

A Cross-Country Comparative Study on the Impact of Institutional Distance on Adolescents' Financial Literacy: Based on the PISA Database

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Abstract: As one of the core competencies of citizens, financial literacy is particularly important under the current global economic context, and adolescents' financial literacy is closely related to the future development of a country. Based on the financial literacy assessment data of the Programme for International Student Assessment (PISA) from 2012 to 2022, this paper takes Belgium, which ranks highest in comprehensive scores, as the benchmark country. The analysis shows that institutional distance has a strong inverted U-shaped relationship with the financial literacy of 15-year-old adolescents in participating countries. That is, as the institutional difference between a participating country and Belgium increases, adolescents' financial literacy first rises and then declines.

Keywords: Financial literacy; Institutional distance; PISA

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1. Introduction

Financial literacy is a combination of the awareness, knowledge, skills, attitudes and behaviors necessary to make rational financial decisions and ultimately achieve financial well-being. The level of financial literacy has become a key dimension of citizens' core competitiveness in the 21st century, and the improvement of adolescents' financial literacy is an inevitable requirement for the development of modern economic society. The environment in which adolescents grow up plays a key role in the formation of their financial literacy. The institutional environment of a country constitutes the most important macro-level element in the growth environment of adolescents ^[1].

Institutions are a set of rules that are unified at least within a specific society and restrict various behaviors of individual social members. Its impact on adolescents' financial literacy can be generally summarized in three aspects: in countries with more sound economic systems, especially market economic systems, adolescents have more opportunities to learn and contact knowledge related to finance and financial management in daily life; in countries with more sound education systems, adolescents are more likely to receive quality education including

financial literacy in the education process and can acquire more systematic and complete financial knowledge; in countries with more sound social welfare systems, adolescents receive higher education and more external contact, and their financial literacy will also improve accordingly ^[2]. In the current world environment with diverse institutions, the impact mechanism of the institutional environment on adolescents' financial literacy can be inferred by drawing on the research conclusions of the impact of institutional differences between countries on the financial literacy test scores of adolescents in that country ^[3].

In the entire economic research, financial literacy is a relatively new research object ^[4]. Most researchers believe that the current global financial literacy is generally at a low level, with significant gender, age, education and racial differences, as well as group and regional differences ^[5]. In subsequent studies, many scholars have conducted in-depth research on the formation mechanism of financial literacy in specific regions and groups based on status quo analysis, and most agree that family and education are the core influencing factors of financial literacy. Lusardi and Mitchell believe that family income, parental financial literacy and education level have a significant impact on adolescents' financial literacy. Kim and Lee (2024) found that the economic institutional environment plays a decisive role in the formation of individual financial literacy by comparing the financial literacy of native Koreans and North Korean defectors living in South Korea, and it is mainly affected by the institutional environment received in early life ^[6].

At present, there is a large gap in cross-country research on financial literacy worldwide. Meanwhile, when exploring the impact of various factors on adolescents' financial literacy, traditional studies are mostly limited to the background of a single country or region, and the role of the institutional environment is often ignored ^[7]. However, the institutional environment can guide or regulate adolescents' behaviors in various ways, thereby affecting their financial literacy. To study the impact of institutions on adolescents' financial literacy, it is necessary to first confirm which institutions have a more positive effect, so as to find out the advantages, disadvantages, similarities and differences of various countries at the institutional level through comparison, learn from each other, and build and improve their own institutions ^[8].

2. Research design

2.1. Data sources and variable description

To explore the level of adolescents' financial literacy in various countries, this paper selects the PISA financial literacy test scores of 15-year-old adolescents from 18 countries and regions obtained from four PISA tests in 2012, 2015, 2018 and 2022, and takes the mean value of all reasonable values of individual students (PV_FLIT) as the final dependent variable indicator. PISA is a large-scale international education assessment program initiated by the Organisation for Economic Co-operation and Development (OECD) ^[9].

In terms of institutional distance, this paper uses the Worldwide Governance Indicators (WGI) database of the World Bank to calculate the formal institutional distance between countries $distance_{ks_{it}}$ ^[10]. This indicator measures governance quality in six dimensions and is mostly used to assess the governance level of countries around the world ^[11].

Based on the comprehensive ranking of the average scores of adolescents' PISA financial literacy tests in many countries over the years, this paper selects Belgium as the benchmark country. The institutional distance between each country and the benchmark country Belgium is calculated according to the formula of Kogut and Singh (1988).

Since the model constructed in this paper contains quadratic terms, to alleviate the multicollinearity problem, this paper further centers the formal institutional distance, and the obtained centered institutional distance $inst_center_{it}$ represents the de-meaned value of the formal institutional distance of the country where student i is located in year t ^[12].

Based on the core explanatory variables, the control variables selected in this paper include: student gender (GENDER), student age (AGE), mathematical literacy (PV_MATH), student bank card holding status (CARD), student bank account holding status (ACCOUNT), school independent financial course offering status (FLSCHOOL), school interdisciplinary financial course participation status (FLMULTI), family economic, social and cultural status index (ESCS), and the logarithm of per capita GDP of the country where the student is located (LPGDP).

2.2. Model construction

To explore the empirical relationship between individual financial literacy and national institutional distance, this study sets the following benchmark regression model:

$$PV_FLIT_{it} = \beta_0 + \beta_1 \times inst_center_{it} + \beta_2 \times inst_center_{it}^2 + \gamma \times Controls_{it} + \delta \cdot Year_FE + \varepsilon$$

Where PV_FLIT_{it} represents the average financial literacy score of student i in year t ; $inst_center_{it}$ is the core explanatory variable, representing the centered formal institutional distance between the country where student i is located and Belgium in year t ; $inst_center_{it}^2$ is the quadratic term of institutional distance; $Controls_{it}$ is a set of control variables; $Year_FE$ is the year fixed effect; and ε_{it} is the random error term.

3. Empirical analysis

3.1. Benchmark regression results

To test the nonlinear relationship between institutional distance and adolescents' financial literacy, this paper uses the regression model for benchmark regression analysis, and the results are shown in **Table 1**. It shows that the coefficients of the primary and quadratic terms of institutional distance are both significantly negative at the 1% level, indicating that there is a significant inverted U-shaped relationship between institutional distance and adolescents' financial literacy. That is, as institutional distance increases, adolescents' financial literacy first rises and then declines ^[13]. This result suggests that moderate institutional differences may bring positive institutional spillover effects, but when institutional differences exceed the threshold, an excessive institutional gap will inhibit the development of adolescents' financial literacy. The inflection point is calculated to be at an institutional distance of 0.34, which is approximately to the left of the original sample mean, indicating that most samples are in the declining stage of the inverted U-shaped curve. In terms of control variables, the coefficient of logarithmic per capita GDP is significant at the 1% level, indicating that adolescents in countries with higher economic development levels perform better in financial literacy ^[14].

Table 1. Benchmark regression results

PV_FLIT	Coef.	Sig
inst_center	-11.7116	***
inst_center2	-269.9073	***
LPGDP	6.0159	***
FLMULTI	.8349	***

Constant	-98.5238	***
Observations	130,392	
F-test	31919.02***	
R-squared	0.798	

Note: Year and other variables are controlled. *** $p < 0.01$

3.2. Heterogeneity analysis

To further explore the heterogeneous impact of institutional distance on adolescents' financial literacy, this paper divides the sample into two groups: developing countries (DEVELOPED=0) and developed countries (DEVELOPED=1) for sub-sample regression, and the results are shown in **Table 2**. Institutional distance and financial literacy both show a significant inverted U-shaped relationship in both groups of samples, but there are differences in curve shape and inflection point position. In the developing country group, the institutional distance inflection point is higher than the sample mean, indicating that most developing countries are in the rising stage of the inverted U-shaped curve, and a moderate expansion of institutional distance is still helpful to improve adolescents' financial literacy. In the developed country group, the inflection point is lower than the sample mean, indicating that most developed countries have crossed the inflection point and are in the declining stage of the inverted U-shaped curve, and further expansion of institutional distance will inhibit the development of adolescents' financial literacy^[15].

Table 2. Heterogeneity analysis results

Variables	Developing	Developed
inst_center	58.372***	-9.625***
inst_center2	-524.786***	-225.028***
LPGDP	-2.422***	13.342***
Constant	-53.300***	-138.740***
Observations	46,924	83,468
R-squared	0.823	0.761
F-statistic	15380.14***	15027.97***

Note: Year and other variables are controlled. *** $p < 0.01$

4. Conclusion

The empirical study of this paper finds that there is a significant inverted U-shaped relationship between institutional distance and adolescents' financial literacy. This means that moderate institutional differences help to introduce advanced educational concepts and financial practices, thereby promoting the improvement of financial literacy; however, when institutional differences are too large, information asymmetry intensifies and the compatibility of the education system decreases, which instead produces an inhibitory effect. This relationship shows significant heterogeneity in countries at different development levels: in developing countries, most samples are still in the rising stage of the curve, and there is still positive space for institutional reference; while in developed countries, most samples have crossed the inflection point and entered the declining stage, and simple transplantation of other countries' institutions may be counterproductive.

Disclosure statement

The author declares no conflict of interest.

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