



The Mutual Interdependence between Financial Inclusion and Human Development and Their Effects on Economic Development: Comparative Study between Egypt and The BRICS Countries

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Abstract

This study examines the forward and backward relationships between human development and financial inclusion and their ultimate effects on the process of economic development in Egypt and the BRICS countries. The response of deposits and private credit to domestic savings and the response of private credit to deposits will be used as financial indicators of the status of financial inclusion. Human Development Index and its sub-indices will be used as indicators of the development of human factor. Finally, the state of economic development will be represented here by unemployment, income inequity, and poverty. Panel data and Ordinary Least Squares techniques will be used to analyze annual data from the year 2000 to the year 2018 in the BRICS countries and Egypt.

The study found that, in the BRICS countries, there is a mutual interdependence relationship between human development and financial inclusion in the interest of economic development; however, the spread of inequity in education and income may spoil this relationship. In Egypt, thanks to the spread of inequity in education and income, human development and financial inclusion work in two opposite directions, which may result in undesirable repercussions for the state of economic development.

Keywords: Financial inclusion, human development, Economic development, BRICS, Egypt.

JEL: D14, G20, O11, O15.

Introduction

One of the recognized facts in economics is that the number of executed transactions through different markets promotes the process of economic growth in any economy, and when these transactions spread over a considerable number and categories of citizens, the fruits of economic growth prevail and economic development efficiently occurs. In this regard, the link between product markets and factors of production markets, in general, and capital market, in particular, makes the issue of financial inclusion of a great importance and impact on both economic growth and development, where financial inclusion promotes the efficiency of financial markets. Effective financial markets significantly absorb the domestic savings and make the financial services available to different categories in the economy. This makes the efficiency and stability of the financial market major catalysts for achieving a successful economic development (Babajide et al., 2015; Gounasegaran et al., 2013; Cull et al., 2012; Klapper et al., 2006; Beck et al., 2000).

Based on the mutual interdependence between product markets and factors of the production markets, the development of the human factor can promote the process of doing transactions, economic growth, and

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economic development. Qualifying the human factor educationally and healthily would increase the demand for labor in the labor market, promote financial literacy, increase the pool of domestic savings, and encourage access to various financial services. Accordingly, it can be said that human development is a complement factor in supporting the status of financial inclusion (Sarma and Pais, 2011). Despite the level of income is critical in promoting the status of financial inclusion (Kunt and Klapper, 2013); however, it can't be taken as a mono catalyst for financial inclusion, where China has a low level of per-capita income relative to the other BRICS countries; however, it occupies a relatively advanced position regarding the status of financial inclusion among the BRICS countries, where education found with great positive impact on the status of financial inclusion as well (Fungáčová and Weill, 2014; Piñeyro, 2013); thus, the indices of human development have a combined active effect on the status of financial inclusion (Fungáčová and Weill, 2014).

Regarding the determinants of the status of financial inclusion, several observations have been acted as indicators of the status of financial inclusion. Ownership of formal accounts in different financial institutions is considered the primary indicator of financial inclusion (Kunt and Klapper, 2013). After the primary indicator of the status of financial inclusion was exposed to a number of criticisms, other measures and indicators have been developed to serve this issue. In some studies, the number of bank branches and the amount of credit supplied by the financial sector were considered indicators of the status of financial inclusion (Iqbal and Sami, 2017); In other studies, the ratio of aggregate deposits to GDP has been considered an indicator of the status of financial inclusion (Das et. al, 2013; Han and Melecky, 2013). Moreover, other studies used the weight of the underground economy as an indicator of the status of financial exclusion in the economy (Affandi and Malik, 2020).

Study Problem

One of the reasons that may stand behind the increase in the magnitude of the underground economy in several countries over the world is the weak institutional framework in these countries (Medina and Schneider, 2018). Inefficient financial inclusion is considered one important type of weakness of the institutional framework, where it contributes to the spread of informal activities in the economy; moreover, it contributes to depriving a large number of citizens of benefiting from financial services and contributing to the GDP, reaping the fruits of this contribution, and ultimately increases the status of poverty, unemployment, and income inequity, and impedes the process of economic development as a whole.

Despite the efforts made by Egypt and the BRICS countries on improving the human factor; however, these efforts have had differentiated effects on the state of economic development in these economies. This raised inquiries regarding the mutual effect of financial inclusion and human development on each other and how these relationships affect the state of economic development. In other words, are human development and financial inclusion complementary to each other in the interest of economic development?

Study Objectives and Layout

This study tries to examine the forward and backward relationships between human development and financial inclusion and their ultimate effects on the process of economic development in Egypt and the BRICS countries. Human Development Index represents the development of human factor while the status of financial inclusion is represented by deposit and credit transactions; finally, the status of economic development will be represented here by three indicators: unemployment, income inequity, and poverty, as depicted in figure (1).

Study Hypothesis

The indices of human development and the indicators of financial inclusion support each other in the interest of economic development in Egypt and the BRICS countries.

Study Methodology

Panel data and Ordinary Least Squares techniques will be applied to analyze annual data on the indices of human development and deposit and credit transactions from the year 2000 to the year 2018 in the BRICS countries and Egypt.

The Scope of the Study

This study covers the period 2000-2018 in Egypt and the BRICS countries, where they are all emerging countries with different experiences and achievements of human and economic development.

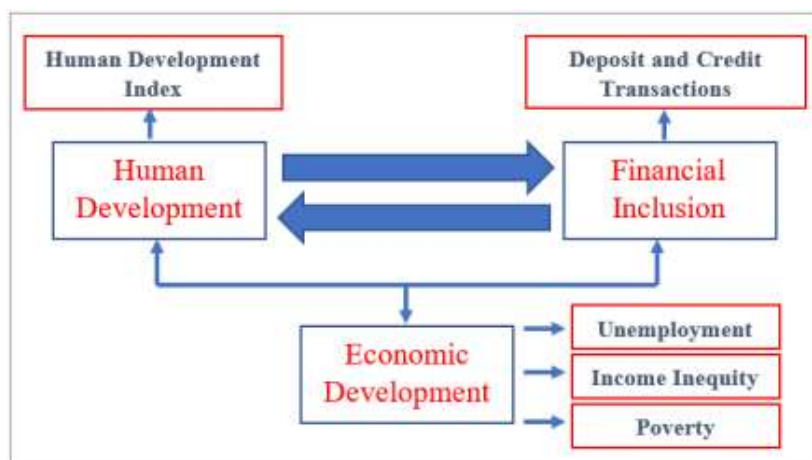


Figure (1): The Study Layout

Sources of Data

Data are collected from two main sources: World Bank (World Development Indicators Data Base), and United Nations Development Programme (Human Development Reports).

Research Plan

- Section (1): Introduction.
- Section (2): Literature Review.
- Section (3): The Relationship between Human Development and Financial Inclusion in the BRICS Countries.
- Section (4): The Relationship between Human Development and Financial Inclusion in Egypt.
- Section (5): The Effect of Human Development and Financial Inclusion on Economic Development.
- Section (6): Concluding Remarks and Recommendations.

Literature Review

The literature review is divided into two sections. The first section is devoted to the literature that covers the determinants of financial inclusion, and section two is devoted to the literature that covers the relationship between financial inclusion, human, and economic development.

Several studies tried to investigate the main determinants of financial inclusion. The study of Allen et al. (2012), examined the characteristics of a sample of 123 countries and more than 124000 individuals, argued that low cost and ease of obtaining a bank account and spread of financial intermediaries are critical determinants of successful financial inclusion. Based on examining the financial behavior and the characteristics of individuals in 148 countries, Kunt and Klapper (2013) supported the findings of Allen et al. (2012) regarding the barriers to financial inclusion; moreover, the study argued that differences in the level of development between countries and differences in income between individuals are main determinants of financial inclusion. The study of Fungáčová and Weill (2014) made a comparison between China and the other BRICS countries and found that the level of income and education, in addition to other demographic factors, promotes financial inclusion. Yoshino and Morgan (2016) argued that lack of funds and financial illiteracy are considered the primary and main barriers to make benefit of financial services in any economy. Grohmann et

al. (2018) illustrate that the demand for different financial services is a crucial determinant of financial inclusion and that financial literacy, supported by the levels of education and income, generates the willingness and ability to demand financial services. Mhlanga and Denhere (2020) applied the logit model to discover the determinants of financial inclusion in South Africa and found that the levels of income and education are the main determinants of financial inclusion besides other demographic characteristics of the citizens.

Other studies were concerned with the mutual effect of financial inclusion, human, and economic development on each other. Beck et al. (2007) argued that financial inclusion mitigates the problem of income inequity. Sarma and Pais (2011) found that human development promotes financial inclusion, and there is a positive relationship between the human development index and the index of financial inclusion; moreover, factors as the level of education, income, and unemployment are with great impact on the status of financial inclusion. Cull et al. (2012) argued that financial inclusion provides both households and small businesses with growth and prosperity opportunities and promotes the stability of macroeconomic. Han and Melecky (2013) applied a cross-sectional regression model for 95 countries and found that utilization of bank deposits by citizens mitigates the economic and financial problems that their countries are exposed to, especially middle-income countries, during periods of financial crises. Bruhn and Love (2014) experienced the effect of opening a number of 800 bank branches in Mexico on the economy and found that Mexican people access to different official financial services can stimulate economic growth and decrease the level of poverty; thus, financial inclusion supports the process of economic development. Yoshino and Morgan (2016) illustrate that financial inclusion facilitates both consumption and investment transactions and provides a platform to finance small businesses and increases the levels of income, mitigates poverty, and the state of income inequity. Boukhatem (2016) studied the effect of financial inclusion on the economic performance of low-and middle-income countries and the study found that financial inclusion promotes the efficiency of doing transactions in the economy which ultimately increases the level of welfare of a considerable number of poor categories in these economies. Iqbal and Sami (2017) argued that the number of transactions made on the bank accounts, the number of bank branches, and the amount of credit promote economic growth in India and the study of Lenka and Sharma (2017) confirmed that this finding is valid whether in the short- or long-run. Brzozowski (2018) applied the System GMM estimation of panel data for more than 100 economies to determine the effect of the ratio of credit to GDP on the efficiency of production through the period 1970-2009. The study argued that credit volatility has a negative impact on the efficiency of production, especially for emerging economies. Won Kim et al. (2018) found that financial inclusion boosts the growth of real GDP in the Organization of Islamic Cooperation (OIC) countries.

The findings of the previous studies confirm that education and income are two major determinants of financial inclusion; thus, human development and financial inclusion should be in a positive relationship if achieving depth in financial inclusion was targeted. Moreover, the findings emphasize the ability of financial inclusion on improving the performance of the economy to the extent that some have argued that financial inclusion is a critical tool in achieving sustainable development goals (Klapper et al. 2016).

What is new with this study?

This study tries to examine the forward and backward relationships between human development indices and financial inclusion indicators, and their ultimate effect on the state of economic development in Egypt and the BRICS countries. Besides, the response of deposits and private credit to domestic savings, and the response of private credit to deposits will be used as indicators of the state of financial inclusion.

The Relationship between Human Development and Financial Inclusion in the BRICS Countries

In this section, the forward and backward relationships between the indices of human development and the indicators of financial inclusion will be examined in the BRICS countries.

The Effect of Human Development on Financial Inclusion

Panel data analysis has been applied to annual data of the BRICS countries collected from 2000 to 2018 on the indices of human development and deposit and credit transactions in the BRICS countries. The panel least squares regression model is represented as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it}$$

Where:

Y is the ratio of private credit to deposits, X_1 is the life expectancy index, X_2 is the education index, and X_3 is the per-capita income index.

The correlated random effect of the panel regression analysis has been examined by the Hausman test, Chi-Sq. Statistic 0.51 with 0.92 probability value, and the panel least square random cross-section analysis of the BRICS countries revealed that (see appendix 1):

- The life expectancy index is statistically insignificant to explain changes in the status of financial inclusion.
- The education index has a positive and powerful effect on the status of financial inclusion, where a one point increase in the education index encourages the private credit relative to deposits with 6.4% and this relationship is statistically significant at 1% significance level.
- The level of per-capita income harms the status of financial inclusion, where one point change in the per-capita income index discourages the private credit relative to deposits with 4.9% and this relationship is statistically significant at 1% significance level.

The negative impact of the level of income on the status of financial inclusion raised some doubts regarding the effect of income inequity on financial inclusion; accordingly, we have reapplied the previous statistical analysis on the inequality-adjusted indices of human development (see appendix 2). The statistical results were as follows:

- The life expectancy pillar remains statistically insignificant to explain changes in the status of financial inclusion.
- The education pillar remains with a positive effect on the status of financial inclusion; however, the positive effect became less powerful, where one point change in the education index encourages the private credit relative to deposits with just 2.7% and this relationship is statistically significant at 10% significance level.
- The per-capita income index turned to be statistically insignificant in interpreting the status of financial inclusion.

The Effect of Financial Inclusion on Human Development

Panel data analysis has been applied to annual data of the BRICS countries collected from 2000 to 2018 on the two indicators of the status of financial inclusion, the ratio of deposits to domestic savings and the ratio of private credit to domestic savings, and the values of the human development index. The panel least squares regression model is represented as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \varepsilon_{it}$$

Where:

Y is the human development index, X_1 is the ratio of deposits to domestic savings, and X_2 is the ratio of private credit to domestic savings.

The correlated random effect of the panel regression analysis has been examined by the Hausman test, Chi-Sq. Statistic 2.15 with a probability value 0.34 and the panel least square random cross-section analysis of the BRICS countries revealed that (see appendix 3):

- The ratio of deposits to domestic savings has a positive effect on improving the status of human development, where a one percent increase in the ratio of deposits relative to domestic savings improves the human development index by 0.036 points and this relationship is statistically significant at 1% significance level.
- The ratio of private credit to domestic savings has a positive effect on improving the status of human development, where a one percent increase in the ratio of private credit relative to domestic savings improves the human development index by 0.014 points and this relationship is statistically significant at 1% significance level.

In order to determine the effect of financial inclusion on the status of inequity, we have reapplied the previous statistical analysis on the inequality-adjusted human development index (see appendix 4). The statistical results were as follows:

- The ratio of deposits to domestic savings is statistically insignificant in explaining changes in the inequality-adjusted human development index.
- The ratio of private credit to domestic savings has a positive effect on improving the status of the inequality-adjusted human development index, where a one percent increase in the ratio of private credit relative to domestic savings improves the index by 0.015 point and this relationship is statistically significant at a 1% significance level.

The Relationship between Human Development and Financial Inclusion in Egypt

In this section, the forward and backward relationships between the indices of human development and the status of financial inclusion will be examined in Egypt. Life expectancy index, education index, and per-capita income index represent the different aspects of human development, while the status of financial inclusion will be represented by the ratios of deposits to domestic savings, private credit to domestic savings, and private credit to deposits.

The Effect of Human Development on Financial Inclusion

The ordinary least squares regression model has been applied to annual data collected from 2000 to 2018 on the indices of human development and deposit and credit transactions of the financial institutions in Egypt. The regression model is represented as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it}$$

Where:

Y is the ratio of private credit to deposits, X_1 is the life expectancy index, X_2 is the education index, and X_3 is the per-capita income index.

The outcomes of the ordinary least squares regression model revealed that the pillars of human development are highly correlated (see appendix 5); thus, we applied the stepwise regression model. The stepwise regression outcomes illustrate the followings: (see appendix 6)

- The education index negatively affects the status of financial inclusion, where a one-point increase in the education index discourages the response of private credit to deposits by 2.9%, and this relationship is statistically significant at a 1% significance level.
- The per-capita income index is statistically insignificant in explaining the changes in the status of financial inclusion.

The previous statistical outcomes suggest that there are undesirable financial repercussions associated with the improvement in the level of education and these repercussions may work against the depth of

financial inclusion in Egypt. Moreover, the impartiality of the effect of income on the rate of private credit to deposits points out a deficiency in the distribution of income in Egypt.

By applying the previous ordinary least squares model on the inequality-adjusted indices of human development, the statistical results revealed that the inequality-adjusted indices of human development are highly correlated as well (see appendix 7); thus, we applied a stepwise regression model. The stepwise regression outcomes illustrate the followings: (see appendix 8):

- The strength of the negative impact of the education index on the status of financial inclusion has been mitigated, where a one-point increase in the inequality-adjusted education index discourages the response of private credit to deposits by 1.5%, instead of 2.9%, and this relationship is statistically significant at a 1% significance level. This result confirms that the equity factor has a significant impact on the effect of the education pillar on the status of financial inclusion.
- The other two inequality-adjusted indices of human development are not statistically significant to explain changes in the ratio of private credit to deposits.

The Effect of Financial Inclusion on Human Development

The ordinary least squares regression model has been applied to annual data collected from 2000 to 2018 on the two indicators of the status of financial inclusion, the ratio of deposits to domestic savings and the ratio of private credit to domestic savings, and the values of human development index. The regression model is represented as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \varepsilon_{it}$$

Where:

Y is the human development index, X_1 is the ratio of deposits to domestic savings, and X_2 is the ratio of private credit to domestic savings.

The outcomes of the ordinary least squares regression model revealed that the two indicators of the status of financial inclusion have a statistically significant effect on human development as follows: (see appendix 9)

- The ratio of deposits to domestic savings positively affects human development, where a one percent increase in the ratio of deposits to domestic savings improves the human development index by 0.024 points and this relationship is statistically significant at a 1% significance level.
- The ratio of private credit to domestic savings negatively affects human development, where one percent increase in the ratio of private credit to domestic savings decreases the human development index by 0.054 points and this relationship is statistically significant at a 1% significance level.

To determine the effect of financial inclusion on the status of inequity, we have reapplied the previous statistical analysis on the inequality-adjusted human development index. The statistical results revealed that the regression model is not a valid one. In other words, the two indicators of the status of financial inclusion have a statistically insignificant effect on the inequality-adjusted human development index. (see appendix 10)

The Effect of Human Development and Financial Inclusion on Economic Development

Both human development and financial inclusion are expected to have a great impact on the state of economic development. On the one hand, the pillars of human development act as indicators of the state of economic development; on the other hand, financial inclusion has the power to mitigate the problems of poverty, income inequity, and unemployment, which are also important indicators to the state of economic development. In this regard, this section will try to determine the ultimate effect of human development and financial inclusion on the state of economic development in both the BRICS countries and Egypt. The state of economic development will be represented here by three indicators: Gini coefficient, unemployment rate, and the poverty rate (poverty headcount at 3.20 \$ a day PPP 2011).

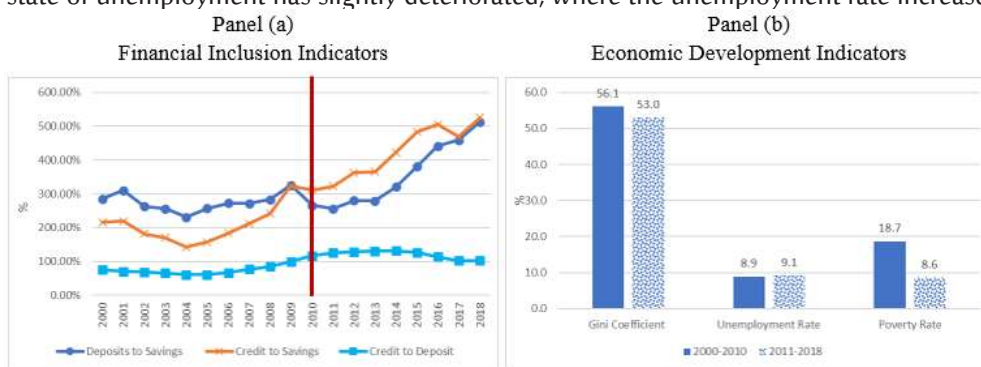
The State of Economic Development in The BRICS Countries

1- The Case of Brazil

The time period 2000-2010 witnessed fluctuations in the three indicators of financial inclusion. The ratios of deposits and private credit to domestic savings and the ratios of private credit to deposits recorded average rates of 275%, 214%, and 77% with standard deviations of 26%, 59%, and 17%, respectively, during the period 2000-2010. During the period 2011-2018, the ratios of deposits and private credit to domestic savings have been significantly increased and followed an upward sloping trend while the ratios of private credit to deposits have started to improve until they eventually declined at the end of the period, see figure (2), panel (a).

The three indicators of financial inclusion recorded average rates of 366%, 432%, and 120% with standard deviations of 96%, 75%, and 12%, respectively, during the period 2011-2018.

Panel (b) captured an improvement in two economic development indicators and a retreatment in one other indicator. Income inequality has been moderately improved, where the Gini coefficient retreated by 5.8%, and the state of poverty has been significantly improved, where headcount poverty rate decreased by 54%, while the state of unemployment has slightly deteriorated, where the unemployment rate increased by 2.2%.



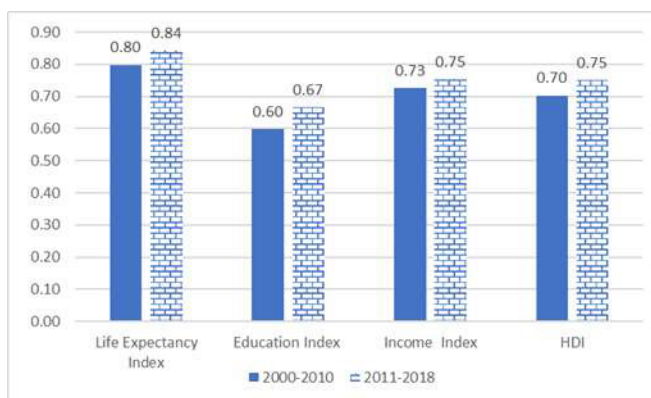
Source: World Bank, World Development Indicators Database.

Figure (2): Financial Inclusion and Economic Development Indicators in Brazil

The review of the human development indices through the considered periods revealed that there was an improvement in all human development indicators, where the three human development indices recorded growth rates of 5.7%, 11.3%, and 3.6%, respectively; moreover, the HDI recorded a growth rate of 6.8%, see figure (3). In this context, it can be said that there is a mutual interdependence between human development and financial inclusion in Brazil, and this works in favor of alleviating the problems of income inequity and poverty.

2- The Case of Russia

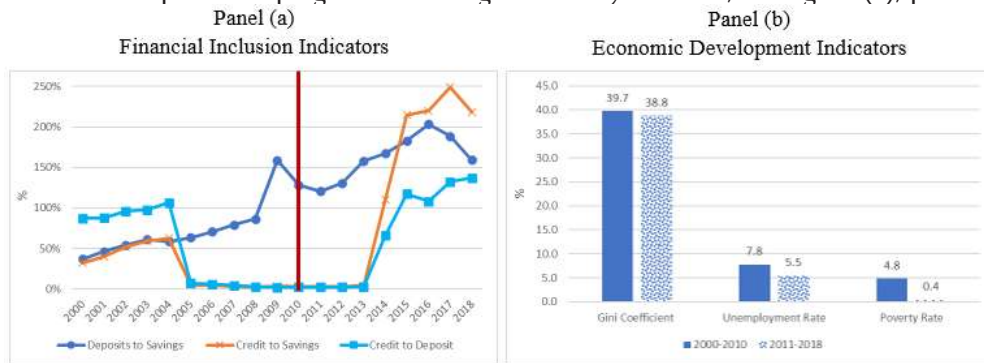
During the period 2000-2010, the ratios of private credit to savings and deposits witnessed severe deterioration and recorded average rates of 24% and 46% with standard deviations of 25% and 48%, respectively, while the ratios of deposits to savings followed an upward sloping trend and recorded an average rate of 77% with 37% standard



Source: United Nations Development Programme, Human Development Reports.

Figure (3): The Development of Human Development Indices in Brazil

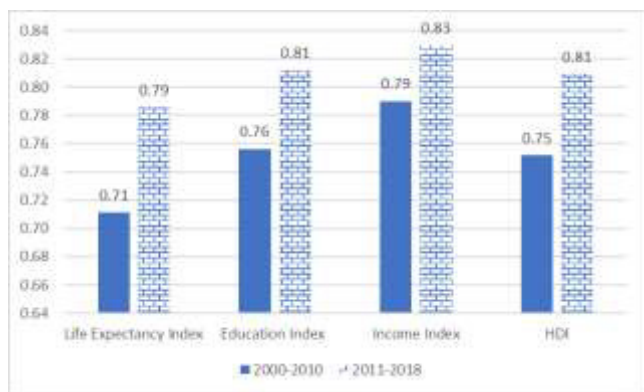
deviation. During the initial years of the followed period, the ratios of private credit to savings and deposits maintained the same low levels while the ratios of deposits to savings started to deteriorate until the three ratios followed an upward sloping trend starting from the year 2014, see figure (4), panel (a).



Source: World Bank, World Development Indicators Database.

Figure (4): Financial Inclusion and Economic Development Indicators in Russia

The ratios of deposit to savings, private credit to savings, and private credit to deposits recorded average rates of 124%, 128%, and 71% with standard deviations of 28%, 111% and, 61%, respectively, during the period 2010-2011. Panel (b) illustrates that the three economic development indicators improved during the period 2011-2018. Gini coefficient retreated by 2.4%, the unemployment rate decreased by 29.6%, and a massive decrease in the headcount poverty rate by 91.5%.



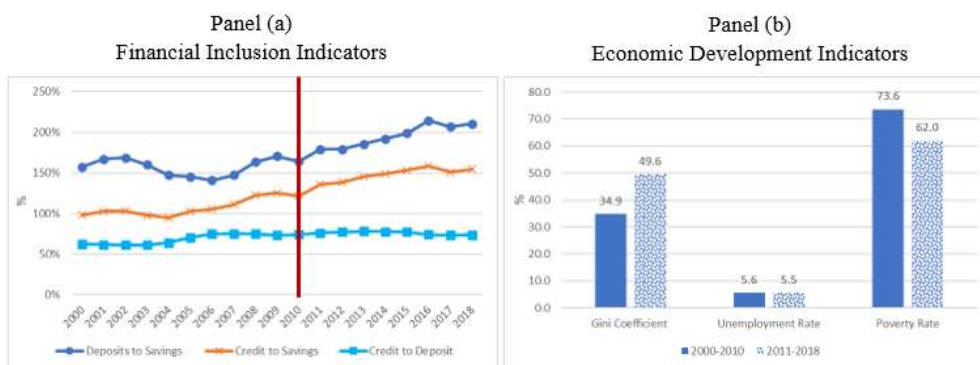
Source: United Nations Development Programme, Human Development Reports.

Figure (5): The Development of Human Development Indices in Russia

Figure (5) illustrates that all the indices of human development have been significantly improved during the period 2011-2018.

The life expectancy index improved by 10.5%, the education index improved by 7.3%, the income index improved by 5%, and finally, the human development index improved by 7.6%. This illustrates that the combined effect of human development and financial inclusion managed to improve the selected indicators of economic development in Russia.

3- The Case of India

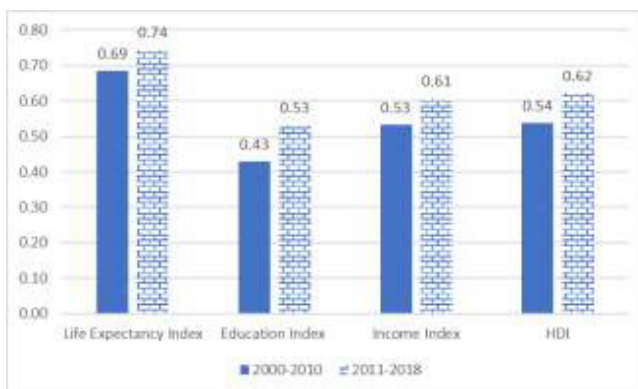


Source: World Bank, World Development Indicators Database.

Figure (6): Financial Inclusion and Economic Development Indicators in India

Figure (6), panel (a), shows that the ratios of deposits and private credit to savings, and the ratios of private credit to deposits followed an upward sloping trend during the whole study period. During the period 2000-2010, the three ratios recorded average rates of 157%, 108%, and 68% with standard deviations of 11%, 11%, and 6%, respectively. The three ratios have been improved during the period 2011-2018 and recorded average rates of 196%, 148%, and 76% with standard deviations of 14%, 8%, and 2%, respectively. Panel (b) shows that the rate of poverty has been significantly improved during the period 2011-2018, where the headcount poverty rate has been retreated by 15.8%, the state of income inequity has been mitigated by 42%, while there was no significant change in the rate of unemployment where it is at its normal rate

Figure (7) illustrates that all the indices of human development have been significantly improved during the period 2011-2018. The life expectancy index improved by 8.6%, the education index improved by 24%, the income index improved by 14%, and finally, the human development index improved by 15.4%. Despite the improvement in all the indicators of financial inclusion and the indices of human development in India; however, the combined effect of these improvements did not manage to mitigate income inequity. This may be attributed to the relatively low rates of private credit to deposits and the slow progress in education compared to the other BRICS countries; moreover, this raises doubts regarding the state of equity in income and education in India.

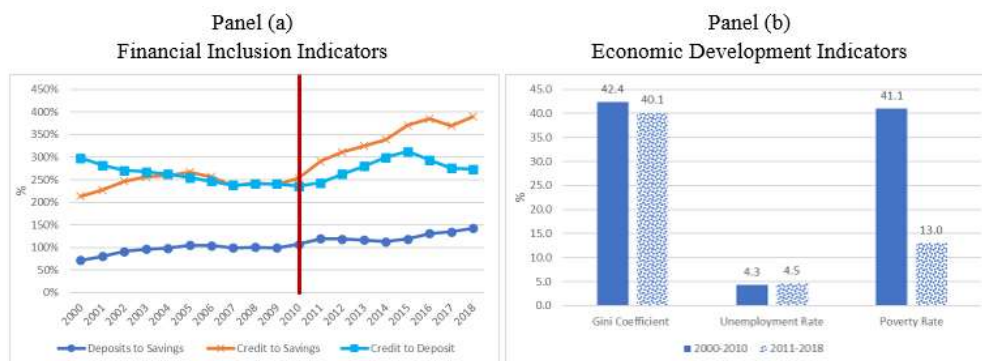


Source: United Nations Development Programme, Human Development Reports.

Figure (7): The Development of Human Development Indices in India

4- The Case of China

In China, the ratios of deposits and private credit to domestic savings followed an upward sloping trend and recorded average rates of 96%, and 245% with standard deviations of 11% and 16%, respectively, while the ratios of private credit to deposits followed a downturn sloping trend and recorded an average rate of 258% with a standard deviation of 20% during the period 2000-2010. During the period 2011-2018, the ratios of the three indicators followed an upward sloping trend and recorded average rates of 124%, 348, and 280% with standard deviations 10%, 36%, and 22%, respectively, see figure (8), panel (a).



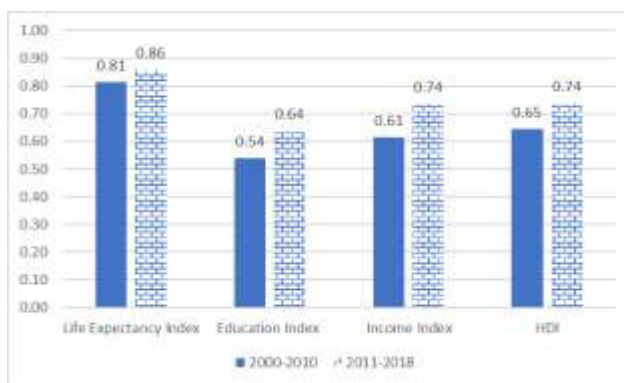
Source: World Bank, World Development Indicators Database.

Figure (8): Financial Inclusion and Economic Development Indicators in China

Panel (b) shows that the state of poverty has witnessed massive improvement during the period 2011-2018, where the headcount poverty rate has been retreated by 68.5%, while there was slight improvement in the state of income inequity, where Gini coefficient retreated by 5.4%. Finally, there was no significant

change in the rate of unemployment (normal rates).

Figure (9) illustrates that the improvement in the indicators of financial inclusion during the period 2011-2018 has been supported by improvement in the indices of human development, where all the indices of human development have been improved during this period. The life expectancy index improved by 5.3%, the education index improved by 18.4%, the income index improved by 19.9%, and the human development index improved by 14.2%. Accordingly, it can be said that the improvement in financial inclusion and human development in China have had a mutually positive effect on the process of economic development, in general, and on mitigating the state of poverty, in particular.

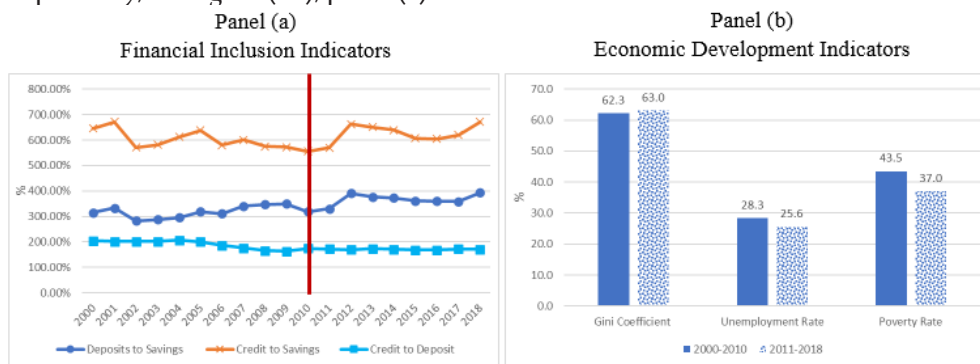


Source: United Nations Development Programme, Human Development Reports.

Figure (9): The Development of Human Development Indices in China

5- The Case of South Africa

During the period 2000-2010, the ratios of deposit to savings followed an upward sloping trend and recorded an average rate of 318% with a standard deviation of 22%, while the ratios of private credit to saving and deposit followed a downward sloping trend and recorded average rates of 600% and 189% with standard deviations of 34% and 16%, respectively. During the period 2011-2018, the three ratios followed an upward sloping trend, where the ratios of deposit and private credit to saving, and the ratios of private credit to deposits recorded average rates of 368%, 628%, and 170% with standard deviations of 20%, 34%, and 2%, respectively, see figure (10), panel (a).



Source: World Bank, World Development Indicators Database.

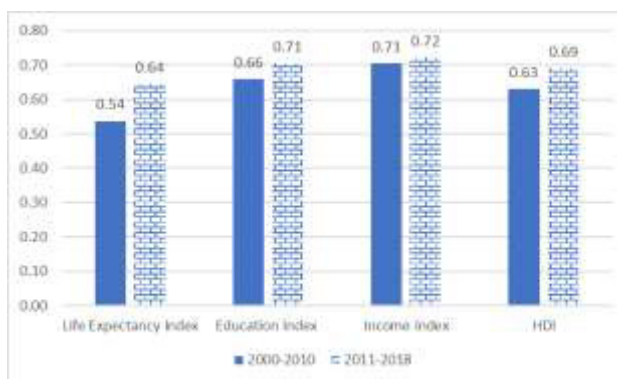
Figure (10): Financial Inclusion and Economic Development Indicators in South Africa

The improvement of the state of financial inclusion in South Africa has been associated with positive effects on both unemployment and poverty, where the rates of unemployment and poverty have been re-treated by 10%, and 15%, respectively, while there was no noticeable change in the state of income inequality during the period 2011-2018.

Human development and financial inclusion work hand in hand in favor of the state of economic development in South Africa, where the period 2011-2018 witnessed improvement in life expectancy index, education index, income index by 20%, 7%, and 2%, respectively. Moreover, the human development index has been improved by 10% during that period, see figure (11).

The State of Economic Development in Egypt

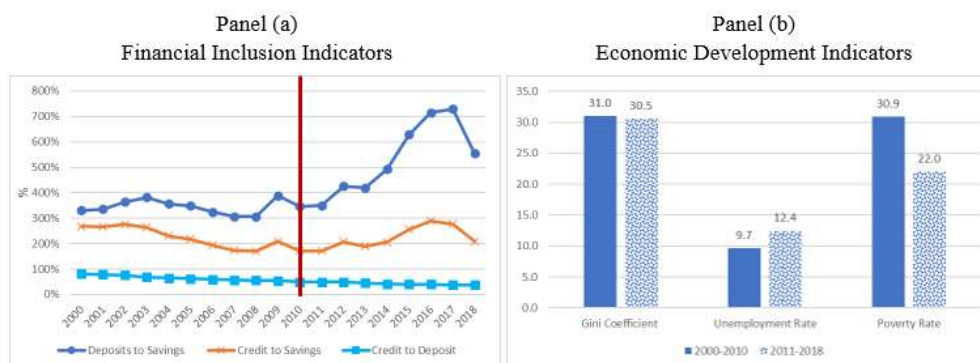
The three indicators of financial inclusion followed a downward sloping trend during the period 2000-2010 in Egypt, and the average rates of the ratios of deposits to savings, private credit to savings, and private credit to deposits recorded 345%, 222%, and 64% with standard deviations of 27%, 42%, and 11%, respectively. During the period 2011-2018, there was a massive improvement in the ratios of deposits relative to domestic savings, where the ratios of deposits to savings recorded an average rate of 540% with a standard deviation of 142%. There was a modest improvement in the ratios of private credits to domestic savings, where these ratios recorded an average rate of 246% with a standard deviation of 43%, while there was retreatment in the ratios of private credits to deposits, where these ratios recorded an average rate of 43% with a standard deviation of 4%, see figure (12) panel (a).



Source: United Nations Development Programme, Human Development Reports.

Figure (11): The Development of Human Development Indices in South Africa

The average rate of unemployment climbed to 12.4% during the period 2011-2018 with a 28.5% increase relative to the period 2000-2010. There was no significant improvement in the state of income inequity during the period 2011-2018 relative to the proceeded period. The most notable improvement during the period 2011-2018 is the decline in the rate of headcount poverty rate where it declined by 28.6% relative to the period 2000-2010, see figure (12) panel (b).

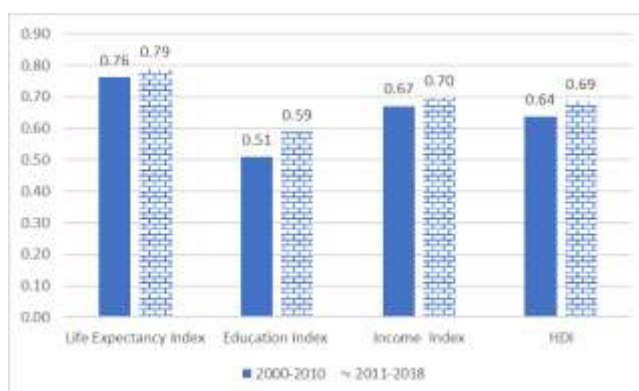


Source: World Bank, World Development Indicators Database.

Figure (12): Financial Inclusion and Economic Development Indicators in Egypt

The average rate of unemployment climbed to 12.4% during the period 2011-2018 with a 28.5% increase relative to the period 2000-2010. There was no significant improvement in the state of income inequity during the period 2011-2018 relative to the proceeded period. The most notable improvement during the period 2011-2018 is the decline in the rate of headcount poverty rate where it declined by 28.6% relative to the period 2000-2010, see panel (b).

The human development indices showed modest improvement during the period 2011-2018, where the life expectancy index increased by 4%, the education index increased by 16%, the income index increased by 4%, and the human development index improved by 8%, see figure (13).



Source: United Nations Development Programme, Human Development Reports.

Figure (13): The Development of Human Development Indices in Egypt

Based on the previous observations, we may conclude that the low response of private credit to deposits and the low index value for education stand behind the increase in the unemployment rate in Egypt. Besides, the state of inequity in income and education may support this trend.

Concluding Remarks and Recommendations

Regarding the BRICS Countries:

- The education pillar is a critical and powerful variable in supporting the status of financial inclusion, and the spread of inequity in education may weakness its positive impact on the status of financial inclusion.
- The level of per-capita income works against the status of financial inclusion, and income inequality may stand behind this negative impact, where the negative impact disappears when income is adjusted to equality.
- The ratios of deposits and private credit to domestic savings support the index of human development; however, just the ratios of private credit to domestic savings are able to support the inequity adjusted human development index.
- There is an improvement in the state of poverty in all the BRICS countries regardless of the different achievements in human development and financial inclusion, which may be attributed to other measures adopted by the BRICS countries regarding this issue.
- Some countries like Brasil, Russia, and China managed to metiugate the problem of income inequity while others, like India and South Africa, could not.
- There was no notable effect of financial inclusion and human development on the state of unemployment in the countries that experience normal rates of unemployment, like India and China, while the rate of unemployment has been retreated significantly in Russia and South Africa, supported by the high response of private credit to deposits and the improvement in education pillar.

The previous findings illustrate that, in the BRICS countries, both the response of private credit to deposits and the quality and equitable distribution of education are linked in a circular flow relationship. In other words, each one can strengthen or weaken the other one, and if they both work in the same direction, the state of economic development, in general, and unemployment, in particular, tends to improve.

Regarding Egypt:

- The education index negatively affects the response of private credit to deposits. This may be attributed to the inequity of education, where the negative impact of education on the inequality-adjusted index has been mitigated.
- The per-capita income index is statistically insignificant in explaining the changes in the status of financial inclusion, which may be attributed to the inequity of income distribution.
- The ratios of deposits and private credit to domestic savings work in two opposite directions regarding their combined effect on the human development index. From one side, the ratios of deposits promote the index, while the ratios of private credit discourage the index from the other side. This makes the deposits and credit transactions with almost a neutral effect on human development.
- The development of human development indices and deposits and private credit transactions has been associated with an improvement in the state of poverty.
- Despite the improvement in the education index, the weak response of the rate of private credit to deposits has been associated with a massive increase in the rates of unemployment.
- There is no significant improvement in the inequality of income distribution.

The previous findings illustrate that, in Egypt, the education pillar weakens the response of private credit to deposits which works against the state of unemployment, one critical indicator of economic development.

General Conclusion

The collective data of the BRICS countries show mutual interdependence between human development and financial inclusion in the interest of economic development; however, the inequality in education and income may spoil this relationship. In Egypt, thanks to inequality in education and income, human development and financial inclusion work in two opposite directions, which may harm the state of economic development.

In light of the above findings, two recommendations could be introduced:

- The issue of equity, in general, and education equity, in particular, must be given special attention, so resources have to be effectively directed to serve this issue. In other words, there should be a priority in the size and efficiency of investment in education in a way that guarantees equitable capabilities and skills in the labor market among citizens.
- To stimulate the rates of private credit relative to deposits for the interest of human and economic development, the role and size of credit unions, and savings and loan associations, as financial intermediaries in the financial markets, must be maximized.

Appendices

Appendix (1)

Method: Panel EGLS (Cross-section Random Effects)
 Sample: 2000 2018
 Periods Included: 19
 Cross-sections Included: 5
 Total Panel (Balanced) Observations: 95

Swamy and Arora Estimator of Component Variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.102939	1.027754	2.046151	0.0436
X1	-1.852144	1.273005	-1.454938	0.1491
X2	6.367128	1.833397	3.472859	0.0008
X3	-4.862196	1.614681	-3.011242	0.0034
Effects Specification				
		S.D.	Rho	
Cross-section random		1.700360	0.9737	
Idiosyncratic random		0.279722	0.0263	
Weighted Statistics				
R-squared	0.131892	Mean dependent var	0.050701	
Adjusted R-squared	0.103273	S.D. dependent var	0.291319	
S.E. of regression	0.275867	Sum squared resid	6.925317	
F-statistic	4.608543	Durbin-Watson stat	0.360267	
Prob(F-statistic)	0.004767			

Appendix (3)

Method: Panel EGLS (Cross-section Random Effects)
 Sample: 2000 2018
 Periods Included: 19
 Cross-sections Included: 5
 Total Panel (Balanced) Observations: 95

Swamy and Arora Estimator of Component Variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.568710	0.049641	11.45646	0.0000
X1	0.035785	0.010640	3.363252	0.0011
X2	0.013752	0.006497	2.116572	0.0370
Effects Specification				
		S.D.	Rho	
Cross-section random		0.105602	0.9158	
Idiosyncratic random		0.032012	0.0842	
Weighted Statistics				
R-squared	0.392041	Mean dependent var	0.047324	
Adjusted R-squared	0.378825	S.D. dependent var	0.040651	
S.E. of regression	0.032039	Sum squared resid	0.094435	
F-statistic	29.66306	Durbin-Watson stat	0.174690	
Prob(F-statistic)	0.000000			

Appendix (2)

Method: Panel Least Squares
 Sample: 2010 2018
 Periods Included: 9
 Cross-sections Included: 5
 Total Panel (Balanced) Observations: 45

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.175481	1.313690	0.133579	0.8945
X1	0.101541	2.137367	0.047508	0.9624
X2	2.730939	1.620761	1.684973	0.1004
X3	-0.610002	1.594948	-0.382459	0.7043
Effects Specification				
		Cross-section fixed (dummy variables)		
R-squared	0.904575	Mean dependent var	1.410622	
Adjusted R-squared	0.886522	S.D. dependent var	0.829377	
S.E. of regression	0.279388	Akaike info criterion	0.447381	
Sum squared resid	2.888135	Schwarz criterion	0.768565	
Log likelihood	-2.066073	Hannan-Quinn criter.	0.567115	
F-statistic	50.10574	Durbin-Watson stat	0.441844	
Prob(F-statistic)	0.000000			

Appendix (4)

Method: Panel EGLS (Cross-section Random Effects)
 Sample: 2010 2018
 Periods Included: 9
 Cross-sections Included: 5
 Total Panel (Balanced) Observations: 45

Swamy and Arora Estimator of Component Variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.659754	0.045927	14.36519	0.0000
X1	0.003948	0.006937	0.569183	0.5723
X2	0.014934	0.004821	3.097577	0.0035
Effects Specification				
		S.D.	Rho	
Cross-section random		0.099086	0.9798	
Idiosyncratic random		0.014228	0.0202	
Weighted Statistics				
R-squared	0.396406	Mean dependent var	0.034328	
Adjusted R-squared	0.367664	S.D. dependent var	0.017628	
S.E. of regression	0.014018	Sum squared resid	0.008253	
F-statistic	13.79161	Durbin-Watson stat	0.310739	
Prob(F-statistic)	0.000025			

Appendix (5)

Method: Ordinary Least Squares
Sample: 2000 2018

Variable	Coefficient	Std. Error	t-Statistic	Prob.	VIF
C	3.486	2.864	1.22	0.242	
X1	-0.688	4.608	-0.15	0.883	117.578
X2	-1.921	1.634	-1.18	0.258	135.410
X3	-1.998	1.320	-1.51	0.151	12.574
R-squared	96.6%	Source	DF	SS	MS
Adjusted R-squared	95.9%	Regression	3	0.33257	0.11086
S.E. of regression	0.0281402	Residual Error	15	0.01188	0.00079
F-statistic	140.00	Total	18	0.34445	
Prob(F-statistic)	0.000	Durbin-Watson stat		0.678440	

Appendix (7)

Method: Ordinary Least Squares
Sample: 2000 2018

Variable	Coefficient	Std. Error	t-Statistic	Prob.	VIF
C	0.9469	0.3909	2.42	0.060	
X1	-0.6062	0.7389	-0.82	0.449	5.173
X2	-0.576	1.256	-0.46	0.666	17.348
X3	0.1959	0.3149	0.62	0.561	8.408
R-squared	84.4%	Source	DF	SS	MS
Adjusted R-squared	75.0%	Regression	3	0.0148706	0.0049569
S.E. of regression	0.0234412	Residual Error	5	0.0027474	0.0005495
F-statistic	9.02	Total	8	0.0176180	
Prob(F-statistic)	0.018	Durbin-Watson stat		1.80301	

Appendix (9)

Method: Ordinary Least Squares
Sample: 2000 2018

Variable	Coefficient	Std. Error	t-Statistic	Prob.	VIF
C	0.674873	0.006866	98.30	0.000	
X1	0.024458	0.001066	22.94	0.000	1.341
X2	-0.054231	0.003489	-15.55	0.000	1.341
R-squared	97.2%	Source	DF	SS	MS
Adjusted R-squared	96.8%	Regression	2	0.0150403	0.0075201
S.E. of regression	0.00524107	Residual Error	16	0.0004395	0.0000275
F-statistic	273.77	Total	18	0.0154798	
Prob (F-statistic)	0.000	Durbin-Watson stat		1.12153	

Appendix (6)

Method: Stepwise Regression

Forward Selection	Alpha-to-Enter	0.5
Response is Y and 3 predictors		
N=19		
Step	1	2
Constant	2.109	3.070
X2	-2.87	-2.15
T-Value	-20.26	-4.48
P-Value	0.000	0.000
X3		-2.0
T-Value		-1.55
P-Value		0.140
S	0.0284	0.0273
R-Sq	96.02	96.55
R-Sq (adj)	95.79	96.11
Mallows Cp	2.3	2.0

Appendix (8)

Method: Stepwise Regression

Forward Selection	Alpha-to-Enter	0.5
Response is Y and 3 predictors		
N=9		
Step	1	
Constant	0.9837	
X2	-1.55	
T-Value	-5.68	
P-Value	0.001	
S	0.0212	
R-Sq	82.18	
R-Sq (adj)	79.64	
Mallows Cp	0.7	

Appendix (10)

Method: Ordinary Least Squares
Sample: 2010 2018

Variable	Coefficient	Std. Error	t-Statistic	Prob.	VIF
C	0.38937	0.07472	5.21	0.002	
X1	-0.0710	0.1037	-0.69	0.519	31.492
X2	0.05948	0.06493	0.92	0.395	31.492
R-squared	27.8%	Source	DF	SS	MS
Adjusted R-squared	3.7%	Regression	2	0.0003974	0.0001987
S.E. of regression	0.0131189	Residual Error	6	0.0010326	0.0001721
F-statistic	1.15	Total	8	0.0014300	
Prob (F-statistic)	0.377	Durbin-Watson stat		1.12153	

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