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REGULAR ARTICLE

Bringing Voluntary Financial Education in Emerging Economy: Role of Financial Socialization During Elementary Years

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Abstract The level of financial literacy tends to be low in children, while information and financial education for children are very limited, especially in developing countries without mandatory financial education in schools. This study examined the effects of a classroom financial education program on financial knowledge. We used "Financial Intelligence Curriculum" designed for elementary school students from grade 1–6, focusing on the need and want, priority needs, income, spending, saving, and sharing. Using experimental method with pre-post-test and control group design, we found that the treatment group who received financial education has improved financial knowledge relative to the control group. The study provides evidence that elementary school students are appropriate targets for financial education and that it is necessary to develop mechanisms for effective learning to improve financial capability at an early age.

Keywords Financial education · Financial socialization · Financial literacy · Emerging economy · Elementary years

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Introduction

Financial literacy is the ability to use one's knowledge and skills to manage financial resources effectively to achieve financial well-being. Citizens who have financial competencies play an important role in the functioning of financial markets and the economic stability of nations (OECD 2005; Hilgert et al. 2003). Over the last decade, major initiatives on financial education have been undertaken by a number of high-income countries. Previous research on financial education conducted at primary schools in high-income countries found that financial education can improve financial knowledge in elementary school students (Grody et al. 2008; Schug and Hagedorn 2005; Hagedorn et al. 2012; Berti and Monaci 1998). In the last few years, there has been a rising interest in financial education issues in both low and middle-income countries for many different causes, i.e., concerns with the perceived low level of financial capability, low financial access, or use and the recognition that finance is a critical element for innovation and growth (OECD 2005). Financial education for children, especially in middle-income countries, is very essential because the level of financial literacy tends to be low in children (Lusardi and Mitchell 2011) and financial information for children is very limited (Sherraden et al. 2011). However, studies that examine the effects of financial education in the middle-income countries are only limited in number.

Despite a growing number of high-income states mandating financial education, the level of financial literacy remains low (Kirsch 2014), possibly because mandatory financial education often results in elective course without prior broad-based announcements to all students, as well as that teachers are not prepared to teach it (Holden and Way 2009). Previous studies found evidence that there is no difference in the score of financial literacy between students who have had a mandatory personal finance course and those who have not (Mandell 2009). In addition, also research on voluntary financial education in countries where financial education is not mandated continues to receive only little attention. The present study fills the gap by implementing and testing the effectiveness of voluntary financial education for elementary school students in emerging economy countries.

Literature Review and Hypothesis Development

The Importance of Financial Education in Emerging Economies

World Bank's definition of low- and middle-income countries is assigned in relation to their access to the World Bank Group's financial services, which is associated with the margin of gross national income (GNI) per capita. There are different characteristics between low income countries (LICs), middle-income countries (MICs) and high-income countries (HICs) in terms of access, poverty and informality. Access to financial services in LICs is limited to a very large population. In low income countries (LICs), less than 20% of their citizens have access to financial service institutions; while high-income countries (HICs) have access by over 80%, and MICs are somewhere in between. Most of the population in LICs live in rural areas, where access to financial services is limited. It leads to more limited cash needs, and assets are predominantly in the form of land, cattle, seeds, or gold. LIC communities typically work in informal economy sector.

Past research on financial education was conducted in HICs, but currently low and middle-income countries are being interested in financial literacy issues because of their citizens' low level of financial literacy, lack of access to and use of financial services, and awareness that financial literacy is an essential element for innovation and growth.

Indonesia is categorized as an MIC, with only 20% of its citizens have access to formal financial institutions (Bank Indonesia 2014). The level of financial literacy in Indonesia is the lowest among ASEAN countries, with only 29.66% of Indonesians are being literate, a number even lower than Malaysia (65%) and Singapore (98%) (OJK 2016). As such, financial education is expected to be capable of increasing the level of financial literacy and financial capability of the Indonesian society.

Financial Education for Elementary Students

Children already have control of money (Doss et al. 1995). Most children already have the knowledge and attitude about their role as consumers before they even start attending school (Kuhlmann 1983). According to Jelks (2005), children would have a premature affluence behavior if they are supported by financial resources. Children are driven by the media to actively contribute as consumers (Suiter and Meszaros 2005). At the primary school-age, children begin to understand the assortment of brands and make judgment about a person based on the goods they consume (John 1999). Thus, financial knowledge should be given early (Mandell 2009) because it impacts on improving their financial competency in the future.

Every developmental stage has appropriate foci for financial education interventions. Those interventions are executive function, financial socialization and financial skill building (Drever et al. 2015). Executive function is critical for pre-elementary students and it refers to the cognitive abilities for staying focused on long-term goals and for acquiring and processing financial information. Financial socialization is the key for elementary school students. Financial socialization means acquiring and developing values, attitudes, standards, norms, and behaviors that provide contexts for one's financial practices (Drever et al. 2015). Financial skill building is vital for adolescents and young adults, and it focuses on the development of both financial skills and habits.

Financial socialization is important for elementary and middle school children. It deals with how children develop their financial value, attitude and behavior. Children understand money, saving, frugality, and financial planning by observing the behavior of parents, teachers, and other adults. The practices of financial socialization have positive effects on the development of financial well-being of children (Smith and Barboza 2013; Jorgensen and Savla 2010; Hibbert et al. 2004). Financial socialization occurs through multiple pathways, including schools, mass media, peers, and parents.

Financial socialization through financial education at schools provides some advantages. It will not only improve the level of financial literacy in children, but will also be able to reach all children in the school, including those who have little chance to get financial literacy outside school. In addition, the school environment will also facilitate financial education to be integrated into other subjects, such as mathematics or language (Beverly and Burkhalter 2005).

Financial education at elementary schools has a positive influence on improving students' competency in finance (Sherraden et al. 2011). Financial education given at an early age will support cumulative learning in the subsequent grade levels (Sosin et al. 1997). Cumulative learning means that the current behavior is a function of the present stimulus condition and previous learning conditions (Staats et al. 1970). However, there are only few studies of financial education targeted at elementary school students. Gao et al. (2012) and Batty et al. (2015) examined financial education for elementary students and found evidence of positive changes in their attitude and knowledge.

Despite a growing number of states mandating financial education K-12, the level of financial literacy remains low (Kirsch 2014). Mandell (2009) found that there is no difference between the scores of high school students who have had a course in personal finance and those who have not. Watts and Walstad (2010) found that in states with a specific mandate of personal financial subject, students did not score higher on a test of personal finance as compared to those who lived in states without the specific mandate.

Studies on financial education in countries not mandating it continues to receive only a small amount of attention. Therefore, the purpose of this research is to implement financial education in emerging countries where the subject is not specifically mandated and to examine its impact. We predict that financial literacy education implemented voluntarily will have a positive impact towards improving financial knowledge because the implementation is based on awareness rather than coercion. Teachers, principals and parents will share an awareness of the importance of this program and thus will support it. This present study takes aboard the overall conclusion from the above discussion, and develops a tentative hypothesis as follows:

Hypothesis 1 Financial education for elementary school students has positive impacts on financial knowledge.

Personal and Family Background of Financial Knowledge

There are differences in financial attitudes between men and women. Men have more desire to have financial independence and earn their own income than women (Newcomb and Rabow 1999). Previous research found that male students had higher score in financial literacy than female students (Chen and Volpe 2002).

Hypothesis 2 After receiving financial education, boys have higher score in financial knowledge than girls.

Students from low-income families do not have the same quality of financial education compared to higher-income families (Mandell 2009) because low-income families have only limited access to financial institutions. They have no savings account, limited access to capital, and often take in harmful financial behaviors such as owing money from loan sharks or by payday loans. They do not have sufficient knowledge and confidence to teach finance to their children. Those with parents of lower education degree, lower income, or limited access to financial institutions have low financial literacy scores (Mandell 2009; Lusardi et al. 2009).

Hypothesis 3 Parents' education and income level have positive impact on financial knowledge.

Academic Ability

Academic ability is the level of competence to perform scholastic or education activities. Previous research suggests that the most common indicators used to measure academic ability are GPA and class rank (Sabri 2011). High GPA means that the student has a higher initial knowledge. Students who have higher initial knowledge will have a higher increase in general knowledge because their existing knowledge serves as the foundation of learning (Kirsch 2014). Academic ability has been used to predict financial knowledge (Sabri et al. 2010; Xiao et al. 2011).

Hypothesis 4 GPA has a positive impact on financial knowledge.

Method

This study examines the effects of a classroom financial education program on financial knowledge. This study used "Financial Intelligence Curriculum." This curriculum was developed by the Research Institution of the Yogyakarta State University (Universitas Negeri Yogyakarta) Indonesia and the Indonesian Fund Management Institution (Lembaga Pengelola Dana Keuangan Indonesia). The program is designed for elementary school students from grade 1–6. The program is designed to be given for 4 weeks, 45 min each, focusing on the need and want, priority needs, earning income, spending, saving and sharing. The instructions were delivered using interactive strategy. Each lesson included a short lecture and worksheet, IT-based educational games, and story as a learning medium. Story is an effective learning tool for elementary school students (Grody et al. 2008). This financial literacy instruction was integrated in subjects such as mathematics, Indonesian language, or arts. It did not require extended school days or additional class sessions. Prior to teaching, teachers attended two-day training, each for 4 h, to get themselves trained on financial education.

Financial literacy education was implemented in three different schools in Yogyakarta that have stated their willingness to implement it voluntarily. Each school represented the characteristic of school with students from low, middle, and high income level. Table 1 shows the sample characteristics.

There are characteristic differences between the schools in terms of parents' income and education level. Therefore, school dummy variables are included in the model (see Table 2). There appears to be no imbalance between the schools in terms of the distribution of participants into treatment and control group as indicated by no differences in the values of GPA in Math and GPA in Language.

Table 1 Sample characteristics of measurement: financial education on financial knowledge at school

	Sapen elementary school				Pakel elementary school				Jogokaryan elementary school			
	Treatment		Control		Treatment		Control		Treatment		Control	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
GPA in math	86.19	11.42	86.19	11.34	72.82	17.18	72.90	17.08	65.68	21.71	65.76	21.53
GPA in language	83.38	12.84	83.44	12.81	82.70	11.12	82.70	11.10	70.09	18.46	70.09	18.45
Parents' income level[a]	3.66	0.79	3.55	0.86	2.56	0.61	2.71	0.80	2.156	0.42	2.08	0.61
Parent education level[b]	3.92	0.87	3.83	0.98	3.10	1.16	3.25	1.20	2.68	1.03	2.67	1.11
Number of samples observed	207		206		215		214		88		87	

[a] Parents' income is measured with a scale of 1 if the income per month is less than USD38; 2 USD39–75; 3 USD76–375; 4 USD376–748; 5 >USD749

[b] Parent education level is measured with a scale of 1 if parents graduated from primary school education/junior high school; 2 senior high school; 3 diploma; 4 bachelor; 5 master; 6 doctor

Determination of the class used as the treatment group was randomly assigned. There was a total of 1017 students from three elementary schools selected for this study, 510 students were in the control group and 507 were in the treatment group.

In order to measure the students' financial knowledge, a pre-test was given one week prior to the start of the program and a post-test was subsequently given one week after the completion of the program. There were 21 multiple choice questions to measure the students' financial knowledge. Test material was adjusted to the specific grade. For example, for grade 1–4, the tests employed more images, while for grade 5–6 survey questions were used because at age of 9 and above children have already had the ability to accurately respond to survey questions (Borgers et al. 2000).

The impact of financial education on financial knowledge was measured using ordinary least squares (OLS) regression with control for the baseline level of the dependent variable (Lalonde 1986). The model to be tested in this study is as refer to Eq. (1).

$$\begin{aligned} Y = \alpha &+ \beta_1\ \text{Treat} + \beta_2\ \text{School1} + \beta_3\ \text{School2} \\ &+ \beta_4\ \text{Grade} + \beta_5\ \text{Gender} + \beta_6\ \text{GPA Math} \\ &+ \beta_7\text{GPA Language} + \beta_8\ \text{Parent Income Level} \\ &+ \beta_9\text{Parent Education Level} \\ &+ \beta_{10}\text{Teacher Financial Literacy} + e \end{aligned} \tag{1}$$

As identified in Table 2, Y is the outcome variable for students i, representing the difference between the pre-test and post-test result. School2 is a dummy variable equal to one if the individual goes to School2 and zero if otherwise. School3 is a dummy variable equal to one if the individual goes to school three and zero if otherwise. Grade is a dummy equal to one if the individual is in the 5th or 6th grade and zero if the individual is in the 1st, 2nd, 3rd, or 4th grade. GPA in math represented the students' score in mathematics, while GPA in language represented the students' score in language. Parents' income level is the level of income of the parents, while Parents' education

Table 2 Variables of impact of financial education on financial knowledge at school

Variable	Definition
Treatment	A dummy variable equal to one for students in classroom offering financial education, and 0 if otherwise
Pre-test	The proportion of correct answer from the pre-test
Post-test	The proportion of correct answer from the post-test
School2	A dummy variable equal to one if the individual goes to school 2 and zero if otherwise.
School3	A dummy variable equal to one if the individual goes to school 3 and zero if otherwise
Grade	A dummy equal to one if the individual is in the 5th grade or 6th grade and zero if the individual is in the 1st, 2nd, 3rd or 4th grade
Gender	A dummy variable equal to one if individual is a girl and zero if a boy
GPA in math	Mathematics score
GPA in language	Language score
Parents' income level	Parents' income level
Parents' education level	Parents' education level
Teacher financial literacy level	Financial literacy of the teacher

level is the level of parents' education degree, and teacher's financial literacy is the level of financial literacy of the teacher.

The dependent variables included financial knowledge test items consisting of 21 problems. Financial knowledge was measured by the number of questions answered correctly. Need and want questions were intended to measure improvements in the students' ability to distinguish between needs and wants. It consisted of five survey items about making purchase decision, determining priority item to purchase, and determining need and want. Need priority was intended to measure the students' skills in prioritizing needs. It consisted of five survey items about the ability to prioritize in purchasing the items needed than desired. Earning money questions were intended to measure the students' knowledge in knowing how to earn money. It consisted of five questions about recognizing some professions, respecting all professions and knowing that money is gained through work. Spending, saving, and sharing questions were intended to measure the students' awareness on saving and sharing. It consisted of five survey questions about the importance of managing money for saving, spending, and sharing. Examples of Financial Knowledge questionnaire are attached in Appendix Table 6.

Result

All outcomes measured suggested improvement over the study period. According to effect size indicator, test score improvement was greater in the treatment group compared to the control group. The rank order of post-test improvement, from high to low, was treatment sample of Jogo ES, Sapen ES, and Pakel ES, respectively (as refer to Table 3).

In addition, to test the multi-collinearity aspect of the model, correlation analysis was conducted to examine the correlations among the independent variables. The results did notfind high correlations among independent variables. The correlation matrix is presented in Table 4.

Furthermore, the result shows that financial education can improve learning outcomes as indicated by the increase of the value of the outcomes. Table 5 shows regression estimates; the significant coefficient towards financial education to knowledge is 0.184 and is statistically significant at 1% level.

Some of the results for the control variables are then discussed. School1 and School2 variables were not significant, suggesting that differences in school characteristics had no significant effects on the outcomes of financial literacy learning. Language score and teacher's financial literacy do not appear to be an important factor. Parents'

Table 3 The pre-test and post-test result of impact of financial education on financial knowledge at school

Elementary school	Test	Treatment			Control			Mean difference	*P* value	Effect size
		Mean	N	SD	Mean	N	SD			
Sapen ES	Pre-test	4.43	207	1.21	3.67	206	1.03	0.76	0.00	0.68
	Post-test	4.78	207	0.98	3.81	206	1.01	0.97	0.00	0.97
Pakel ES	Pre-test	4.57	215	1.14	3.74	214	1.14	0.83	0.00	0.73
	Post-test	4.78	215	1.01	3.81	214	1.13	0.97	0.00	0.91
Jogo ES	Pre-test	4.39	88	1.33	3.35	87	0.84	1.04	0.00	0.93
	Post-test	4.75	88	0.99	3.41	87	0.78	1.34	0.00	1.50

SD standard deviation, *ES* elementary school

Table 4 Correlation matrix of the independent variables of impact of financial education on financial knowledge at school

Variables	1	2	3	4	5	6	7	8	9
School1	1								
School2	−0.563	1							
Grade	−0.026	0.208	1						
Parents' income level	0.555	−0.303	−0.030	1					
Parents' education level	0.319	−0.153	−0.021	0.457	1				
GPA in math	0.391	−0.213	−0.221	0.209	0.211	1			
GPA in language	0.109	0.113	0.036	0.096	0.152	0.503	1		
Teacher's financial literacy	0.144	0.148	0.562	0.211	0.204	0.190	0.341	1	
Gender	−0.018	0.174	0.557	−0.063	−0.017	−0.199	0.087	0.465	1

education level has positive influence with a coefficient of 0.064 and is becoming significant at 1% level; the higher the parents' education, the higher the financial literacy learning outcomes. However, GPA and parents' income level had negative prediction on the change of students' financial knowledge, contrary to the findings of Lusardi and Mitchell (2010). Further discussion is provided in the findings and discussion section.

Findings and Discussion

This study provides evidence of the impact of elementary school-based voluntary financial education program in emerging economies. We found that well-supported financial education increases financial knowledge relative to the control group. This study provides encouraging evidence of the potential for financial education to be offered to students at early age. This is because elementary school students can get cumulative knowledge if they receive financial education since the youth level (Sosin et al. 1997). This study is based on five lessons integrated into existing classroom subjects. Financial literacy education in Indonesia is voluntary and not included in the assessment of national exams; thus, this program needs investments in the form of time, effort, and willingness of the teachers and schools. Training and support for teachers are important for the success of the implementation of financial education programs.

Parents' education level also has significant effect towards improving students' outcomes; the higher the parents' education level, the higher the financial knowledge possessed. Furthermore, children look up to their parents as role model who influence significantly on financial socialization (Hibbert et al. 2004; Gudmunson and Danes 2011). Clarke et al. (2005) therefore suggested that such formal

Table 5 OLS regression estimates of the effect of financial education on financial knowledge

	Coefficients	*t*
Treatment	0.18	4.45***
School1	0.01	0.03
School2	0.19	1.76
Grade	−0.05	−0.77
Parents' income level	−0.06	−1.99**
Parents' education level	0.06	2.97**
GPA in math	−0.01	−1.96*
GPA in language	−0.01	−0.48
Teacher's financial literacy	−0.01	−0.25
Gender	−0.08	−1.89
Baseline	0.01	0.86
$R^2 = 0.051$		

$^*P < 0.10$; $^{**}P < 0.05$; $^{***}P < 0.01$

instruction by parents is important in shaping children's future financial behavior from young age. In Indonesia, students lack financial education, which is why parents' financial experience will help narrow the gap in financial knowledge (Tang and Peter 2015). Financial education at school cannot replace financial socialization by parents because, while at home, children will always observe their parents' financial habits. However, as some parents themselves feel unconfident and unqualified to manage their own finance, school can play an active role as a financial agent by giving socialization for students.

However, GPA and parents' income level had negative effect on the change of students' financial knowledge. This study's findings differ from those in Lusardi and Mitchell (2010) with regard to the participants and financial literacy test, where the participants in Lusardi and Mitchell study (2010) were adults rather than children. The test of financial knowledge for adults contains calculation of inflation, compound interest, stock, time value of money, and risk diversification; thus, mathematical skills had positive effect on financial literacy scores. In addition, high-incomes parents benefited because of their ease of access to financial institutions and financial knowledge. Therefore, the income level affected students' financial knowledge negatively.

This study used elementary school students as participants. The central concept in financial education for elementary students is decision-making under scarcity. Students learn to think critically about tradeoffs, opportunity costs, and to use benefit/cost analysis to analyze choices (Kirsch 2014). Students with low-income parents will be able to distinguish between wants and needs and to make a priority need because of their limited resources than students with high-income parents. Low-income parents tend to be more prudent in making spending decision; thus, their children will observe and imitate their parents' behavior in financial management (Drever et al. 2015). Students who have better cognitive ability will possess better ability to analyze cost and benefit of financial choices, but under certain conditions the influence of cognitive abilities can be negative (Kirsch 2014). It may be that, given their unique circumstance, they have better ability to determine that saving money for them is a bad idea.

The limitation of this study is that there are differences in baseline levels or pre-test scores between the treatment and control group. Therefore our model includes students, teachers and school characteristics as control variables. In addition, we also include a baseline value as an independent variable. By controlling the baseline value, the regression estimate changes in the dependent variables from baseline to follow-ups (Lalonde 1986).

This study contributes empirical evidence that field experiments are feasible in the field of financial education, and that the causal effects of financial education towards financial knowledge can be proven. Finally, this study has shown that elementary school students are appropriate targets for financial education. Thus, it is necessary to develop mechanisms for effective learning to improve financial capability at an early age.

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Appendix

See Table 6.

Table 6 Financial knowledge questionnaires (overview)

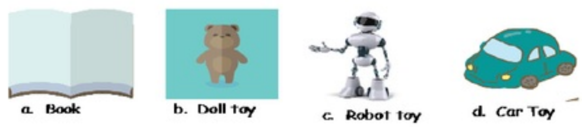
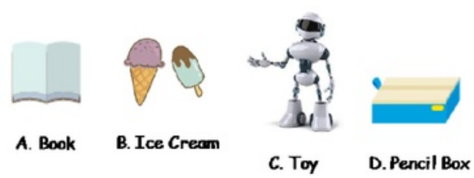
Grade	Topics	Example of items
1st, 2nd, and 3th	Need and want	Of the following items, which one is a need for a student? 
	Need priority	Gita goes to the store. Gita wants to buy a pencil box like his friend. However, he remembered that he ran out of books. What should Gita buy? 
	Earning money	What is his job?  A. Policeman; B. Teacher; C. Doctor; D. Accountant

Table 6 continued

Grade	Topics	Example of items
	Spending, saving, sharing	Do you think that Bank is a safe place to save money?
		
		One of the goals of saving is to achieve your long-term goals. Which of the following is your long-term goal?
		
		Which is the safest place to save?
		
4th and 5th	Need and want	At school Ani forgot to bring money for levy about $2. Noni, a friend of Ani, is willing to lend money. Ani also wants to buy ice cream at $1 price. How much money Ani should borrow from Noni?
		A. $3; B. $2; C. $4
	The priority needs	Arinda has $3 and wants to buy a book at $2 price. Arinda also wants to buy a toy car at $2 price. What should Arinda buy?
		A. A book
		B. A toy car
		C. A book and a toy car
		D. Buy nothing
	Earnings money	Mr. Dedi is An elementary teacher. Each month he earns $100 with spend for month need about $70. Mr. Dedi always save $30 to the bank. The money that always been saved by Mr. Dedi is called:
		A. Profit; B. Credit; C. Account; D. Budget; E. Have No Idea
	Spending, saving, sharing	The evidence of goods purchasing is called by…
		A. Bill; B. Statement of Account; C. Invoice; D. Cheque
		Adi wants to buy a bag about $60 by savings his money. He wants to save $10 per month. How long that Adi needs until e could buy a bag.
		A. 3 month
		B. 4 month
		C. 5 month
		D. 6 month
		E. Have no idea
5th and 6th	Need and want	At school, Ani forgot to bring a picture book and money. Noni, a friend of Ani, is willing to lend money. A picture book worths $1. Ani also wants to buy ice cream at $1 price. How much money should Ani borrow from Noni?
		A. $2; B. $1; C. $3; D. $5

Table 6 continued

Grade	Topics	Example of items
	Priority needs	What are the benefits of creating a personal budget?
		A. Control spending; B. Wasting time; C. Increasing income
	Earning money	What do teachers do?
		A. teach science; B. handle financial records; C. record expenses
		Which statement is true about the value of money…
		A. $10 at the present time is equal to $10 five years ago
		B. $10 at the present time is different from $10 five years ago
		C. Value of money does not changed The value of money is fixed
	Spending, saving, sharing	Which of the following is an investment product
		A. Food; B. Clothes; C. Shoes; D. Gold
		The following is not a function of banks.
		A. To save money; B. To lend money; C. For stock trading
		On January 1, 2015, Dodi saved $10 to the bank. The interest rate was 10% per year. How much is Dodi's money on January 1, 2016? Assuming the Bank does not charge administration fee.
		Which of the following is not a payment instrument?
		A. Credit card; B. Cash; C. Identification card; D. Cheque
		What are the functions of invoice?
		What is a stock?
		A. Type of security that signifies ownership in a corporation
		B. Type of loan
		C. Money transfers

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