

FINANCIAL DEEPENING & INCOME INEQUALITY: EVIDENCE FROM INDONESIA

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Abstract

Financial deepening is a term used to measure the quality of improvement in the provision of financial services. The focus of financial deepening in this research using the credit ratio and the bank ratio. The discussion of this research is limited to using data from 34 provinces in Indonesia during 2005-2021. This condition shows that financial services, especially banking access through the ratio of the number of banks and also the development of the credit ratio, have not been able to reduce income inequality. The government needs to evaluate policies and improve the quality of sustainable financial institutions services can reach all levels of society, especially the lower middle people both in cities and in villages. It aims to achieve a more even distribution of income so that income inequality can be reduced.

Keywords: *Financial Deepening; Income Inequality; Gini Ratio.*

JEL Classification: *D33, G20, O10*

INTRODUCTION

Economic growth and income distribution are the main indicators for every country, especially developing countries. Rachmawati et al. (2018) revealed that these two indicators have an important role but many developing countries face a trade-off between growth and income distribution. This raises the problem of increasing income inequality, especially in Indonesia. In addition to the economic aspect, Benczur & Kvedaras (2021) argue the increase in income inequality is also associated with technological differences in each region.

The Gini Ratio is commonly used as an indicator to measure income inequality; a high Gini Ratio value implies an imperfect distribution of income. The head-count ratio measure for the poverty index or Gini coefficient that is widely used is an aggregate indicator that describes the level of inequality (Ahlin & Jeong, 2021; Luptacik & Nezinsky, 2020). Aiyar & Ebeke (2020) states that inequality can hinder growth if low-income households have little opportunity to access capital accumulation and greater financial exclusion.

The influence between financial development and income inequality becomes a concern to governments in various countries. Altunbas & Thornton (2020) argue that, first, policymakers are concerned with the issue of whether there is a sufficiently strong relationship between financial development and economic growth as well as how higher rates of economic growth are distributed. Second, concerns about income distribution, policymakers are interested in knowing how policies affect economic growth and income distribution. Finally, policymakers study in what contexts the financial sector can be used as an instrument to influence income inequality.

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Financial deepening can be seen as one of the factors that influence income inequality. Financial deepening is a term used to measure the quality of improvements in the provision of financial services, although there are differences in the measurement of the concept of financial deepening used in each country. The focus of research conducted by Chu & Jiang (2021) is to test whether financial deepening affects income inequality. The results of the study found that financial deepening worsened income distribution in the early stages and began to reduce income inequality after a certain period.

The big question is whether financial depth is effective in reducing poverty and inequality, especially focusing on the dimensions of financial deepening. The five dimensions of financial sector development are access, depth, efficiency, stability and liberalization (Zhang & Naceur, 2019).

However, several discussions and findings related to financial deepening have increased inequality. Jeong & Kim (2018) found that the impact of financial deepening on inequality has a positive value but only has an effect in the short term and Baiardi & Morana (2017) shows the impact of widening inequality due to financial deepening in the short term. Sawyer (2018) the financial sector tends to show a level of income inequality and inequality in the financial sector directly impacts overall inequality.

Ridzuan et al. (2019) found empirical results that deepening financial development increases income distribution which is supported by expanding accessibility of financial products and the role of financial institutions in driving a reduction in income inequality. Brei, Ferri, & Gambacorta et al (2023) confirm that reduced income inequality is greater if a country has a high level of financial openness and forms of increased access to finance. In another case between urban and rural areas, Ran, Chen, & Li (2020) empirical results show that financial deepening is significantly negatively related to urban-rural income inequality. In addition, several studies have analyzed and identified the impact of financial deepening on economic growth as carried out by Harisuddin & Hartono (2019), Boamah et al. (2018), Alrabadi & Kharabsheh (2016).

This study aimed to examine the novelty and contribution of the impact of financial deepening on income inequality in Indonesian provinces. Previous research conducted Alshubiri (2021) examines the effect of financial deepening on income inequality by using gross domestic product (GDP) and money supply proxies, but in this study, the data used to measure financial deepening is using a ratio of credit released by commercial banks located in a province to province's GDP and the ratio of the number of bank branches per million population of the province.

RESEARCH METHOD

The object of this study is the effect of financial deepening on income inequality in Indonesia. The focus of financial deepening in this research uses the credit ratio and bank ratio that refers to Trinugroho et al. (2015), Rachmawati et al. (2018), Bolarinwa et al. (2021) and Afzal, Firdousi, & Mahmood (2023) with variable modifications to adjust data at the provincial level. Credit ratio and bank ratio are used as indicators of financial deepening because generally defined as the



growth in the scale of financial transactions related to the real economy and to measure the quality of improvement in the provision of financial services. Credit ratio is a ratio of total credit released by commercial banks in each province compared to the province's GDP. Bank ratio is the ratio of the number of bank branches per million population of the province because it is constrained by data at the provincial level. These variables reflect the aspect of financial deepening which is thought to be an important factor influencing income inequality in Indonesia. The data in this study used secondary data obtained from Bank Indonesia and Statistics Indonesia. The discussion of this research is limited to using data from 34 provinces in Indonesia during 2005-2021.

The analytical method for this financial deepening research on income inequality refers to research conducted by Selim & Bongur (2020); Shi, Paul, & Paramati (2020); Sugiyanto & Yolanda (2020); Thornton & Di Tommaso (2020); Bolarinwa et al. (2020) and Bolarinwa et al. (2021) with slight modifications to the research variables. The research hypothesis is answered using a panel regression analysis technique (pooling regression). The purpose of using panel data is to produce a broader empirical analysis because panel data provides more information, variety, and more degrees of freedom. Where the variables in this study include the credit ratio, the ratio of the number of banks, HDI (Human Development Index), Ln per capita income, LnPDRB, and the Gini ratio.

The model of financial deepening and income inequality for the 34 provinces can be compiled as follows:

$$GR_{it} = \alpha + \beta_1 CR_{it} + \beta_2 BR_{it} + \beta_3 HDI_{it} + \beta_4 LnPCI_{it} + \beta_5 LnPDRB + e$$

Explanation:

α	= Constant
GR	= Gini Ratio
β	= Regression Coefficient
CR	= Credit Ratio
BR	= Bank Ratio
HDI	= Human Development Index
LnPCI	= Ln Per Capita Income
LnPDRB	= Ln PDRB
i	= 34 Provinces in Indonesia
t	= 2005-2021
e	= Error Term

RESULTS AND DISCUSSION

Results

This study uses panel data regression of 34 provinces in Indonesia. After the Chow Test and Hausman Test were carried out, the best estimation results in this study used the fixed effect model. The results obtained that several variables are significant.



Table 1 Fixed Effect Model Estimation Results

Variables	Gini Ratio			
	Coefficient	Std. Error	t statistic	Probability
C	-0.224429	0.062889	-3.568635	0.0004
Credit Ratio	0.011739	0.014678	0.799770	0.4242
Bank Ratio	0.005931	0.001040	5.702506	0.0000
Human Development Index	0.002960	0.000826	3.582868	0.0004
Ln Per Capita Income	0.026497	0.003333	7.950536	0.0000
Ln PDRB	0.000002	0.000007	2.975575	0.0031
R-Squared	0.542766			
F-Stats	16.58678			
Prob (F-Stats)	0.000000			
Chow Test				0.0000
Hausman Test				0.0000

Sources: Author's calculation (2022)

The coefficient of determination (R squared) in this study is 0.5427 with the assumption that 54% of the independent variables are credit ratio, bank ratio, human development index, Ln Per Capita Income, Ln GRDP and the remainder is influenced by other variables not included in the study. This model is examined under the condition that it fulfills the assumptions used so that it can be seen whether the regression model can correctly show a significant and representative relationship. The purpose of the assumption test is to assess the validity and unbiased estimator parameters used. The assumption test used in this study is the multicollinearity test and the heteroscedasticity test.

Table 2 Multicollinearity Test

	Credit Ratio	Bank Ratio	Human Development Index	Ln Per Capita Income	Ln PDRB
Credit Ratio	1	0.11830	0.05019	0.04163	-0.03030
Bank Ratio	0.11830	1	0.41144	0.57650	0.05778
Human Development Index	0.05019	0.41144	1	0.32753	-0.10484
Ln Per Capita Income	0.04163	0.57650	0.32753	1	0.04699
Ln PDRB	-0.03030	0.05778	-0.10484	0.04699	1

Sources: Author's calculation (2022)

The results of the multicollinearity test show that there is no high correlation value between the independent variables which does not exceed 0.90, so it can be concluded that there is no multicollinearity between the independent variables.


Table 3 Heteroscedasticity Test

	t-Statistic	Prob.
Credit Ratio	0.968082	0.3335
Bank Ratio	-0.316803	0.7515
Human Development Index	-0.004490	0.9964
Ln Per Capita income	-4.469945	0.2168
Ln PDRB	-0.811581	0.4174

Source: Author's calculation (2022)

Regression models that are considered good are residuals from one observation to another that are constant or homoscedasticity or there is no heteroscedasticity. Based on the information in the table, there was no heteroscedasticity in this study.

Discussion

The test results show that the bank ratio variable between the number of banks and the population has a significant effect and has a positive relationship with income inequality in the Indonesian province. If there is an increase in the number of banks, it will cause more income inequality or further increase income inequality in the Province of Indonesia.

This can be interpreted that the increase in the activities of banking institutions spread across all provinces in Indonesia has not been able to solve the problem of inequality. The presence of banking institutions actually increases the widening or uneven distribution of income in Indonesia. This is due to the low access to finance of middle to lower-income people, especially people in rural areas who only rely on non-bank institutions such as cooperatives or people who have enormous wealth. At present, the development of the financial sector can only be utilized by the upper middle class, so inequality is still high, and this causes inequality.

These results are in line with research conducted by Gabriella (2013) which states that financial development in Indonesia has not been able to reduce income inequality. Thus, it can be said that the insignificant effect of financial inclusion can occur due to the lack of financial development benefits for low-income groups of people which are strongly related to their low access to utilizing existing financial products (Muslikhah & Utami, 2020).

The test results show that the HDI variable has a significant effect and has a positive relationship with income inequality in the Indonesian province. Although the development of HDI in various provinces continues to increase, the growth is not proportional to the increase in productivity and has an effect on low-income levels. This problem can occur due to differences in HDI in each region. The Human Development Index factor in this study cannot be said to be successful because a region or area is not able to increase economic growth and increase the standard of living of the people evenly.

These results were also confirmed by Didia (2016) that there are indications that areas that experience an increase in the HDI will further widen differences in society and result in increasing inequality.

Per capita income has a significant effect and has a positive relationship with income inequality in the Province of Indonesia. If there is an increase in per capita income, there will be more income inequality or an increase in income inequality in the Province of Indonesia.

The results of this study also support Simon Kuznets' hypothesis that in the short term, there is a positive correlation between per capita income growth and income disparities. The relationship between the level of income inequality and the level of income per capita is inverted U-shaped, which states that when per capita income increases, there will be an increase in income inequality, then lasts for a certain period and then decreases as per capita income improves, but in the long run the results of this study does not support the Kusnetz hypothesis, this can happen because the increase in per capita income in each region is not the same. If a region's per capita income level increases, it is not certain that other regions will also increase. The existence of a situation like this will exacerbate the condition of development inequality.

These results are in line with research conducted by (Siami-Namini & Hudson, 2019) that there is a significant influence and a positive correlation to income inequality. However, it is different in the long term, as there is a sustainable development process that enables people to think more modernly and want to meet their every need, an increase in the value of income per capita will actually reduce inequality in income distribution (Hartini, 2015; Marantika et al., 2018).

Kuznets also assumes that groups of people with high incomes will contribute large amounts of capital and savings, while groups with low incomes only make very small contributions. Therefore, such a situation will have an accumulative impact which will result in widening the income gap in an area. Residents with high incomes will be richer and residents with low incomes will be poorer (Dao, 2018).

The GRDP variable that reflects economic conditions has a significant effect and has a positive relationship with Income Inequality in the Indonesian Province. If there is an increase in GRDP, income inequality will increase or income inequality in the Indonesian province will increase.

The role of economic growth during the observation period has not been able to reduce the level of inequality, instead, it has widened the gap between the rich and the poor. These results are in line with research conducted by Triastanto (2015).

Based on research conducted by (Febriani & Anis, 2021; Trimurti et al., 2018) that economic growth cannot always have a good impact on income distribution in society. Research by Huang et al., (2015) concluded that the relationship between economic growth and income inequality can have both positive and negative effects. This can happen because the level of economic growth and the Gini ratio of each province in Indonesia are relatively different.

CONCLUSIONS

The results show that the various indicators that measure financial deepening have an impact on increasing inequality during the observation period, even though financial deepening developments that occur in all provinces are expected to reduce inequality levels. Based on the results of the research and discussion, it can be

concluded that bank ratio, Human Development Index, Ln Per Capita Income, Ln GDRP have a positive and significant effect on inequality while the credit ratio has no effect. This condition shows that financial services, especially banking access through the ratio of the number of banks and also the development of the credit ratio, have not been able to reduce income inequality. The government needs to evaluate policies and improve the quality of sustainable financial institutions services can reach all levels of society, especially the lower middle people both in cities and in villages. It aims to achieve a more even distribution of income so that income inequality can be reduced.

ACKNOWLEDGEMENT

The authors acknowledge financial support from Fakultas Ekonomi Universitas Sriwijaya.

REFERENCES

- Ahlin, C., & Jeong, H. (2021). A conditional Gini: measure, estimation, and application. *The Journal of Economic Inequality*, 19(2), 363–384. <https://doi.org/10.1007/s10888-020-09474-3>
- Agyemang-Duah, W., Gbedoho, E.K., Peprah, P., Arthur, F., Sobeng, A.K., Okyere, J. (2018). Reducing poverty through fiscal decentralization in Ghana and beyond: A review. *Cogent Economics & Finance*, 6(1).
- Aiyar, S., & Ebeke, C.(2020). Inequality of opportunity, inequality of income and economic growth. *World Development*, 136, 1-10. <https://doi:10.1016/j.worlddev.2020.105115>
- Alrabadi, D. W. H., & Kharabsheh, B. A. (2016). Financial Deepening and Economic Growth : The Case of Jordan. *Journal of Accounting and Finance*, vol 16, 158–166.
- Alshubiri, F. (2021). Financial deepening indicators and income inequality of OECD and Asian Countries. *The Journal of Economic Asymmetries*, 24, 1-21. <https://doi.org/10.1016/j.jeca.2021.e00211>
- Altunbas, J., & Thornton, J. (2020). Finance and income inequality revisited. *Finance Research Letters*, Vol 37 <https://doi.org/10.1016/j.frl.2019.101355>
- Afzal, A., Firdousi, S. F., Mahmood, K. (2023). The Link Between Financial Depth and Economic Variables: Evidence from Poland. *Journal of Risk Finance*, 24(4). <https://doi.org/10.1108/JRF-09-2022-0245>
- Baiardi, D., & Morana, C.(2017). Financial development and income distribution inequality in the euro area. *Economic Modelling*, 40-55 <https://doi.org/10.1016/j.econmod.2017.10.008>
- Benczúr, P., Kvedaras, V. (2021). Nonlinear impact of financial deepening on income inequality. *Empirical Economics* 60, 1939–1967. <https://doi.org/10.1007/s00181-019-01819-w>
- Boamah, J., Adongo, F., Essieku, R., & Lewis, J. (2018). Financial Depth, Gross Fixed Capital Formation and Economic Growth: Empirical Analysis of 18 Asian Economies. *International Journal of Scientific and Education Research*, Vol 2, 120-130

- Bolarinwa, S.T., Adegboye, A.A., & Vo, X.V. (2021). Is there a nonlinear relationship between financial development and poverty in Africa? *Journal of Economic Studies*. Vol 48, No 7, pp 1245-1266. <https://doi.org/10.1108/JES-10-2019-0486>
- Bolarinwa, S.T., Vo, X.V., & Olufolahan, T.J. (2020). The effect of financial development on income inequality in Africa. *Development Southern Africa*, <https://doi.org/10.1080/0376835X.2020.1838261>
- Brei, M., Ferri, G., & Gambacorta. (2023). Financial Structure and Income Inequality. *Journal of International Money and Finance*, Vol 131. <https://doi.org/10.1016/j.jimonfin.2023.102807>
- Chu, C., & Jiang, M. (2021). Financial depth, income inequality, and economic transition. *Southern Economic Journal*, 88(1), 199–244. <https://doi.org/10.1002/soej.12523>
- Dao, M. Q. (2018). Human capital, poverty, and income distribution in developing countries. *Journal of Economic Studies*, 35(4), 294–303. <https://doi.org/10.1108/01443580810895590>
- Didia, K.A. (2016). Analisis Ketimpangan Pembangunan di Kawasan Kedungsepur. *Economics Development Analysis Journal*, 5(1), 101-108.
- Ekananda, M. (2016). Analisis Ekonometrika Time Series, Mitra Wacana Media.
- Ersad, M., Amir, A., & Zulgani. (2022). Dampak IPM, Tingkat Pengangguran dan Tingkat Kemiskinan terhadap Ketimpangan Pendapatan di Sumatera Bagian Selatan. *Jurnal Paradigma Ekonomika*, 17(2), 425–438. <https://online-journal.unja.ac.id/paradigma/article/view/15614/13924>
- Febriyani, A., & Anis, A. (2021). Pengaruh Pertumbuhan Ekonomi, Investasi Dan Indeks Pembangunan Manusia Terhadap Ketimpangan Distribusi Pendapatan Di Indonesia. 3, 375–375. https://doi.org/10.1007/978-3-319-95714-2_300111
- Gabriella, L. G. (2013). Impact of banking financial development and banking financial access towards poverty in Indonesia. <http://lib.ui.ac.id/opac/ui/detail.jsp?id=20157559&lokasi=lokal>
- Gujarati, D. N. (2008). *Basic Econometric* (5th ed.). McGraw-Hill Education.
- Harisuddin, H., & Hartono, D. (2019). Financial Deepening Impacts on Regional Economic Growth. *Signifikan: Jurnal Ilmu Ekonomi*, 8(1), 23–36. <https://doi.org/10.15408/sjie.v8i1.8944>
- Hartini, N. T. (2015). Pengaruh Pdrb Per Kapita, Investasi Dan Ipm Terhadap Ketimpangan Pendapatan Antar Daerah Di Provinsi Diy Tahun 2011-2015. *Jurnal Pendidikan Dan Ekonomi*, 6(6), 530–539.
- Istiqomah, R. (2018). Analisis Pengaruh Pertumbuhan Ekonomi, IPM dan Investasi (PMA) Terhadap Ketimpangan Pembangunan Antar Provinsi (Studi Kasus di Pulau Jawa Tahun 2011-2016). *Jurnal Ilmiah*, 10(05), 1–8.
- Jeong, Hyeok and Kim, Soyoung, (2018). Finance, Growth, and Inequality: New Evidence from the Panel VAR Perspective. *Seoul Journal of Economics* 2018, Vol. 31, No. 2, Available at SSRN: <https://ssrn.com/abstract=3187163>
- Jung, S. M., & Cha, H. E. (2020). Financial development and income inequality: evidence from China. *Journal of the Asia Pacific Economy*, 1–23. <https://doi.org/10.1080/13547860.2020.171730>

- Kavya, T.B., & Shijin, S. (2020). Economic Development, Financial Development, And Income Inequality Nexus. *Borsa Istanbul Review*.
- Luptacik, M., & Nezinsky, E. (2020). Measuring income inequalities beyond the Gini coefficient. *Central European Journal of Operations Research* 28, 561–578. <https://doi.org/10.1007/s10100-019-00662-9>
- Marantika, D., Hadi P, T., & Viphindrartin, S. (2018). Disparitas Regional Antar Provinsi Di Indonesia 2011 – 2015 (Model Regresi Spasial). *Media Trend*, 13(1), 31. <https://doi.org/10.21107/mediatrend.v13i1.3171>
- Pradnyadewi, D., & Purbadharmaja, I. (2017). Pengaruh Ipm, Biaya Infrastruktur, Investasi Dan Pertumbuhan Ekonomi Terhadap Ketimpangan Distribusi Pendapatan Di Provinsi Bali. *E-Jurnal Ekonomi Pembangunan Universitas Udayana*, 6(2), 255–285.
- Rachmawati, A., Wulandari, D., & Narmaditya, B. (2018). Financial Deepening and Income Inequality in Indonesia. *Global Business Review*. <https://doi.org/10.1177/0972150918811246>
- Ran, M., Chen, L., & Li, Wanli. (2020). Financial deepening, spatial spillover, and Urban-Rural income Disparity: Evidence from China. *Sustainability*, 12. <https://doi.org/doi:10.3390/su12041450>
- Rinjani, M. F. (2017). Analisis Faktor-Faktor Yang Mempengaruhi Ketimpangan Distribusi Pendapatan Di Indonesia Tahun 2010-2016. *Jurnal Muhammadiyah Yogyakarta*.
- Ridzuan, A. R., Saad, R. M., Subramaniam, G., Amin, S. M., Borhan., H. (2019). The Link Between Financial Sector Development and Income Distribution: Evidence from Singapore. *International Journal of Business and Society*, 20(2).
- Sawyer M. (2018) Financialisation, Financial Crisis and Inequality. *International Papers in Political Economy*. https://doi.org/10.1007/978-3-319-91298-1_2
- Selim, P., & Gungor, H. (2020). Inequality and financial development: Evidence from selected MENA region countries. *International Journal of Finance & Economics*, Vol 26(2), pp 2732-2747. <https://doi.org/10.1002/ijfe.1930>
- Shi, Y., Paul, S., & Paramati, S.R. (2020). The impact of financial deepening on income inequality: Empirical evidence from Australia. *International Journal of Finance & Economics*. <https://doi.org/10.1002/ijfe.2338>
- Siami-Namini, S., & Hudson, D. (2019). Inflation and income inequality in developed and developing countries. *Journal of Economic Studies*, 30(3–4), 195.
- Sugiyanto, C., & Yolanda, Z. (2020). The effect of financial deepening on economic growth, inequality, and poverty: Evidence from 73 Countries. *South East European Journal of Economics and Business* Vol 15 (2), 15-27. <https://doi.org/10.2478/jeb-2020-0012>
- Tarmidzi, A. (2012). Analisis Pengaruh PDRB, Penduduk, IPM dan APBD terhadap Konvergensi Pendapatan di Indonesia tahun 2004-2011.



- Thornton, J., & Di Tommaso, C. (2020). *The long-run relationship between finance and income inequality: Evidence from panel data*. Finance Research Letters, 32. <https://doi.org/10.1016/j.frl.2019.04.036>
- Trimurti, C. P., Komalawati, M. (2018). Determinan Ketimpangan Pendapatan Di Provinsi Bali. *Teknologi, Sains, Dan November*, 29–36. <https://jurnal.undhirabali.ac.id/index.php/sintesa/article/view/470%0Ahttps://jurnal.undhirabali.ac.id/index.php/sintesa/article/download/470/403>
- Trinugroho, I., Agusman, A., Ariefianto, M. D., Darsono, D., & Tarazi, A. (2015). Determinants of Cross Regional Disparity in Financial Deepening: Evidence from Indonesian Provinces. *Economics Bulletin*, 35(2).
- Verbeek, M. (2008). *A guide to modern econometrics*. John Wiley & Sons.
- Wibisono, Y. (2005). *Metode Statistika*. Gadjah Mada University Press.
- Wibowo, T. (2016). Ketimpangan Pendapatan dan Middle Income Trap Income Inequality and Middle Income Trap. *Kajian Ekonomi Keuangan*, 20(2), 111–132. <http://fiskal.kemenkeu.go.id/ejournal>.
- Zhang, R., & Naceur, S. B. (2019). Financial Development, Inequality, and Poverty: International Evidence. *International Review of Economics and Finance*, 61, 1-16. <https://doi.org/10.1016/j.iref.2018.12.015>.