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## THE EXAMINATION OF FACTORS AFFECTING FINANCIAL INCLUSION IN ASIAN COUNTRIES

### Summary

**Purpose** | The aim of the paper is to examine the impact of economic and non-economic factors on financial inclusion in Asian countries. The factors were covered at macro level (GDP per capita, population density, and unemployment rate), at micro level (Domestic Credit provided by sector as a percent of GDP), and at meso level (the mobile phone penetration).

**Research method** | The fixed effect model (FEM) and the random effects model (REM) were used to quantify the effect of independent variables on financial inclusion. FEM was chosen in this article based on the Hausman test results.

**Results** | The article has given conclusions as follows: (i) GDP growth, domestic credit, and mobile phone penetration have a significant positive effect on financial inclusion; (ii) there is a negative effect of population density, contrary to most studies; (iii) as in other studies, the unemployment rate has the negative impact on financial inclusion.

**Originality/value/implications/recommendations** | The study has included different types of independent variables. In addition to the unemployment rate, population density, domestic credit and GDP growth rate, the impact of mobile phone penetration on financial inclusion was examined. The evolution of mobile telecommunications has become a central point of public policy debate due to the key role it plays in improving living standards, financial inclusion and economic growth.

**Keywords:** financial inclusion, GDP, mobile phone penetration, unemployment, domestic credit, population density

**JEL classification:** G20, O10, F63

## 1. Introduction

Financial inclusion is rapidly gaining traction as a key driver of long-term sustainable economic growth and it is critical in both the financial market and in the reduction of poverty and inequality. According to what Worldbank [2020] noted, financial inclusion makes life convenient and helps families and businesses prepare for anything from long-term objectives to unforeseen emergencies. Financial institutions have a tremendous force to extend access to financial services in order to have timely provision for consumers currently [Demirgüç-Kunt et al, 2018].

There are three main research gaps which will be discussed. The first is that the number of reports analysing factors affecting financial inclusion of Asian countries is not sufficient and complete. Especially, since the rapid growth of mobile phone penetration, when smartphones and apps are developing significantly, there is still a lack of empirical studies on the impact of mobile phone penetration on financial inclusion in Asia. Although, many Asian countries are paying attention to financial inclusion, getting an article that covers the entire region can help policymakers develop more effective and appropriate solutions for their countries. Secondly, the reports are still not up to date in terms of time and other related factors, particularly for the articles with the same topic concern about Asian countries. Thirdly, the majority of articles, when analysing the use of cross-section data, may not provide the most objective approach as well as recommendations to improve financial inclusion by using the data panel.

This study evaluates the drivers of financial inclusion in a sample of 25 out of 48 Asian countries between 2009 and 2019, which includes both developing and less developed countries. The countries on the list are satisfied with a condition that there are no shock effects or crisis affecting the economy during the research period. Moreover, the total number of countries is more than half of all the countries in Asia, so it is possible to represent the economic situation of Asia during this period.

## 2. Financial inclusion concepts and measurements

Financial inclusion is defined as a process of conducting poorer and marginalised members of society into the framework of a structured financial system to ensure that they have access to various financial services at an affordable price [Sarma, 2008; Chithra and Selvam, 2013; Sanderson, Mutandwa and Le Roux, 2018; Ozili, 2018]. Demirgüç-Kunt, Klapper and Singer [2017] argue that financial inclusion ensures complete accession to secure financial products and services like payments, saving credit or insurance for not only the poverty but also for all individuals or firms. These financial services must be provided by formal financial institutions (MFIs), which are secure and with effective financial instruments in a transparent regulatory environment [Beck et al., 2007].

Levine et al. [2000] emphasised that financial sector development and economic growth have a dynamic link within some exogenous components. The mutual subordinate between financial innovation and economic development was empirically elaborated by King and Levine [1993]. They denoted that financial institutions mitigate the social cost of intangible capital investment by evaluating, tracking, and providing financing services. Montiel [1995] also argued that economic growth can be implicated by innovation in the financial development that improves the efficiency of intermediation, hence increasing the marginal product of capital and raising the savings rate.

Naumenkova, Mishchenko and Dorofeiev [2019] argued that access, quality, and usage, which are based on qualitative and quantitative indicators, are the basis for measuring financial inclusion. To be able to measure it

appropriately and to provide high accuracy for financial inclusion, it is essential to understand the context and framework [Chakrabarty, 2012]. For Chakrabarty's [2012] point of view, a structure for financial inclusion must consider a variety of factors, including supply and demand side issues; an evaluation of the enabling environment; penetration issues; and barriers to financial inclusion. Based on the theoretical framework above and on the Human Development Index, the equation which is the most common was introduced by Sarma [2008]. The proposed FII accepts values between 0 and 1 (0 – complete financial exclusion, 1 – complete financial inclusion). A general formula is as follows:

$$FII_i = \frac{\sqrt{(1-d_1)^2 + (1-d_2)^2 + (1-I_n)^2}}{\sqrt{n}},$$

where:

$$d_i = \frac{A_i - m_i}{M_i - m_i}$$

$A_i$ ,  $M_i$ ,  $m_i$  – actual value, minimum value, and maximum value of dimension  $i$ .

Three dimensions would be based on three factors: banking penetration, availability, and usage of banking services.

### 3. Determinants of financial inclusion

#### 3.1. Gross Domestic Product (GDP)

Empirical studies have acknowledged the relationship between GDP per capita and financial inclusion. This is appropriate with both Asia and Africa region, including at an international level [Park and Mercado, 2015; Kim, Yu and Hassan, 2018; Van et al., 2019]. The research by Van et al. [2019] provided a comprehensive insight between financial inclusion and economic growth at the international level, especially in emerging markets. They pointed out a positive two-way relationship. Admittedly, Wang and Guan [2017] reveal that the level

of income, education, and use of communication facilities by individuals play a vital role in explaining the degree of financial inclusion of a country.

Opposed to the previous literature, Demirgüç-Kunt and Klapper, [2012] found that assessing the relationship between financial inclusion and economic growth still has a number of hurdles leading to a lack of objective and clear insight. The first is that ambiguity has recently emerged in the economic policies of many countries where diversification of initiatives toward inclusion is carried out.

### 3.2. Population density

Using the database of household surveys and Public Financial Institutions, Honohan [2008] showed a positive relationship between financial inclusion and population intensity. Nevertheless, the correlation between the two variables is significantly lower than the meso variable such as the quality of institutions. However, there are still many research papers assessing the importance of this variable [Allen et al., 2014]. However, the correlation between the two variables is still ambiguous

### 3.3. Unemployment rate

Most reports have drawn the conclusion that the unemployment rate will have a significant negative effect on financial inclusion [Babych and Grigolia, 2018; Loukoianova et al.'s, 2018; Wokabi and Fatoki, 2019]. The most recent one can mention Le et al. [2019] article when evaluating determinants of financial inclusion using panel data with Asian countries within 5 years.

### 3.4. Domestic credit

Gebrehiwot and Makina [2015] appraised the determinants of financial inclusion in specified Asian countries which used panel data and picked out the domestic credit provided by the sector as a percent of GDP is a significant factor explaining the level of financial inclusion in Asia. In turn, Evans and Adeoyd [2016], on the basis of the research conducted in 15 African countries between 2005 and 2014, found that the relationship between domestic credit

and financial integration does not necessarily need to be taken into account. Moreover, Demirgüç-Kunt and Klapper [2013] argue that consumer credit does not necessarily correlate to the broad use of financial services, as credit can be concentrated between the major industries and the wealthiest individuals.

### 3.5. Socio-demographic factors

Gender is a factor to be noted in the literature on the impact of financial inclusion. Swamy [2014] has shown that gender dimension is one of the factors directly affecting the financial ability of the poor, especially of women. This is also the view of Arnold and Gammage [2019]. On the other hand, El-borh-Woytek et al. [2013] evaluated that this variable is inconclusive. Due to the complicated gender difference, it is assessed that this relationship should be measured more cautiously and the measurement data on financial inclusion between countries over time for gender is insufficient to reliably measure it. In addition, different measures of financial inclusion are significantly correlated with different socio-demographic variables, such as age, household income, education, and population, that the highest incentives can be attributed to the targeted financial education [Demirgüç-Kunt and Klapper, 2012; Akudugu, 2013; Chithra and Selvam, 2013; Zins and Weill, 2016; Loukoianova et al., 2018; Sayed and Shusha, 2019]. For the recent research about determinants of financial inclusion in Asian countries, Le et al. [2019] argued that there are only four out of twelve components which are suitable for this case: GDP growth rate, income, the literacy rate, and the unemployment rate.

### 3.6. Mobile phone penetration

Cell phone distribution has the ability to improve financial inclusion by making it easier for the poor and for the non-poor to access cost-effective financial services. Waverman, Meschi and Fuss [2005], examining the impact of telecommunications in Africa, found positive correlation between financial inclusion and mobile phone penetration. This result is similar to Honohan's [2008] who examined 162 countries and found that the growing use of mobile phones has led to the advent of branchless banking services in developing countries. Moreover, Andrianaivo and Kpodar, [2011], when considering a dataset of African countries during 1988–2007, found that greater availability for underserved

people to financial services helps to narrow the gap in financial infrastructure, especially in developing countries, where the cost of distance and time for formal banking services is very high. Ghosh [2018] has also provided evidence from the experience of countries such as South Africa, Zambia, and Kenya that mobile financial services can help decrease the gap in financial infrastructure and the lack of access to financial services in Africa.

**TABLE 1**

Summary of the literature review

| Variables                         | Indicators                                              | Expected sign  | References                                                                                       |
|-----------------------------------|---------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------|
| Economic growth                   | GDP per capita                                          | +              | Gebrehiwot and Makina [2015]; Sarma and Pais [2011]                                              |
| Domestic Credit to private sector | Domestic credit provided by sectors as a percent of GDP | +              | Gebrehiwot and Makina [2015]; Al-Smadi [2018]                                                    |
| Population density                | Population density                                      | + / –          | Andrianaivo and Kpodar [2011]; Allen et al. [2014]                                               |
| Mobile phone penetration          | Mobile cellular subscriptions (per 100 people)          | +              | Gebrehiwot and Makina [2015]; Andrianaivo and Kpodar [2011]                                      |
| Bank branches                     | Bank branches per 100,000 adults                        | +              | Andrianaivo and Kpodar [2012]; Ongo Nkoa and Song [2020]                                         |
| Unemployment                      | Unemployment rate                                       | -              | Babych and Grigolia [2018]; Loukoianova et al. [2018]; Wokabi and Fatoki [2019] Le et al. [2019] |
| Gender                            | Gender                                                  | Dummy variable | Akudugu [2013]; Chithra and Selvam [2013]; Zins and Weill [2016]                                 |
| Income                            | Salary                                                  | +              | Kendall, Mylenko and Ponce [2010]; Demirgüç-Kunt and Klapper [2013]; Le et al. [2019]            |
| Literacy                          | Adult literacy rate                                     | +              | Ramji [2009]; Al-Smadi, [2018]; Sayed and Shusha, [2019]                                         |

Source: the Authors' summary from literature review.

#### 4. Research methodology

The data set used to measure financial integration was obtained from the International Monetary Fund (IMF) and the World Bank. The data set covers 25 Asian countries from 2009 to 2019 and refers to panel data. The independent variables were divided into 3 aspects: macro level (GDP per capita, population density, and unemployment rate), micro level (Domestic Credit provided by sector as a percent of GDP), and meso level (the mobile phone penetration).

The study adopts the approach of Sarma [2015] to calculate the dependent variable. It is determined as follows:

$$FII_i = \frac{1}{2} \left[ \frac{\sqrt{(I_b^2 + I_c^2 + I_d^2)^2}}{\sqrt{n}} + \left( 1 - \frac{\sqrt{(1 - I_b)^2 + (1 - I_c)^2 + (1 - I_d)^2}}{\sqrt{n}} \right) \right],$$

where:

$I_b$  – commercial bank branches per 100,000 adults (supply side)

$I_d$  – deposit account with commercial banks per 1,000 adults (demand side)

$I_c$  – outstanding deposits at a commercial bank as% GDP (demand side)

$n$  – the number of dimensions (3).

From literature review, the following research model is applied for this paper:

$$FII_{it} = \beta_0 + \beta_1(GDP\_growth_{i,t}) + \beta_2(POP_{i,t}) + \beta_3(UNEMP_{i,t}) + \beta_4(DCredit_{i,t}) + \beta_5(Mobile_{i,t}) + \varepsilon$$

In this article, using panel data, two estimation techniques are discussed: the fixed effects model (FEM) and the random effects model (REM).

The Hausman test was conducted to determine the use of fixed or random effects [Baltagi, 2008]. The FEM model was selected. Heteroscedasticity, multicollinearity, and autocorrelation tests were also used to determine the suitability of FEM.

The description of the variables and the hypotheses are given in Table 2.

**TABLE 2**

Variables and hypotheses for the research

| Variable                                               | Notation   | Source                            | Expected sign | Hypothesis                                                                                        |
|--------------------------------------------------------|------------|-----------------------------------|---------------|---------------------------------------------------------------------------------------------------|
| Dependent variable                                     |            |                                   |               |                                                                                                   |
| Financial inclusion index                              | FI         | IMF and the authors' calculations |               |                                                                                                   |
| Independent variable                                   |            |                                   |               |                                                                                                   |
| Gross Domestic Product growth rate                     | GDP_growth | DWI                               | +             | H1: Economic growth and FI have positive relationship                                             |
| Population density                                     | POP        | DWI                               | +             | H2: Population density has a positive impact on financial inclusion                               |
| Unemployment rate                                      | UNEMP      | DWI                               | –             | H3: Unemployment rate has a negative impact on financial inclusion                                |
| Domestic Credit provided by sector as a percent of GDP | DCredit    | DWI                               | +             | H4: Domestic credit provided by sector as a percent of GDP impact on FI has positive relationship |
| Mobile cellular subscriptions (per 100 people)         | Mobile     | DWI                               | +             | H5: Mobile phone penetrations are significant and positively associated with FI                   |

Source: the Authors's choice from literature review and local knowledge

## 5. Results and discussion

Descriptive statistics of variables are shown in the Tables 3 and 4.

**TABLE 3**

Summary statistics of the dependent variable – FI

| Countries            | Mean    | Standard Deviation | Coefficient of variation | Minimum | Maximum |
|----------------------|---------|--------------------|--------------------------|---------|---------|
| Afghanistan          | 0.20785 | 0.00875            | 4.21%                    | 0.2007  | 0.22588 |
| Nepal                | 0.22464 | 0.00488            | 2.17%                    | 0.21477 | 0.23025 |
| Yemen                | 0.24555 | 0.02963            | 12.07%                   | 0.21781 | 0.29826 |
| Pakistan             | 0.24698 | 0.00833            | 3.37%                    | 0.23432 | 0.25744 |
| Bangladesh           | 0.24983 | 0.02924            | 11.70%                   | 0.20144 | 0.30329 |
| Myanmar              | 0.26854 | 0.04026            | 14.99%                   | 0.20018 | 0.35399 |
| Vietnam              | 0.28267 | 0.01389            | 4.91%                    | 0.26208 | 0.3027  |
| Uzbekistan           | 0.29777 | 0.02941            | 9.88%                    | 0.26711 | 0.38138 |
| India                | 0.30304 | 0.04932            | 16.28%                   | 0.26081 | 0.39955 |
| Philippines          | 0.30307 | 0.02217            | 7.32%                    | 0.26611 | 0.34083 |
| Bhutan               | 0.30733 | 0.01582            | 5.15%                    | 0.26812 | 0.32956 |
| Jordan               | 0.34545 | 0.01277            | 3.70%                    | 0.33712 | 0.3782  |
| Turkey               | 0.36387 | 0.07555            | 20.76%                   | 0.21645 | 0.47902 |
| Indonesia            | 0.36597 | 0.04406            | 12.04%                   | 0.31634 | 0.46826 |
| Georgia              | 0.36779 | 0.03014            | 8.19%                    | 0.3172  | 0.39598 |
| Thailand             | 0.39496 | 0.02693            | 6.82%                    | 0.31531 | 0.41011 |
| Lebanon              | 0.40419 | 0.05066            | 12.53%                   | 0.26509 | 0.4684  |
| Maldives             | 0.40497 | 0.04948            | 12.22%                   | 0.26981 | 0.47909 |
| Oman                 | 0.41297 | 0.00543            | 1.31%                    | 0.40121 | 0.41708 |
| Saudi Arabia         | 0.42051 | 0.00708            | 1.68%                    | 0.40167 | 0.42623 |
| Malaysia             | 0.43107 | 0.09032            | 20.95%                   | 0.25724 | 0.4885  |
| Korea, Rep.          | 0.43724 | 0.00807            | 1.85%                    | 0.42213 | 0.4469  |
| Brunei Darussalam    | 0.44629 | 0.01121            | 2.51%                    | 0.43502 | 0.4681  |
| United Arab Emirates | 0.46052 | 0.00836            | 1.82%                    | 0.44703 | 0.46821 |
| Japan                | 0.48966 | 0.01071            | 2.19%                    | 0.46838 | 0.50197 |

Source: the Authors' compilation from secondary data

**TABLE 4**

Descriptive Statistics

| Variables  | Mean      | Standard Deviation | Coefficient of variation | Minimum    | Maximum   |
|------------|-----------|--------------------|--------------------------|------------|-----------|
| FII        | 0.3473098 | 0.0869506          | 25.0%                    | 0.2001815  | 0.501968  |
| GDP_growth | 0.0252351 | 0.0255457          | 101.2%                   | -0.1161105 | 0.0897488 |
| POP        | 269.6525  | 352.3073           | 130.7%                   | 9.293008   | 1718.987  |
| UNEMP      | 8.116776  | 5.348315           | 65.9%                    | 1.123      | 31.45     |
| DCredit    | 80.39648  | 48.54768           | 60.4%                    | 3.472177   | 174.7243  |
| Mobile     | 112.2271  | 36.5183            | 32.5%                    | 0.999008   | 221.46    |

Source: the Authors' compilation from secondary data.

We observe that 32% of countries in Asia fall into the lowest group of FII (below 0.3), 44% into medium (0.3–0.43), and 24% into large (above 0.43). The results are comparable to those reported by Le et al. [2019] and Gebrehiwot and Makina [2015]

Table 5 presents the correlation coefficients for the independent variables. The results indicate that the independent variables are insignificantly related to one another.

**TABLE 5**

Correlation matrix

|            | GDP_growth | POP     | UNEMP   | DCredit | Mobile |
|------------|------------|---------|---------|---------|--------|
| GDP_growth | 1.0000     |         |         |         |        |
| POP        | 0.0346     | 1.0000  |         |         |        |
| UNEMP      | -0.1332    | -0.0383 | 1.0000  |         |        |
| DCredit    | 0.1786     | -0.0255 | -0.6860 | 1.0000  |        |
| Mobile     | 0.2880     | 0.0365  | -0.5945 | 0.7432  | 1.0000 |

Source: the Authors' compilation from secondary data.

**TABLE 6**

Multicollinearity test

| Variable   | VIF  | 1/VIF    |
|------------|------|----------|
| DCredit    | 2.84 | 0.351560 |
| Mobile     | 2.45 | 0.408184 |
| UNEMP      | 1.96 | 0.510852 |
| GDP_growth | 1.10 | 0.913109 |
| POP        | 1.01 | 0.987986 |
| Mean VIF   | 1.87 |          |

Source: the Authors' compilation from secondary data.

Table 7 shows the results of the Hausman and the Wooldridge tests. The results indicate that FEM takes precedence over REM and there is no first-order autocorrelation.

**TABLE 7**

Test results

|                             |                                                                                                                                                                                                       |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hausman test result         | Test: Ho: difference in coefficients not systematic<br>$\chi^2(5) = (b-B)' [(V_b - V_B)^{-1}] (b-B)$<br>= <b>215.84</b><br>Prob > $\chi^2$ = <b>0.0000</b><br>( $V_b - V_B$ is not positive definite) |
| Autocorrelation test result | Wooldridge test for autocorrelation in panel data<br>H0: no first order autocorrelation<br>$F(1, 24) = \mathbf{3.454}$<br>Prob > F = <b>0.754</b>                                                     |

Source: the Authors' compilation from secondary data.

The regression results are presented in Tables 8 and 9. The Fixed Effects Model is statistically significant at the 1% level of significance and it confirms significant relationship between independent variables and the FI.

**TABLE 8**

Fixed effect regression result

| Independent variables | Coefficient   | Standard error | P-value |
|-----------------------|---------------|----------------|---------|
| GDP_growth            | 0.3221856**   | 0.1231268      | 0.015   |
| POP                   | -0.0000415**  | 0.0000178      | 0.028   |
| UNEMP                 | -0.0025102*** | 0.0005756      | 0.000   |
| DCredit               | 0.0004446***  | 0.0001335      | 0.003   |
| Mobile                | 0.0003309**   | 0.0001229      | 0.013   |
| _cons                 | 0.2979399***  | 0.0185092      | 0.000   |
| Overall R-square      |               | 0.6889         |         |
| F-test                |               | 0.0000         |         |

\* p &lt; 0.05

\*\* p &lt; 0.01

\*\*\* p &lt; 0.001

Source: the Authors' compilation from secondary data.

**TABLE 9**

Summary of the hypothesis and the results

| Variables                  | GDP growth | Population density | Unemployment rate | Domestic Credit | Mobile phone penetration |
|----------------------------|------------|--------------------|-------------------|-----------------|--------------------------|
| Expected sign (Hypothesis) | +          | +                  | -                 | +               | +                        |
| Actual sign                | +          | -                  | -                 | +               | +                        |
| Conclusion                 | Support    | Not support        | Support           | Support         | Support                  |

Source: the Authors' compilation.

## 5.1. Discussions of regression result

### Gross domestic product

GDP has a positive impact on the increase of financial inclusion. This is also consistent with Le et al. [2019], Evans and Alenoghena [2017], David et al.

[2018], as well as Nizam et al. [2020] results. In the case of Asia, economic growth increases people's opportunities to use financial services more effectively, as individuals and businesses increase their revenue, expenditures, and payment. Similarly, as more individuals and businesses gain access to the capital market, the GDP annual growth boosts up.

### **Population density**

Population density brings a negative impact on financial inclusion. The sign of this variable differs from what was intended previously. This result stands in contrast to Kumar [2013] for finding the determinants of financial inclusion in India, Chikalipah [2017] for the case in Sub-Saharan Africa or especially when the Allen et al. [2014] examine the financial growth and financial inclusion disparities in Africa in comparison to other peer developing countries. It can be explained by the fact that some Asian countries have areas with extremely high population density but still have relatively low financial literacy and financial infrastructure.

### **Unemployment rate**

Similar to Sarma and Pais [2011], Chithra and Selvam [2013], Le et al.'s [2019], the unemployment rate is a negative determinant of financial inclusion. When the unemployment rate rises, job opportunities for individuals decline. As a result, employees are not compensated by from bank accounts.

### **Domestic credit**

The coefficient of domestic credit was positively associated with financial inclusion. When a bank makes the increase of the lending or credit available for the borrowers, the value of financial inclusion becomes greater. This result is consistent with Chithra and Selvam's [2013], who examined the impact of deposit and credit penetration on India's financial inclusion, as well with Evans and Alenoghena's [2017], who investigated micro, small, and medium-sized businesses in Africa. National bank regulators must coordinate broadly at the international level and take appropriate steps to ensure credit availability.

## Mobile phone penetration

The mobile phone penetration variable is found to be positive and statistically relevant, meaning that mobile infrastructure has a profound effect on financial inclusion. Its beneficial effects derive not only from the increased access to financial services but also from the fact that it connects communities to a broader network of service providers. As people use their phones more, their access to financial information is also more diverse. Diverse advertising, the use of mobile money, social network, and mobile banking will improve the FII. These findings corroborate those of Andrianaivo and Kpodar [2012], who examined the effect of cell phones on economic growth in a sample of African countries from 1988 to 2007. Beck, Demirgüç-Kunt and Honohan [2009] found a similar finding, stating that owning a mobile phone increased one's probability of using financial services in Kenya.

## 6. Conclusions

The paper confirms that GDP growth, domestic credit, and mobile phone penetration have a positive effect on financial inclusion, while the unemployment rate has a negative effect. This is consistent with most other studies, with the strongest impacts from GDP growth – as Asian countries have had the highest GDP growth rates worldwide in recent years. In contrast to other researches, it is noted that the population negatively affects the growth. This newness of the findings for Asian countries can be explained by digital infrastructure that has been significantly developed in rural and remote areas.

The recommendations for institutions and companies are the added value of the research. In order to increase financial inclusion, different businesses need to work together. Companies need to collaborate with providers of financial platforms, such as money mobile or banks which are suitable for customers' needs. Moreover, financial institutions should ensure inclusive financial networks, such as bank branches and credit cooperatives, in order to assist citizens in accessing the financial environment to the maximum extent possible. Additionally, financial services products must be diverse and

continuously updated, all the more so given Asia's rapid growth rate. Adoption and innovation of digital 4.0 would increase product and service diversification and efficiency.

What is more, policymakers have a critical role to play in enhancing the factors affecting financial inclusion. They are critical in promoting an inclusive financial sector on a national and international scale. Both statistically significant independent variables in the models are at the macroeconomic stage, where policymakers exert a strong impact. Thus, in order to encourage successful financial inclusion, policymakers must focus on fostering economic growth and minimise unemployment. Additionally, they can increase literacy, particularly in primary education, in order to encourage more prudent financial services.

Along with data assessment and interpretation, the article has some limitations. Firstly, it did not cover all Asian countries due to numerous difficulties and shortcomings in the data collection process. The lack of comprehensive data, especially from China, results from its inaccuracy and concerns about reality. For example, unemployment rates, especially among people in rural areas, are considered to be imprecise. Moreover, some data were inconsistent and insufficiently transparent. Secondly, the number of independent variables can be expanded to include other factors influencing financial inclusion. There are several additional independent variables listed in other authors' papers on the same topic, but they are not covered in this article due to a lack of data.

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