higher. The opposite is true with regard to the financial-illiteracy gains and the myopic factor, i.e. more myopic politicians care less about financial literacy policy.

The inaction level, x_t, that optimizes the actual expected value of the politician in charge is minimized at a steady-state level, x_p, which can be either zero or positive depending on the expected costs and benefits. Given the politician's myopia (Eq. 18):

$$x_p = \sqrt{\frac{(1-\partial)^2}{\partial^2} + 2\frac{(1-\partial)}{\partial}\frac{\left(A_p - B\right)}{c}} - \frac{1-\partial}{\partial} \tag{18}$$

where optimization takes the political-competition factor into account (Eq. 19):

$A_p \equiv pA_1 - (1-p)A_0$. (19).

However, in contrast to the helping-hand strategy, the inaction strategy in the grabbing-hand scenario can be higher that the corresponding steady-state level if the political gain of being inactive is higher. In fact, when (Eq. 20):

$$\Delta_a(1-p) > 0 \tag{20}$$

The (Eq. 21):

$$x_t = x_s + \frac{(1-p)\Delta_a}{c}. \tag{21}$$

In other words, the politician's inaction will be higher when his or her gains are higher and when political competition is high. The opposite is true when the probability of financial instability is higher.

Given the above overall analytical framework, what are the consequences of a public agency taking on a third-party certification role?

As highlighted in the previous section, quality assessment and disclosure can be difficult and complex tasks. There is, first of all, the need to distinguish between a priori and ex post assessments, especially if the objective is quality certification in financial education, becomes evident.

But quality certification can be negatively affected by a series of further well-identified problems. The first problem in ex post assessments arises when it is based on consumer feedback which, in turn, can be negatively affected by noisy data. In fact, consumer ratings may be biased by heterogeneity in the consumer sample or by misrepresentation. Moreover, they may be unverifiable (Dranove and Jin 2010; Glazer et al. 2008; Miller et al. 2005). However, this could also be an issue in the case of ex ante certification if the information set that the certifier uses is supplied by the producers.

The second problem concerns the fact that potential conflicts of interest can harm the actions and reputation of the certifier. The extant literature has explored the case of private certifiers (e.g., auditing and consulting firms, as well as credit agencies) in detail (Flegm 2005; Beaver et al. 2006; Xu and Liu 2021; Ehrmann and Prinz 2023). In general, the certifier's incentive problem can be mitigated through competition, reputation, external monitoring or isolation, i.e. independence (Dranove and Jin 2010). Therefore, from a logical point of view, each of these four factor could increase the public certifier action.

Unfortunately, the role of competition is, in general, ambiguous (Lizzeri 1999; Albano and Lizzeri 2001; Hvide and Heifetz 2001; Miao 2006; Farhi et al. 2008). Moreover, in the case of financial education, any public certifier established by law is likely to operate as a monopolistic agency.

Reputation cannot be considered an automatic correction for certifiers' biases, as it has been uncovered exploring the already mentioned case of private certifiers. Users can take a long time to evaluate a certifier's reputation (Benabou and Laroque 1992), especially if a large fraction of those users are naïve consumers (Bolton et al. 2009), or if the correlation between the overall reputation of the certifier and its certification performances is low (Mathis et al. 2009). In the case of a public body acting as financial education certifier, reputation mechanisms are difficult to design, as, by definition, users are likely to be naïve players. At the same time, the more the public certification of the quality of financial education is the only function of the focal public body, the more likely reputational incentives are to emerge.

In addition, it emerges the well-known question of who certifies the certifiers (Dranove and Jin 2010), which has been addressed in general in the literature on the governance of bureaucracy, including the above-mentioned case of central banks as certifiers of the safety and soundness of banking firms (Frisell et al. 2009). The establishment of an external certifier would be particularly difficult to handle in the case of a public certifier of financial education.

Finally, one more solution to the incentive problem among certifiers is to completely isolate them from any selling activity and any seller's influence (Schaefstein and Stein 1990; Ottaviani and Sorensen 2006). In our case, all else equal, the isolation of the public certifier could be the more realistic solution to guarantee the public certifier independence, in order to reduce the risks that politicians, which in all modern bureaucracy retain discretion in public employment decisions, use their discretion substituting political connections for individual competence (Colonnelli et al. 2020).

In other words, the more a public agency can be captured by private constituencies that are against financial literacy, the more the certification is likely to be ineffective. Therefore, the institutional setting must guarantee the independence of the public agency as well as the transparency of its decisions, taking inspiration from the literature devoted to central bank independence (Grilli et al. 1991; Bacchiocchi et al. 2023; Hommes and Lustenhouwer 2019), and distinguishing between *de jure* and de facto independence (Romelli 2022), where independence is time to time shaped by politicians, that take into account both the wishes of the citizens and their own personal interests (Masciandaro and Romelli 2015).

Independence is a device to reduce the political and bureaucratic capture risks (Masciandaro 2022). This intuition can be formalized assuming a political two tier framework (Persson and Tabellini 2004, 2024; Aghion et al. 2004; Alesina and Tabellini 2007; Listokin 2019) where two different and subsequent stages occur: a "legislative" stage and a "policy" stage. In the first stage, society operates with a long run perspective. The lawmakers decide the establishment of a public certifier. In other words, they design the institutional delegation process in the financial education policy area. In the second stage the public certifier will design and implement its policies, given the legislative guidelines.

In other words, and from an analytical point of view, the public certifier goal can be described using a weighted function, where the two components are respectively the helping hand's function and the grabbing hand's function, and the weight θ—with $0 \leq \vartheta \leq 1$ —represents the de facto degree of independence of the public certifier, which summarizes the properties of the principal – agent setting (Walsh 1995; Chortareas and Miller 2003, 2004) that characterizes the relationships between the certifier and the politicians in charge (Eq. 22):

$$V_{PC} = \vartheta V_{HH} + (1 - \vartheta) V_{GH} \tag{22}$$

The motivation of a lawmaker in charge can be simply described in a political economy perspective, modifying a general delegation framework between citizens and politicians (Alesina and Tabellini 2007) to analyse the case of lawmakers that decide the degree of independence of the public certifier. The legislature choice in designing the public certifier independence can be captured through the parameter Ω. Yet, finding the optimal level of independence is not a trivial task: in any country and in any moment, both social benefits and costs can be present, and shape the incentives of the lawmakers in charge.

Our starting point is that citizens care about the effectiveness of the public certifier according to a classic well-behaved concave function $U = U(\Omega)$, where social welfare

increases with the optimal level of independence. Linear preferences are used (Eq. 23):

$$U(\Omega) = \Omega. \tag{23}$$

We assume that the members of the Parliament in charge are politicians, and that, for any politician, the political reward is based on how she carries out her job. The assumption allows us to show the conditions under which the final political decision—the actual level of independence Ω—can differ from the socially optimal one, despite the lawmakers desire to please the citizens.

The level of Ω is determined by the lawmaker's ability, Φ, and by her effort, a (Eq. 24):

$$\Omega = a + \phi. \tag{24}$$

The sequence of events is as follows: (a) society chooses to delegate the task of defining the public certifier independence to the lawmaker; (b) the lawmakers choose their effort, a, before knowing their ability, Φ, with regard to implementing this particular task, given that designing the public certifier independence is not a typical task; (c) the lawmakers defines her activism, thereby revealing their ability, Φ; d) citizens, that as usual do not know the actual relationship between effort and ability, observe her actual degree of independence and consistently reward the lawmaker.

The lawmaker's utility function, denoted by $L = L(R, C)$, is defined as (Eq. 25):

$$L = R(U) - C(a), \tag{25}$$

where $R(U)$ is the reward function and $C(a)$ is the cost function. The political reward is a function of the social utility, while the political costs are a function of the effort needed to implement the task. The lawmaker evaluates every task assignment while considering the political rewards and costs of that task.

The lawmakers in charge know that designing the public certifier setting is associated with both political gains and costs, given that any specific political action can influence consensus, whose level in turn defines the overall degree of freedom of any legislature in designing and implementing its political strategy.

In other words, to allow for a conflict of interest inside the population that influence the lawmakers, we assume again that for a lawmaker implementing any activity being in power produces more political benefits respect to the case when she is not in power (Harstad 2023).

The lawmakers can design a public certifier setting that strengthens the country's literacy endowment. However, doing so is not without cost, given—as we already know—the existence of economic and political opportunity costs in designing and implementing these policies, due to the fact that constituencies formally or de facto in favour of or against financial literacy can be present in the population. Going into the details, let us describe the three crucial features of the lawmaker:

i. Ability: The ability of the lawmaker is a random variable with a normal distribution, where we denote the mean with Φ_{AV};

ii. Political expected reward: The incumbent lawmaker wishes to be re-elected. The politician therefore needs to provide the majority of voters with enough utility. As such, her utility function is associated with the social welfare function $U = U(\Omega)$.

In general, the lawmaker wishes to please voters and her goals are aligned with those of the citizens. Each delegated task—i.e. each specific alignment—can be more or less convenient in terms of political gains from the lawmaker's point of view. We denote the political value she assigns to fulfil the specific task of defining the public certifier degree of independence by β_L, with $0 \leq \beta_L \leq 1$. Therefore (Eq. 26):

$$R(U) = \beta_L U. \tag{26}$$

The alignment of incentives between the lawmakers and the citizens is a necessary and sufficient condition for finding the legislature's optimal behaviour. The political reward differs from the social reward so long as $\beta_L \neq 1$. In other words, from the lawmaker's point of view, the political gains of an independent public certifier activism are associated with the expected benefits in terms of consensus.

Moreover, the reward will be useful if the citizens' utility exceeds the minimum threshold of utility, W that they expect from an incumbent lawmaker. In other words, the political competition condition can be defined as follows (Eq. 27):

$$R_L = \beta_L \Pr(U \geq W). \tag{27}$$

The usefulness of the political reward will depend on this condition. All else equal, we assume that the overall re-election probability is dependent from any legislature decision. The general intuition is that political turnover can lead to less investment in state capacity (Besley and Person 2009; Battaglini et al. 2014). The specific assumption is that a lower probability of re-election is associated with less focus on protecting a scarce public resource (Robinson et al. 2006; Ryszka 2013; van der Ploeg 2018), as financial literacy can be.

iii. Political expected costs: The lawmaker knows that designing an independent public certifier has an implicit cost, as it is likely to occur when a policy position is taken. The politician's cost function can assume the following specification (Eq. 28):

$$C(a) = c_L a^2, \tag{28}$$

In fact, in order to carry out a complete political cost–benefit analysis, we must acknowledge that the lawmaker in charge may benefit from financial illiteracy, given the existence of constituencies against financial literacy.

All in all, the lawmaker maximizes social welfare net of the costs of executing the task and taking into accounting the political reward (Eq. 29):

$$\max L = R(U) - C(a) = \beta_L U - c_L(a_L) = \beta_L(a_L + \Phi) - c_L a_L^2. \tag{29}$$

From the first-order condition, the optimal effort will be:

$$\frac{\delta L}{\delta a_l} = \beta_l - 2c_L a_L = 0,$$

Which implies that (Eq. 30):

$$a_L = \frac{\beta_L}{2c_L}. \tag{30}$$

Given a_L, the lawmaker's effective political reward will depend on the condition of political competition (Eq. 31):

$$R_L = \beta_L \Pr(U \geq W). \tag{31}$$

Citizens are rational. They realise that the alternative to the existing lawmaker is another lawmaker with average ability. Given their expectations, a^e for effort, it follows that (Eq. 32):

$$W = a^e + \Phi_{AV} \tag{32}$$

Then (Eq. 33):

$$R_L = \beta_L \Pr(\Phi + a_L \geq \Phi_{AV} + a^e) = \beta_L \Pr(\Phi - \Phi_{AV} > a^e - a_L \tag{33}$$

Nature determines the ability of the incumbent Φ_L. It follows that (Eq. 34):

$$R_L = \beta \Pr(\Phi_L - \Phi_{AV} > a^e - a_L) \tag{34}$$

When rational expectations are matched (i.e. $a^e = a_L$), the effective political reward will be positive if the ability of the incumbent lawmaker is above average(Eq. 35):

$$\Phi_L > \Phi_{AV} \tag{35}$$

Given condition (13), the equilibrium level of the public certifier independence will be determined by the lawmaker's ability and effort (Eq. 36):

$$\Omega_L = a_L + \Phi_L = \frac{\beta_L}{2c_L} + \Phi_L \tag{36}$$

Given the exogenous lawmaker's ability, the level of independence will depend on the political preferences, which can differ from the socially optimal preferences. On the one side, the more the lawmaker wishes to please the constituency in favour of financial literacy, the higher the independence will be. The opposite is true if the lawmaker would like to please the constituencies against financial literacy.

Exploring the politician's preferences is essential to understand when and how the activism is implemented. The independence of the public certifier is an endogenous variable. Various hypotheses can be advanced to explain the genesis of the political preferences. In our framework, the endogeneity of the preferences can easily be captured if we assume that the political parameters β_L, $c\left[\text{unknown template}\right]$ depend on well-identified drivers.

For example, drawing from the literature of bureaucratic governance, we can assume that the degree of independence of the public certifier will depend on a series of assumptions: if the legislature works under a veil of full ignorance (Romer and Rosenthal 1983; Aghion and Bolton 2003; Aghion et al. 2004), considering financial education a public good (Battaglini and Coate 2007), and deciding through supermajority vote (Dal Bo 2006; Battaglini and Coate 2007), the degree of independence is likely to be higher. All in all, the independence could be ensured through the design and implementation of rules of conduct and guidance on transparency designed to govern the public agency's actions.

In conclusion, the actual public certifier independence will influence the education policy $x(q,\ p)$ that the public certifier will select, and consequently the corresponding level of financial literacy (Eq. 37):

$$S_{t+1} = (1 - x(\vartheta)_t)S_t \tag{37}$$

Or (Eq. 38):

$$S_{t+1} = (1 - [p,\ q]\vartheta_t)S_t. \tag{38}$$

7 Politicians, Bureaucrats, and Financial Education: Uncovering Preferences

In the previous sections we explored the possible links between financial education activism and political and bureaucratic preferences. We discovered that the politician's inaction will be higher when her gains are higher and when political competition is high. The opposite is true when the probability of financial instability is higher. Such preferences can be mirrored in the relationships between the politicians and the bureaucrats that are in charge of designing and implementing the education policies.

A further research step is to explore both the private and public incentives that characterize the supply of financial education in a given country. In particular, so far previous research on financial literacy has failed to investigate the preferences of the main public actors, i.e. the politicians. This gap in the extant research is not without effects. The limited understanding of the goals and incentives of the politicians in charge affects our knowledge of why financial education policies can be more or less intense in a given country. This issue can be addressed through systematic examinations of politicians' voices that rely on text-analysis techniques (Ferrara et al. 2021; Massoc 2024) or elite surveys (Ferrara et al. 2024).

Assuming such perspective, we zoom our attention on the financial instability issue, given the above mentioned attention that so fare the existing literature devoted to this issue (Boeri and Guiso 2008; Guiso 2010; Sapienza and Zingales 2012), investigating simultaneously the relevance, if any, of the financial education narrative both for the politicians of the European Parliament and the bureaucrats of the ECB in the period 1997–2024. We aim to provide first empirical evidence on the relationship between

political activism and financial instability worries, using the existence of financial education narrative as a metric for activism.

7.1 Datasets

With the declared objective, a text analysis on the transcripts of speeches delivered by both the ECB and the European Parliament was conducted.

In relation to the politicians' side, the Monetary Dialogues that took place before the ECON Committee of the European Parliament were examined. They concern dialogues between the Members of the European Parliament (MEPs) and the ECB, on a quarterly basis, and are a key component of the accountability of the ECB to politicians for the period 1999–2024. Also, they serve as a favourable platform for MEPs to deliberate on and propose monetary policies related to specific issues they are passionate about. Hence, those talks perfectly suit the goal of understanding the MEPs' point of view on finance and financial education.

On the other hand, we analysed the bureaucrats' point of view looking at the ECB speeches delivered by the President and the members of the Executive Board from 1997 to 2024 (ECB 2019). In this case, the available dataset is updated every month.[2]

The MEPs dataset contains all speeches held between January 1999 to the latest available, dated 15th of February 2024. The total sample comprises 101 dialogues. Most of them are available in English, wheras 37 of them are at disposal in the native language of the MEPs, and were consequently translated for our purposes with the use of Google Translate, as supported by De Vries et al. (2018). Then, the speech of the Chair of the ECON Committee of the European Parliament as well as those from the ECB P resident were removed, resulting in 3,236 speeches from 308 different MEPs speakers.

The ECB dataset contains speeches delivered between February 1997 and March 2024. Among them, 139 dad to be translated into English using Google Translate (De Vries et al. 2018). The sample results in 2,687 speeches delivered by 28 different ECB bureaucrats.

7.2 Dictionary Technique

The speeches about financial education were analysed initially through a dictionary technique. The approach serves as a fundamental form of text analysis, particularly suitable as we embark on analysing financial education in texts for the first time. It provides a solid starting point and serves as a foundational approach to our analysis. Previous studies have already highlighted politically significant themes in the exchanges between the EP and the ECB, supporting the analysis. Additionally, other approaches such as structural topic modeling (STM) have been proven to provide a similar list of topics.

Building on pre-existing work on the exchanges between MEPs and the ECB, we considered the keywords used by Massoc (2024) for the identification of the main topic

[2] We used the version of the dataset on 1st April 2024.

discussed between politicians and technocrats. Beside, we identified the keywords for the topic "financial education" for the first time. For this purpose, we considered seminal speeches and documents. In our initial prototype, we examined one of the earliest public addresses concerning financial education, delivered by Alan Greenspan in April 2003 in the United States. Then, we included the first available document on the official website of the Organisation for Economic Co-operation and Development, in particular the International Network on Financial Education (OCSE/INFE). The latter document consists of recommendations and good practices on financial education, and it was published in July 2005. By simply extracting from the cited two documents the most frequent bigrams of words, we provided a list of keywords on financial education and added them to the list from Massoc (2024). The result is provided in the Appendix.

We proceeded by implementing the dictionary technique on both the MEPs and the ECB datasets. In both cases, as expected, financial education (FE) appears to be the less relevant topic among the total 8 examined. Then, the FE topic was isolated from all the others, aggregating the results for each year. Limiting the timeframe to the period from 1999 to 2023, we prevented instances where data were available for only one of the two entities and we avoided incomplete values for the present year (2024).

The chosen precautions enabled the comparison between the two datasets that were initially arranged with different time frequencies. Figure 6 provides the results. The descriptive analysis reveals that the discussion about financial education peaked among Members of the European Parliament (MEPs) during the Great Recession of 2008–2009. Afterwards it remained consistently high during the following period, marked by the European Sovereign Debt Crisis. A similar pattern is observed for the ECB, although with less intensity.

The explanation of the discovered trend allows to state that politicians naturally focus more extensively on financial markets and institutions during times of financial crisis. Yet, this might introduce a bias into the analysis capturing an effect not specifically related to financial education. However, the topic of financial education is distinct from that of financial stability, which was much more prominent during peak periods. Additionally, if this were the case, we would have expected to observe

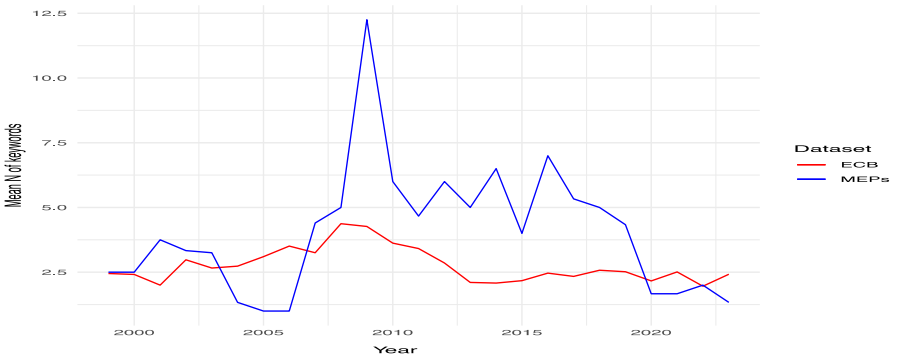

Fig. 6 Financial education discussions, ECB and MEPs. Legend: Mean number of keywords in speeches of ECB and MEPs in those speeches where there is at least one keyword on financial education

a much stronger effect in the ECB database, given that technocrats are at the forefront of combating the recession. However, as depicted in Fig. 6, the ECB's concern about financial education has consistently lagged behind that of MEPs for the majority of the examined period, particularly during times of crisis.

7.3 The Keyword-Assisted Topic Model

Since the dictionary technique represents a rudimentary form of text analysis, a more sophisticated approach to substantiate findings was added. As topic models gained attention as one of the latest developments in text analysis for the purpose of examining human communication within extensive collections of texts (Jacobs and Tschötschel 2019), we performed the analysis using the keyword-assisted topic model. The core idea of the approach consists of considering each speech as a mixture of different topics, in which each topic occurs with a certain probability distribution of terms. We implemented the keyword-assisted topic model by Eshima et al. (2023).

Assuming that our corpus of speeches contains K topics, $\widetilde{K}$ are the keyword-assisted topics, for $\widetilde{K} \leq K$. Following what was done by Feldkircher and Teliha (2024), we set $\widetilde{K} = 8$, and among these keyword-assisted topics, the "financial education" one have been included. We also allow for $K - \widetilde{K} = 3$ no-keyword assisted topics. For each word i in the document d, the model defines a latent topic variable $z_{di} \in \{1, 2, .., K\}$ for the topic distribution of the document,

$$z_{di} \overset{indep.}{\sim} Categorical(\theta_d) \tag{39}$$

where θ_d is a K-dimensional vector of topic probabilities for document d with $\sum_{k=1}^{K} \theta_{dk} = 1$. The no-keyword assisted residual topics to have the word ω_{di} that follows the distribution.

$$\omega_{di}|z_{di} = k \overset{indep.}{\sim} Categorical(\phi_k) for k \in \{\widetilde{K} + 1, \ldots, \widetilde{K} + 3\} \tag{40}$$

Where ϕ_k represents a V-dimensional vector of word probabilities that contains the relative word frequency within topic k. In case the topic is part of the keyword-assisted ones, the word distribution is as follows:

$$\omega_{di}|z_{di} = k \overset{indep.}{\sim} \begin{cases} Categorical(\theta_k) \, if \, s_{di} = 0 \\ Categorical\left(\widetilde{\theta}_k\right) if \, s_{di} = 1 \end{cases} \tag{41}$$

With $s_{di}|z_{di} = k \overset{indep.}{\sim} Bernoulli(\phi_k)$, for $k \in 1, 2, \ldots, \widetilde{K}$, a Bernoulli variable determining whether the ω_{di} should be selected from a designated set of keywords based on the V-dimensional probability vector, with non-zero entries L_k.

Considering that the keyword-assisted topic model relies on keywords, their careful selection is crucial. Also in this framework, we employed a selection of keywords

resulting from the mix of those extracted from the speech of Alan Greenspan and from the document found on the OCSE/INFE website. However, in this case we looked at the most frequent words, and not at bigrams of words.

Concerning the other methodological issues, we decided to implement an 11-topic model providing other keywords on common topics usually addressed by MEPs and ECB bureaucrats. In defining those words, we referred to the work (Feldkircher et al. 2021; Feldkircher and Teliha 2024). The full list of keywords is presented in the Appendix. Overall, we allow for a model where the total number of topics $K = 11$, of which $\widetilde{K} = 8$ are keyword driven.

Before implementing the model, we pre-processed the dataset. To this aim, we removed stop words and punctuation and transformed subsequently the corpus of the speeches into tokens. The length of each speech within the MEPs dialogues ranges from 1 to 445 tokens, with a mean of 86 tokens per speech, while ranging from 20 to 3,110 tokens for the ECB dataset, with a mean of 18,007 tokens per speech.

The model yields the topic proportion for each of the 11 topics. We aimed at identifying those speeches where the financial education topic is relevant, and hence among the corpus, we selected only those ones where the "financial education" topic, identified by $\theta_{d,\,fe}$, is above the mean computed on the whole sample. This yields a financial education subsample of speeches for the MEPs dataset counting 1,559 observations. Within this subset, the mean topic proportion for the "financial education" one is around 0.46. Similarly, the ECB subsample counts 739 speeches, with a mean value for the financial education topic of 0.29. The progression of the financial education topic resulting from the updated technique and the comparison of the outcomes of the ECB and the MEPs speeches from 1999 to 2023, is represented in Fig. 7.

As we can observe, also this second descriptive analysis supports previous conclusions. Indeed, the MEPs proportion of FE is consistently above the one for the ECB. Comparing the number of speeches might be misleading as the unit of measure of the ECB dataset is a whole public speech delivered by an ECB Member, while the one for the MEPs' sample consists of a single and shorter speech inside an entire Monetary

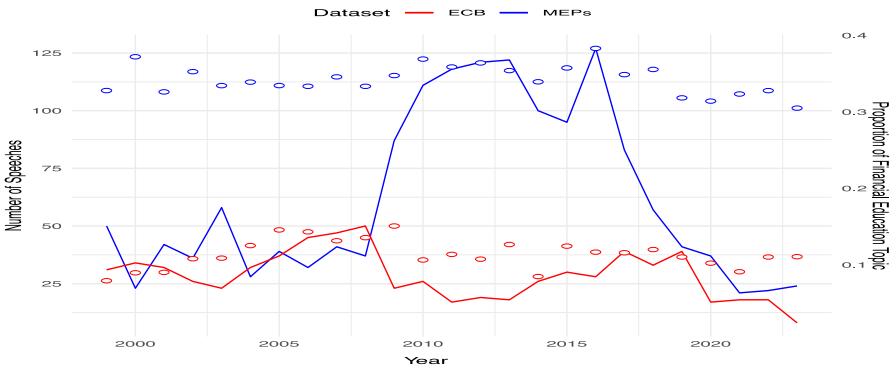

Fig. 7 Progression of the financial education topic, ECB and MEPs. Legend: The lines refer to the left y-axis and they show the number of financial education-related speeches per year for the ECB and the MEPs. The right y-axis shows the proportion of the topic in dots

Dialogue. Instead of comparing the speeches' numbers, it seems rather more interesting to look separately at their evolution in each sample, depicted through the two solid-colored lines. Indeed, the number of speeches with a value of FE topic above the average started increasing consistently for the MEPs during the Great Recession of 2007–2008 and reached two peaks during the Sovereign Debt Crisis (2011–2013) and 2016.

While the explanation of the first peak is already evident, there may be some doubts affecting the second one. Noteworthy is the significance of the year 2016, marked by the Brexit vote, which precipitated heightened financial instability across global markets: the contextual backdrop can partly explain the observed pattern. In terms of the ECB time series, we observe an ascending trend around the crucial years 2007–2008, but in general, the observed behavior is weaker during the crisis periods.

We compare the results obtained for the two different datasets regarding the proportion of the FE topic within each speech, represented by the dots, in Fig. 7. As shown, the proportion of the FE topic within the MEPs' dialogues is around 0.3–0.4 and consistently higher than the same value for the ECB, which remains slightly above 0.1. The result strongly supports the evidence that bureaucrats seem to be generally less concerned about financial education and literacy than politicians, and politicians become more aware and active in situations of financial instability.

7.4 Zero-Shot Classification

With the aim of endeavoring to reinforce the previous conclusions, the utilization of natural language processing and zero-shot classification was suitable. The zero-shot classification is considered the frontier of NLP (Yin et al. 2019). These cases of large language models are initially trained on examples but can subsequently be applied to analyze new datasets without additional training. This capability is particularly appealing in scenarios with limited labeled data. Zero-shot classification entails receiving task instructions via texts describing the desired model behavior. This stands in contrast to single or few-shot classification methods, that involve supplying the model with one or only a few examples of the target task.

Considering all the aforementioned factors, zero-shot seems especially apt for our circumstances. Thus, given the absence of prior text analysis on financial education, this approach holds promise for our needs. We implement zero-shot classification on our dataset using Hugging Face's *facebook/bart-large-mnli model*, based on the BART-large transformer (Lewis et al. 2019). We executed it to infer with zero-shot text classification the similarity score of the classes "financial education" and "no financial education". The model can associate each speech inside each dialogue as a measure of the presence of "financial education" with a similarity score between 0 and 1. Across their entire datasets, the MEPs exhibit a mean similarity score for FE of approximately 0.78, whereas for the ECB, it hovers around 0.73.

Figure 8 outlines the evolution of these measures over time. As observed, the MEPs' time series appear to have two peaks: one during the American Great Recession, and the second one right after the European Sovereign Debt Crisis and right before the Covid-19 Crisis. We do not detect any comparable trend in the ECB similarity score,

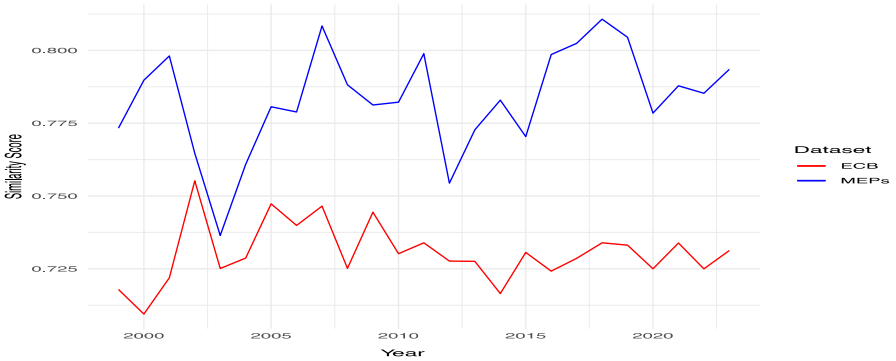

Fig. 8 Financial education similarity score obtained through zero-shot classification for the MEPs and the ECB databases

which consistently remains lower. Note that these measures do not directly indicate the prevalence of the topic "financial education" in the texts; instead, they serve as a proxy for the likelihood of encountering the topic within texts.

8 Conclusion

This article used political economy, marketing and text analysis as intertwined methodological tools to offer a positive analysis in which financial education is the outcome of both market- and state forces.

Even if it's undeniable that an increasing number of countries choose to deal with the financial literacy needs of their populations through the design and implementation of tailored, articulated and coordinated financial education strategies for impacting positively on the general welfare of the population, some problems appear to be still unsolved.

This paper addresses the question of whether and under which conditions, a public certifier can increase the social welfare.

As widely documented in the Italian context, private firms and financial-service providers are extremely vital in providing financial awareness and education to potential consumers. Their involvement in certified financial education initiatives is growing over time and it's likely one factor that increased national financial literacy. Nevertheless, though certification appears to be—differently from licence- the most frequently used means of quality signalling, it does not solve completely the issue of quality assessment and disclosure of financial education initiatives, that should overcome the complex task of defining financial service quality *ex ante*—without considering the impact of customers' engagement and experience during delivery or their perceptions—and is affected by the distinct role of service, provider's features and trust effects.

On the contrary, certification rules may partially obstacle the insurgence of potential conflict of interest, even if educational marketing activities-expressly aimed at eliciting customers' needs and favouring awareness- may, in any case, offer to private firms the means to begin a typical supplier-client relation aimed at conversion. The

described situation in which certification may have favoured an increasing involvement of qualified firms in educational activities is likely to be similar to other OECD- and non OECD countries that offer a public certification to financial education initiatives provided to local citizens.

We contributed to the debate about the role of the public agency in charge of certification by outlining that the certification quality is favoured by its independence, given the risks to be captured by the private constituencies that are, explicitly or implicitly, against financial literacy, or by the politicians who would like to please those constituencies. In other words, when a public agency acts as third-party certifier, political and bureaucratic incentives shape its action. In particular, political activism in financial education can be motivated by financial instability worries. We empirically confirmed such theoretical relationship applying text analyses, and using financial education narrative as a proxy for activism both for the politicians of the European Parliament and the bureaucrats of the ECB in the period 1997–2024. From a methodological point of view, we implemented a zero-shot learning. In future research steps oher approaches could be used the explore the topic distribution.

Finally, and again for further research steps, the combination of different and intertwined methodological tools suggests that when planning and delivering financial education programmes that suit pre-defined customer needs and are intended to measure specific outcomes, both private firms and financial sector authorities could employ marketing principles and techniques to ensure effectiveness and efficiency. Many methodologies could allow to help financial sector authorities chart customers' journeys and understand their financial education needs (World Bank 2021). More specifically, customer-centric assessments that generate buyer personas and capture knowledge from various customer-facing employees in a range of organisations (e.g., banks, insurance companies, agents and so on) could help clarify consumers' needs at every point of interaction with specific products or services, allowing, as well, to focus attention on priority targets and contribute positively to inclusion.

Appendix

A1. Financial Education and Certification: A Comparative Analysis of the European Countries (OECD and non-OECD Members)

In many countries the governments in charge established recently public bodies that implement financial education policy by means of ex ante certification of both, private and public, providers. A comparative analysis of twenty-seven OECD countries shows that all of them but two are characterized by a precise institutional solution: a public body or a financial education agency, composed by the central bank, supervisory authorities, ministry representatives, and other stakeholders, qualifies the initiatives supplied by the providers of financial education. Financial education is, in other words, subjected to quality certification by external entities.

In our analysis we use as a proxy of the recognition activity the fact that the identified public body designs and implements every year the Global Money Week. The initiative, as outlined on its the official website, "is an annual global awareness-raising

campaign on the importance of ensuring that young people, from an early age, are financially aware, and are gradually acquiring the knowledge, skills, attitudes and behaviors necessary to make sound financial decisions and ultimately achieve financial well-being and financial resilience".

In 2023, 106 countries participated to the GMW. This Appendix focuses exclusively on the European ones. The GMW website provides the list of each GMW National Coordinating institution. More clearly: "GMW national coordinators are expected to carry out the following tasks, if possible and appropriate, according to national circumstances:

- *ex-ante coordination*: identifying GMW initiatives planned in the home country by public, private and non-profit institutions, encouraging coordination among involved parties, and reporting expected GMW activities in the country to the GMW secretariat through the pre-form;
- *promoting participation* in GMW at country level, by encouraging potentially interested institutions to join;
- *being the focal point at country level for information requests* by interested or participating institutions about GMW and for communications with the GMW secretariat;
- *liaising and communicating with private sector participants*, if any, to clarify that their initiatives should not contain commercial messages;
- *ex-post coordination*: collecting information about activities implemented during the GMW in their home country and reporting back to the GMW Secretariat through ex-post forms".

In short, out of 27 EU member states there are:

– 21 countries that provide for the involvement of CB,
– 15 for the involvement of the Financial Supervision Authority (if it does not coincide with the CB),
– 18 for the involvement of Ministries,
– and 16 for other public entities, different than those cited above.

Countries and Financial Education Coordination Responsibilities

(1) Austria (member country OECD).
Coordinator body: National Central Bank of Austria
Participating organizations: Ministry of Finance and the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology, the Debt counseling service and that of stakeholders such as Erste Financial Life Park (FLIP); Vienna Stock Exchange; Three Coins (social for profit company).

(2) Belgium (OECD member).
Coordinator body: Financial Services and Markets Authority (FSMA)
Participating organizations: Political representatives from the federal government; Teachers from the Wallonia-Brussels Federation and the Flemish Community's Ministry of Education; The Federation of the Belgian Financial Sector (FEBELFIN); The European Banking Federation (EBF); The Federation of the Belgian Insurance Sector (ASSURALIA); BIZ/CAW and Reference Centers for debt mediation; Belgian Federal Public Service Economy; Belgian Federal Public Service Finance; KU Leuven (University); Credit and

Debt Observatory; BELvue Museum; Belgian National Bank (BNB). Other stakeholders are involved such as the Royal Federation of Belgian Notaries (FEDNOT); Belgian Federal Pension Service; The King Baudouin Foundation; Expertise Center for Budget and Financial Well-being (CEBUD) - Thomas More College; Belgian Asset Managers Association (BEAMA); Ombudsman (Insurance), Steunpunt Mens & Samenleving (SAM); Union professionnelle de courtiers d'assurance (UPCA-BVVM); Federation of insurance brokers and financial intermediaries (FEPRABEL - FVF); Belgian Association for Pension Institutions (PensioPlus); Federal Public Service Chancellery of the Prime Minister, Support Centre for Debt Mediation Services (CAMD).

(3) Bulgaria.

Coordinator body: Junior Achievement Bulgaria

Participating organizations: Ministry of Finance; Ministry of Education and Science and several stakeholders such as the University of Economics – Varna; Parichka.bg; Unicredit Bulbank; Ciela; IT. Schwarz; NATIONAL NETWORK FOR CHILDREN; malkisakrovishta.bg; Economic.bg; Dir.bg; Detskitegradini.com; cleverbook.net; Carrot-bg; Investor.bg; Bulgarian Business Leaders Forum; reshenie.bg; 365idei.bg; The Little Chef; Mammi.bg; Azbuki.bg; Sreda.bd; The Dots; Toplocentrala; BNP PARIBAS PERSONAL FINANCE; UNICEF; Fantastiko Orange; IKEA; LIDL; Happy; H&M; Post Bank; Pireus Bank; NFSG - city of Sofia, SU "St. Kliment Ohridski", city of Rakitovo, SU "St. Sophronius Vrachanski" Plovdiv; SU "G.Benkovski" Pazardzhik, SU "Sofroniy Vrachanski" Plovdiv, SU "St. Kliment Ohridski" Rakitovo; SU "Emilian Stanev", PMG "Vasil Drumev" 1 EG "Asen Zlatarov", PGASG "Angel Popov", American College "Arkus"; 31 schools.

(4) Croatia.

Coordinator body: Ministry of Finance

Participating organizations: Ministry of Finance (MOF); Ministry of Finance, Tax Administration (MoF TA); Ministry of Science and Education (MOSE); Ministry of Economy and Sustainable Development (MESD); Central State Office for Demography and Youth (CSODY); Agency for Education and Training (AET); Agency for Vocational and Adult Education (AVAE); Croatian Financial Services Supervision Agency (CFSSA); Financial Agency (FA); Croatian National Bank (CNB); Croatian Insurance Bureau (CIB) and members – insurance undertakings. Among the stakeholders involved, there are Štedopis, Institute for Financial Education; Croatian Institute for Financial Education (CIFE); Federation of Independent Trade Unions of Croatia (SSSH); CFA Association Croatia; Croatian Association of Credit Unions (CACU); Croatian Employers' Association (CEA); Association of Obligatory and Pension Fund Members (AOPFM); Association of Pension Fund Management and Pension Insurance Companies (APFMPIC); Faculty of Economics and Business Zagreb (FEB); Faculty of Law, University of Zagreb; Croatian Banking Association (CBA); Croatian Chamber of Economy (CCE); Croatian Chamber of Trades and Crafts (CCTC); Zagreb Stock Exchange d.d. (ZSE)

(5) Cyprus.

Coordinating body: Central Bank of Cyprus

Participating entities: Central Bank of Cyprus, Cyprus Securities and Exchange Commission, Ministry of Finance, Ministry of Education, Youth and Sports. The stakeholders involved are Association of Cyprus Banks, Chartered Financial Analysts Society Cyprus, Bank of Cyprus Cultural Foundation, Cyprus University of Technology, Financial Wellbeing Institute, Institute of Certified Public Accountants of Cyprus, Institute of Chartered Accountants (ICAEW) Cyprus, Junior Achievement Cyprus, University of Cyprus, PwC Cyprus, Youth Board of Cyprus.

(6) Czech Republic (OECD member).

Coordinator body: Ministry of Finance

Participating entities: Ministry of Education; Czech National Bank. The stakeholders involved are EFPA ČR and yourchance; ABC finančního vzdělávání; AISIS; Centrum Černý most; Czech Banking Association; Česká spořitelna; Československá obchodní banka; Czech Mint; Finanční gramotnost do škol; Komerční banka; MHMP; Moneta Money Bank; Metodica, z.s.; Nadace České Spořitelny; Rozumíme penězům; Soutěž Finanční gramotnost

(7) Denmark (OECD member).

Coordinating body: Finance Denmark

Participating entities: Finance Denmark, the Math teachers' association, The financial Supervisory Authority, the Danish National Bank, The Danish Consumer Council, FORSTÅ.dk, affliated stakeholders and organisations within government, counseling, teaching and banking, 600 schools and 33 banks.

(8) Estonia (OECD member).

Coordinating entity: Ministry of Finance

Participating organizations: The stakeholders involved are Estonian Banking Association (including 7 different banks), The Estonian Chamber of Enforcement Officers and Trustees in Bankruptcy and approx 150 schools. Also, Bank of Estonia, Estonian Financial Supervisory Authority, Eesti Kindlustusseltside liit (Insurance Service Providers Association), Ministry of Finance,

The steering committee in charge of the national strategy for financial education is not directly in charge of the coordination for the GMW.

(9) Finland (OECD member).

Coordinating entity: Finnish Foundation for Share Promotion.

The Finnish Foundation for Share Promotion is a neutral foundation that finances its operations with the rental income of the Stock Exchange Building Oy. Founded in 1985, its goal is to promote securities investment and the securities market.

Participating organizations: The stakeholders involved are the Finnish Foundation for Share Promotion, Finance Finland, Economy and Youth TAT, Junior Achievement Finland, The Martha Association, Takuusäätiö, Finnish Competition and Consumer Authority, Financial and Debt Counselling, Ministry of Education, Bank of Finland and approximately 300 teachers and classes from primary and high schools.

(10) France (OECD member).

Coordinating entity: Bank of France (Banque de France)

Participating entities: Ministère de l'Économie, des Finances et de la Souveraineté industrielle et numérique ; Ministère de l'Éducation nationale et de la Jeunesse ; Ministère des Solidarités, de l'Autonomie et des Personnes handicapées ; Ministère de l'Agriculture et de la Souveraineté alimentaire ; Comité Consultatif du Secteur Financier (CCSF); Autorités des Marchés Financiers (AMF); Fédération Bancaire Française (FBF); France assureurs; Association Française de La Gestion Financière (AFG); Association des Sociétés Financières (ASF); Association Nationale des Conseils Financiers (ANACOFI). There are also stakeholders such as Consommation Logement Cadre de Vie (CLCV); UFC Que Choisir; Institut National de la Consommation (INC); Familles Rurales; Fédération Crésus; Secours Catholique; La Croix Rouge; Union Nationale des Associations Familiales (UNAF); Union Nationale des Centres Communaux d'Action Sociale (UNCCAS); La Finance Pour Tous; Finances et Pédagogie ; France ESF; Confédération des Petites et Moyennes Entreprises (CPME); Chambre de Commerce et d'Industrie (CCI); Chambre des Métiers et de l'Artisanat (CMA); Mouvement des Entreprises de France (MEDEF); Union des Entreprises de Proximité (U2P).

(11) Germany (OECD member).

Coordinating entity: no coordination entity

Participating entities:

GMW Germany, Deutsche Gesellschaft für Finanzkompetenz DeGeFin e.G., Bündnis ökonomische Bildung e.V., funnymoney.de, Deutsche Bundesbank, Bundesministerium der Finanzen (Federal Ministry of Finance), Bundesministerium für Bildung und Forschung (Federal Ministry of Education and Research). Also some stakeholders are involved as Bund deutscher Volks- und Betriebswirte bdvb, Flossbach von Storch Stiftung, Stiftung Deutschland im Plus, Stiftung Würth, Mano Moneta, Deutsche Stiftung Verbraucherschutz, Netzwerk Finanzkompetenz NRW, Präventionsnetzwerk Finanzkompetenz e.V., Deutsche Börse Group, Börse Frankfurt, BöAG Börsen AG, Bund der Steuerzahler e. V., Finanztip, Aktiengram, Prof. Goldgraf, Dr. Birgit Happel (Geldbiografien), Helmut Peters, Finanzfreundin, Bricklebrit - Eltern.Kinder.Geld, Finanzwende, FH Dortmund, FOM Hochschule, Universität Mannheim, Hochschule Heilbronn, PH Schwäbisch Gmünd, NRW Talentscouts (RWTH Aachen), Caritas für Köln, Diakonie Düsseldorf, Stadt Düsseldorf, Schuldnerberatung, Sozialdienst katholischer Frauen und Männer Düsseldorf e.V., Georg August Zinn Schule, Futurepreneur, IFB Hamburg, MAC - Math Activity Center, w2Wirtschaftswerkstatt, prediqma Institute, like your finance, finance for woman, female finance forum, Arbeitskreis Berlin Lichtenberg, SOS Schule ohne Schulden, Börsenstammtisch Düsseldorf, Börsen Bunch TV.

(12) Greece (OECD member).

Coordinating entity: none

Participating entities: Bank of Greece and stakeholders such as Hellenic Bank Association; ERGO Academy; Alpha Bank; Hellenic Financial Literacy Institute; School of Economics of the Aristotle University of Thessaloniki; MBA Postgraduate Programme of the Aristotle University of Thessaloniki; Hellenic

Loan Servicers Association; Accenture Greece; Directorate of Secondary Education of Arta Prefecture; "Nikolaos Skoufas" General High School of Kompoti Arta.

As we read on the official website of the Central Bank of Greece: “In order to maximise the effectiveness of the actions under the Global Money Week umbrella, the Bank of Greece, as national coordinator, contacted other agencies that are active in financial education, with a view to informing them on the Global Money Week initiative and the Bank’s role as national coordinator, as well as encouraging them to become part of a larger effort to promote financial literacy”.

(13) Hungary (OECD member).

Coordinating entity: Ministry of Finance

Participating entities: Ministry for Economic Developement, Ministry of Interior, Ministry of Finance, Money Compass Foundation (founded by the Central Bank, MCF), Hungarian Banking Association, Junior Achievement Hungary.

(14) Ireland (OECD member).

Coordinating entity: Money Advice & Budgeting Service (MABS)

Participating entities: MABS, Second Level Schools and Youth Reach (Young persons Training & Education Centres).

(15) Italy (OECD member).

Coordinating entity: Financial Education Committee with the help of Bank of Italy

Participating entities: The stakeholders involved are Adiconsum Verona APS, AEEE Italia, Agenzia delle Entrate, AIEF Associazione Italiana Educatori Finanziari, ALFAFIN, Alleanza Assicurazioni spa, ANASF, Arcipelago ODV, Associazione Legali Italiani, Associazione MicroLab, AssoGeco, Azimut holding spa, Banca di Credito Cooperativo di Capaccio Paestum e Serino s.c., Banca di credito popolare, Banca d’Italia (Bank of Italy), Cassa Rurale Alta Valsugana BCC, Centro Studi Aziendali e Tributari srl, Comitato per la programmazione e il coordinamento delle attività di educazione finanziaria, Comune di Pontremoli, Confcooperative FVG, Consob, Dipartimento di Economia Aziendale - Università degli Studi Roma Tre, Dipartimento di matematica - Politecnico di Milano, Dipartimento di Scienze dell’Economia - Università del Salento, Directa Sim, Direzione Didattica Statale Giovanni Lilliu, FABI, FEduF, Findomestic Banca SpA, Finetica ets, First Cisl dei Laghi, First Social Life APS, Fondazione Antiusura Exodus ’94, Fondazione FIBA, Fondazione Maria Stella Maris, Forum ANIA-Consumatori, Global Thinking Foundation, inFinance, ING BANK N.V., INPS, Istituto Comprensivo Randaccio Tuveri Don Milani, Istituto Comprensivo Santa Caterina, Istituto Comprensivo Statale Giovanni Falcone, IVASS, Link Campus University, Ministero dell’Istruzione e del Merito, Mudem, Museo del Risparmio, Olbia Community Hub, Organismo di vigilanza e tenuta dell’Albo unico dei consulenti finanziari, PF Holding Srl, UniCredit S.p.A., Unione Nazionale Consumatori Umbria, Università di Napoli Parthenope, VIK school srl, Your Solution srl, Yunus Social Business Centre Università di Urbin.

(16) Latvia (OECD member).

Coordinating entity: Financial and Capital Market Commission/Bank of Latvia (Latvijas Banka)

Participating entities: Latvijas Banka, Consumer Rights Protection Centre of Latvia, State Employment Agency, Financial and Capital Market Commission, JSC Development Finance Institution Altum, Finance Latvia Association, Latvian Insurers Association. Other stakeholders are BA School of Business and Finance, Riga Technical University, University of Latvia, Junior Achievement Latvia, Global Shapers Riga - FinLit, Association of Senior Communities, Delfin Group, Swedbank Latvia, SEB, Citadele Bank, Tavex SIA, SIA Arctiq.

Also in this case, the Bank of Latvia is in charge of the GMW, and the working group in charge of the national strategy for financial education is not directly cited, even if we know that it is under the Bank of Latvia as well.

(17) Lithuania (OECD member).

Coordinating entity: Bank of Lithuania

Participating entities: Bank of Lithuania, Lithuanian Free Market Institute, Money Museum of the Bank of Lithuania, and stakeholders as Lithuanian Banking Association, economic literacy and entrepreneurship organization Lithuanian Junior Achievement, Vytautas Magnus University, Nasdaq Vilnius, SEB Bank, Swedbank, United Central Credit Union Kreda, We Invest, Allianz Lietuva and over 200 schools in different Lithuanian cities and towns.

Note that the Financial Education Coordination Committee under the Bank of Lithuania which is in charge of the NS for financial education is not in charge of the GMW.

(18) Luxemburg (OECD member).

Coordinating entity: ABBL Foundation for financial education

Participating entities: ABBL Members, CSSF (Commission du Surveillance du Secteur Financier), primary schools, secondary schools.

Note that the PCF Committee (Financial Consumer Protection Committee) is not explicitly stated as part of the event.

(19) Malta.

Coordinating entity: Ministry for Education, Sport, Youth, Research and Innovation, Directorate for Learning Learning and Assessment Programmes (DLAP), Home Economics Seminar Centre

Participating entities: Home Economics Seminar Centre, Malta Bankers' Association, Central Bank of Malta, GEMMAJA, Malta Foundation, Commission for Revenue, Office of the Information and Data Protection Commissioner, BOVHSBCAPS.

Note that GEMMA, the implementing agency of the national strategy for financial education, is a partner of the GMW but not the coordinator.

(20) The Netherlands (OECD member).

Coordinating entity: Money Wise

Participating entities: Ministry of Finance, Ministry of Education, Culture and Science, Ministry of Social Affairs and Employment, Dutch Banking Association, Dutch Association of Insurers, Federation of the Dutch Pension funds, Central bank of the Netherlands, Netherlands Authority for the Financial Markets, and stakeholders as National Institute for Family Finance Information, 64

municipalities including the City of Utrecht, 29% of teachers at primary schools, 31% of teachers at schools for vocational education and many other participating organizations.

(21) Poland (OECD member).

Coordinating authority: The Polish Financial Supervision Authority (UKNF)

Participating organizations: Ministry of Finance (MF), the Bank Guarantee Fund (BFG), the Office of Competition and Consumer Protection (UOKiK), the Financial Ombudsman (RF), the Polish Chamber of Insurance (PIU), the Warsaw Institute of Banking (WIB) and stakeholders as the WSE Foundation, the Centre for the Development of Education (SKEF), Polish Chamber of Pension Funds (IGTE) and CFA Society, schools at all stages of education, other educational facilities, libraries.

(22) Portugal (OECD member).

Coordinating entity: NPFE – Portuguese National Plan for Financial Education (led by the Banco de Portugal, the ASF - Autoridade de Supervisão de Seguros e Fundos de Pensões and the CMVM - Comissão do Mercado de Valores Mobiliários)

Participating entities: Banco de Portugal; ASF – Autoridade de Supervisão de Seguros e Fundos de Pensões (Portuguese Insurance and Pension Funds Supervision Authority); CMVM – Comissão do Mercado de Valores Mobiliários (Portuguese Securities Market Commission) and stakeholders as APB – Associação Portuguesa de Bancos (Portuguese Banking Association); ASFAC – Associação de Instituições de Crédito Especializado (Portuguese Association of Investment Funds, Pensions and Assets); AT – Autoridade Tributária e Aduaneira (Tax and Customs Authority); DECO – Associação Portuguesa para a Defesa do Consumidor (Portuguese Association for Consumer Protection); DGE - Direção-Geral da Educação (Directorate-General for Education); DGLAB – Direção-Geral do Livro, Arquivos e Bibliotecas (Directorate-General for Books, Arquives and Libraries); Euronext Lisbon – Bolsa de Valores (Stock Exchange and Market Infrastructure); FACM - Fundação Dr. António Cupertino de Miranda (Dr. António Cupertino de Miranda Foundation); JAP – Junior Achievement Portugal (Portuguese Branch of Junior Achievement Worldwide); OPP - Ordem dos Psicólogos Portugueses (Portuguese Psychologists Association); RBE - Rede de Bibliotecas Escolares (School Library Network); and 342 schools across the country.

As we read on the GMW website: "During GMW 2023, representative of BdP shared the Portuguese step-by-step approach to promote financial literacy in schools, which has been implemented since 2011 by the financial supervisors in partnership with the Ministry of Education, on the High-Level Debate on Financial Education of Children that took place in the European Parliament on March 22. This year the NPFE developed a new website, specifically dedicated to promoting the participation and engagement of entities and schools in GMW 2023. A diversified set of free educational materials and examples of activities were disseminated through this website, to support teachers and other trainers in carrying out initiatives within the scope of this international campaign." Also, as we read on a report from the coordinating authority: "As national coordinator, the

NPFE monitors all the activities taking place in Portugal during GMW". Source: https://www.globalmoneyweek.org/webinars/20220203-GMW-Portugal.pdf

This closely corresponds to what we intend by "guidelines", though it's not explicitly defined as "directives".

(23) Romania.

Coordinating entity: The National Bank of Romania

Participating entities: Financial Supervisory Authority and stakeholders as Institute of Financial Studies; Bucharest Stock Exchange; Body of Expert Accountants and Chartered Accountants from Romania (CECCAR); National Union of Insurance-Reinsurance Companies from Romania (UNSAR); University of Bucharest; Școala de valori - NGO; Centrul Școlar de Educație Incluzivă Com Filipeștii de Târg Prahova.

(24) Slovakia (OECD member).

Coordinating entity: National Bank of Slovakia

Participating entities: Several stakeholders are involved such as NBS Foundation, FinQ Centrum, n. o., The Slovenská sporiteľňa Foundation, n. o., Institute of Banking Education of the National Bank of Slovakia, n. o., Museum of Coins and Medals, INESS - Institute of Economic and Social Studies, Slovak Banking Association, Association of Asset Management Companies, Association of Security Dealers, Association of Financial Agents and Advisers, CFA Society Slovakia, EDULAB, n. o., EFC - Education & Finance Center, The Duke of Edingurgh´s International Award Slovakia, Indícia, n. o., Projekt DOM.ov, ABCedu pre vzdelanie, Centrum pre deti a rodiny Hriňová, Domov Sv. Jána z Boha, Projekt Finbot, OZ Šetríme peniaze, BV Finance, s. r. o., Finančný lekár, University of Economics in Bratislava, 30 High Schools, 37 Primary Schools. The List of all participating organisations: https://5penazi.sk/global-money-week-2023/

(25) Slovenia (OECD member).

Coordinating entity: National Education Institute of Republic of Slovenia

Participating entities: National Education Institute of the Republic of Slovenia, Ministry of Education, Ministry of Finance, Bank Association of Slovenia, Central Bank of the Republic Slovenia, Financial Administration of Republic of Slovenia (FURS), BANKARIUM - Museum of Money and Banking in Slovenia, Institute of the Republic of Slovenia for Vocational Education and Training, Stock Exchange of Slovenia, Slovenian Institute for Adult Education, Faculty of Management – University of Primorska, Home Economic Association of Republic of Slovenia, Consumers' Association of Slovenia, The Slovenian Investment Fund Association (ZDU GIZ), My Finances magazine.

(26) Spain (OECD member).

Coordinating entity: Banco de España, the National Securities Market Commission (CNMV) and the Ministry of Economic Affairs and Digital Transformation (MAETD).

Participating entities:

(a) Plan de Educación Financiera (Financial Education Plan), composed by: Banco de España, Comisión Nacional del Mercado de Valores (National

Stock Market Commission), Ministry of Economic Affairs and Digital Transformation.

(b) The 16 following collaborators and stakeholders of the Plan de Educación Financiera: ADECOSE (Spanish Association of Insurance Brokers), AEB Foundation (Spanish Banking Association Foundation) and some of its members:o Abancao Santandero Cajamar, ASUFIN - Financial Users Association, AFI Foundation, CECA (Spanish Confederation of Savings Banks) and some of its members, Caixabanko Cajasol Foundationo Edufinet, an iniciative of Ibercaja Foundation, Contea Foundation for Education in Accounting and Business Administration, ERF Group, Foundation of Stock Market and Financial Studies (FEBF), Fundación Mutualidad Abogacía, ICREF (Institute of Credit and Finance of the Region of Murcia), Institut d'Estudis Financers, Junior Achievement Foundation, MAPFRE Foundation, UNACC (National Union of Credit Unions) in cooperation with UECOE (Spanish Union of Teaching Cooperatives), UNESPA (Spanish Union of Insurance and Reinsurance Companies), WTW, through its partnership/membership to OCOPEN (Organisation of Pension Consultants).

The three coordinating members of the GMW correspond to those composing the Plan de Educación Financiera, appointed also as GMW partners. Hence, the bodies in charge of the national strategy for financial education are also those in charge of the GMW. However, they are not appointed as a single entity.

(27) Sweden (OECD Country member).

Coordinating entity: Swedish Financial Supervisory Authority (Finansinspektionen)

Participating entities: Swedish Financial Supervisory Authority and stakeholders such as the National Food Administration, Swedish Young Shareholders' Association, Swedish Securities Markets Association, The Economy Museum – the Royal Coin Cabinet, Swedish Investment Fund Association, Swedbank and Sparbankerna, Nordea, Ung Privatekonomi.

A2. Keywords in the Dictionary technique

Price Stability: primary mandate, primary objective, prices, price, inflation, inflationary, HICP, CPI, PCE, PCE index, independence, price stability, deflation, deflator, deflationary, deflate, hyperinflation, hyperinflationary, hyper-inflationary.

Financial Stability: financial stability, financial instability, financial crisis, financial stress, financial risk, systemic risk, contagion, financial shocks, bubble, bubbles, financial imbalance, financial imbalances, misalignment, credit growth, leverage, banks, insurers, hedge funds, investment funds, securities markets, derivatives, off-balances sheet exposures, foreign currency loans, correlated exposures.

Social Affairs: employment, unemployment, firing, fixed-term, inactivity, job, jobs, jobless, labor, labour, labor force, labour force, labor market, labour market,

self-employed, vacancies, vacancy, worker, workers, wage, wages, inequalities, redistributive, redistribution.

International Affairs: trade, cross-border, emerging markets, emerging economies, outside the euro area, outside the EU, geopolitics, china, chinese, united states, the us, usa, america, american, canada, canadian, japan, japanese, russia, russian, india, indian, turkey, turkish, argentina, argentinian, brexit, united kingdom, england, norway, norwegian, enlargement, developing economies, developing countries, world bank, imf, war, middle east, far east, opec, wto, exchange rate, sweden, swedish, oil, gas, commodity, g7, g20, korea, korean, northern rock, terrorism, terrorist, africa, african, asia, asian, australia, oversea, external representation, ire, dollar, pound, ruble, yuan, yen, renminbi, ltcm, external demand, exports, imports, advanced economies, value chain, us treasuries, fed, federal reserve, bank of england, scotland, scottish, pboc, basel, bank of international settlements, bis, washington, new York.

Payment: payment, payment systems, ccp, clearing, market infrastructures, digital euro, wholesale transactions, bitcoin, stablecoins, libra, diem, instant payments, cbdc, cash, banknotes, coins, card, e-money, private money, central bank money, digital dollar, target, target2, t2s, real-time gross settlement, sepa, tips, settlement, dlt, ledger, blockchain, token, digital currency, cryptocurrencies, crypto-currencies, crypto-assets, cryptoassets, big tech firms, big techs.

EMU Governance: fiscal policy, fiscal rules, fiscal board, bailout, bail-in, single supervisory mechanism, ssm, single resolution mechanism, srm, banking supervision, microprudential, macroprudential, prudential policies, macroeconomic policies, five presidents' report, four presidents' report, economic and monetary union, emu, eu budget, multiannual financial framework, mff, sure, stability and growth pact, sgp, stability and growth, banking union, deposit insurance, edis, ngeu, next generation, recovery and resilience, fiscal capacity, bicc, risk-sharing, transfer union, policy mix, international role of the euro, ire, moral hazard, financial assistance, troika, european stability mechanism, esm, corrective arm, budget, capital markets union, cmu, integration, deepening, country specific recommendations, csrs, euro adoption, changeover.

Climate Change: green finance, green transition, paris agreement, paris climate agreement, green recovery, green bonds, greening, gas, emissions, greenhouse, climate change, climate crisis, climate impact, sustainable finance, gas emissions, sustainable transition, natural disaster, emission, climate-related, natural disaster, fossil, emissions, carbon dioxide, pollution, polluting, ow carbon, high carbon, carbon intensive, environment related, environmentally, co2, carbon dioxide, climate risk, transition risk, physical risk.

Financial Education: financial education, financial institutions, education awareness, financial services, education programmes, financial information, financial products, principles practices, public private, financial markets, practices financial, federal reserve, financial literacy, institutions encouraged, financial basic, financial committee, consumer protection, provided education, financial consumers, financial risks, information advice, financial institutions, public practices services, promoted financial, financial providers, retirement savings, financial role, technological advances, access credit.

A3. Keywords for the Keyword-Assisted Topic Model

Price Stability: price, stability, inflation, target, monetary, policy, interest, rate.

Employment: activity, domestic, demand, economic, growth.

Financial System: financial, system, market, sector.

Microprudential: bank, system, balance, sheet, credit, risk, supervision, stress, test.

Global: foreign, current, account, capital, global, economy.

Payment System: system, financial, new.

Climate Change: climate, change, green, financial, risk, transition.

Financial Education: financial, education, consumers, information, institutions, promoted, practices, services, awareness, programmes, consumer, encouraged, private, products, provide, credit, markets, public, develop, national, principles, savings, account, advice, economic, level, understanding, efforts, including, market.

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