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References

Acemoglu, D., Johnson, S., & Robinson, J. A. (2001). The colonial origins of comparative development: An empirical investigation. American Economic Review, 91(5), 1369–1401. https://doi.org/10.1257/aer.91.5.1369

Angrist, J. D., & Pischke, J.-S. (2009). Mostly harmless econometrics: An empiricist's companion. Princeton University Press. https://doi.org/10.2307/j.ctvcm4j72

Aterido, R., Beck, T., & Iacovone, L. (2013). Access to finance in Sub-Saharan Africa: Is there a gender gap? World Development, 47, 102–120. https://doi.org/10.1016/j.worlddev.2013.02.013

Austin, P. C. (2011). An introduction to propensity score methods for reducing the effects of confounding in observational studies. Multivariate Behavioral Research, 46(3), 399–424. https://doi.org/10.1080/00273171.2011.568786

Ayyagari, M., Demirgüç-Kunt, A., & Maksimovic, V. (2010). Formal versus informal finance: Evidence from China. The Review of Financial Studies, 23(8), 3048–3097. https://doi.org/10.1093/rfs/hhq030

Banerjee, A., & Munshi, K. (2004). How efficiently is capital allocated? Evidence from the knitted garment industry in Tirupur. The Review of Economic Studies, 71(1), 19–42. https://doi.org/10.1111/0034-6527.00274

Banerjee, A. V., & Duflo, E. (2014). Do firms want to borrow more? Testing credit constraints using a directed lending program. The Review of Economic Studies, 81(2), 572–607. https://doi.org/10.1093/restud/rdt046

Bank Indonesia. (2019). Peraturan Anggota Dewan Gubernur Nomor 21/18/PADG/2019 tentang implementasi standar nasional Quick Response Code untuk pembayaran. Bank Indonesia. https://www.bi.go.id/en/fungsi-utama/sistem-pembayaran/ritel/kanal-layanan/qris/default.aspx

Bartelsman, E. J., Haltiwanger, J., & Scarpetta, S. (2013). Cross-country differences in productivity: The role of allocation and selection. American Economic Review, 103(1), 305–334. https://doi.org/10.1257/aer.103.1.305

UNIVERSITAS
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Bastidas, R., & Acosta, N. (2019). Misallocation and manufacturing TFP in Ecuador: Formal, semi-formal and informal firms. Journal of Economic Structures, 8, Article 16. https://doi.org/10.1186/s40008-019-0147-1

Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2005). Financial and legal constraints to growth: Does firm size matter? The Journal of Finance, 60(1), 137–177. https://doi.org/10.1111/j.1540-6261.2005.00727.x

Bento, P., & Restuccia, D. (2017). Misallocation, establishment size, and productivity. American Economic Journal: Macroeconomics, 9(3), 267–303. https://doi.org/10.1257/mac.20150281

Berger, A. N., & Udell, G. F. (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. Journal of Banking & Finance, 22(6–8), 613–673. https://doi.org/10.1016/S0378-4266(98)00038-7

Berger, A. N., & Udell, G. F. (2006). A more complete conceptual framework for SME finance. Journal of Banking & Finance, 30(11), 2945–2966. https://doi.org/10.1016/j.jbankfin.2006.05.008

Berman, N., & Héricourt, J. (2010). Financial factors and the margins of trade: Evidence from cross-country firm-level data. Journal of Development Economics, 93(2), 206–217. https://doi.org/10.1016/j.jdeveco.2009.11.006

Bernanke, B. S. (1983). Irreversibility, uncertainty, and cyclical investment. The Quarterly Journal of Economics, 98(1), 85–106. https://doi.org/10.2307/1885568

Bertrand, M., Djankov, S., Hanna, R., & Mullainathan, S. (2007). Obtaining a driver's license in India: An experimental approach to studying corruption. The Quarterly Journal of Economics, 122(4), 1639–1676. https://doi.org/10.1162/qjec.2007.122.4.1639

Broda, C., & Weinstein, D. E. (2006). Globalization and the gains from variety. The Quarterly Journal of Economics, 121(2), 541–585. https://doi.org/10.1162/qjec.2006.121.2.541

Busso, M., Madrigal, L., & Pagés, C. (2013). Productivity and resource misallocation in Latin America. The B.E. Journal of Macroeconomics, 13(1), 903–932. https://doi.org/10.1515/bejm-2012-0087

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Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. Journal of Economic Surveys, 22(1), 31–72. https://doi.org/10.1111/j.1467-6419.2007.00527.x

Camacho, A., & Conover, E. (2010). Misallocation and productivity in Colombia's manufacturing industries (IDB Working Paper Series No. 123). Inter-American Development Bank. https://doi.org/10.18235/0010928

Cirera, X., Fattal-Jaef, R. N., & Maemir, H. (2020). Taxing the good? Distortions, misallocation, and productivity in Sub-Saharan Africa. The World Bank Economic Review, 34(1), 75–100. https://doi.org/10.1093/wber/lhy018

Clarke, G. R. G. (2025). Estimating how firm characteristics affect corruption using enterprise survey data. Applied Economics. Advance online publication. https://doi.org/10.1080/00036846.2025.2521035

Cobb, C. W., & Douglas, P. H. (1928). A theory of production. The American Economic Review, 18(1), 139–165. https://doi.org/10.2307/1811556

Collard-Wexler, A., Asker, J., & De Loecker, J. (2011). Productivity volatility and the misallocation of resources in developing economies (NBER Working Paper No. 17175). National Bureau of Economic Research. https://doi.org/10.3386/w17175

Coordinating Ministry for Economic Affairs. (2015). KUR baru, memperluas akses pembiayaan bagi UMKM. Komite Kebijakan Pembiayaan Bagi UMKM, Kementerian Koordinator Bidang Perekonomian. https://kur.ekon.go.id/kur-baru-memperluas-akses-pembiayaan-bagi-umkm

De Mel, S., McKenzie, D., & Woodruff, C. (2008). Returns to capital in microenterprises: Evidence from a field experiment. The Quarterly Journal of Economics, 123(4), 1329–1372. https://doi.org/10.1162/qjec.2008.123.4.1329

de Nicola, F., Nguyen, H., & Loayza, N. (2020). Productivity loss and misallocation of resources in Southeast Asia (Policy Research Working Paper No. 9483). World Bank. https://doi.org/10.1596/1813-9450-9483

UNIVERSITAS
GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Desai, M. A., Foley, C. F., & Hines, J. R., Jr. (2004). A multinational perspective on capital structure choice and internal capital markets. The Journal of Finance, 59(6), 2451–2487. https://doi.org/10.1111/j.1540-6261.2004.00706.x

Dixit, A. K., & Stiglitz, J. E. (1977). Monopolistic competition and optimum product diversity. The American Economic Review, 67(3), 297–308. https://doi.org/10.2307/1831401

Djankov, S., Ganser, T., McLiesh, C., Ramalho, R., & Shleifer, A. (2010). The effect of corporate taxes on investment and entrepreneurship. American Economic Journal: Macroeconomics, 2(3), 31–64. https://doi.org/10.1257/mac.2.3.31

Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2002). The regulation of entry. The Quarterly Journal of Economics, 117(1), 1–37. https://doi.org/10.1162/003355302753399436

Dollar, D., Hallward-Driemeier, M., & Mengistae, T. (2005). Investment climate and firm performance in developing economies. Economic Development and Cultural Change, 54(1), 1–31. https://doi.org/10.1086/431262

Fafchamps, M., McKenzie, D., Quinn, S., & Woodruff, C. (2014). Microenterprise growth and the flypaper effect: Evidence from a randomized experiment in Ghana. Journal of Development Economics, 106, 211–226. https://doi.org/10.1016/j.jdeveco.2013.09.010

Fazzari, S. M., Hubbard, R. G., & Petersen, B. C. (1988). Financing constraints and corporate investment. Brookings Papers on Economic Activity, 1988(1), 141–195. https://doi.org/10.2307/2534426

Fazzari, S. M., & Petersen, B. C. (1993). Working capital and fixed investment: New evidence on financing constraints. The RAND Journal of Economics, 24(3), 328–342. https://doi.org/10.2307/2555961

Feenstra, R. C., Inklaar, R., & Timmer, M. P. (2015). The next generation of the Penn World Table. American Economic Review, 105(10), 3150–3182. https://doi.org/10.1257/aer.20130954

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Feenstra, R. C., Inklaar, R., & Timmer, M. P. (2025). Penn World Table version 11.0 [Data set]. Groningen Growth and Development Centre, University of Groningen. https://doi.org/10.34894/FABVLR

Fisman, R., & Svensson, J. (2007). Are corruption and taxation really harmful to growth? Firm level evidence. Journal of Development Economics, 83(1), 63–75. https://doi.org/10.1016/j.jdeveco.2005.09.009

Foster, L., Haltiwanger, J., & Syverson, C. (2008). Reallocation, firm turnover, and efficiency: Selection on productivity or profitability? American Economic Review, 98(1), 394–425. https://doi.org/10.1257/aer.98.1.394

Francis, D. C., Karalashvili, N., Maemir, H. B., & Rodriguez Meza, J. L. (2020). Measuring total factor productivity using the Enterprise Surveys: A methodological note (Policy Research Working Paper No. 9491). World Bank. https://doi.org/10.1596/1813-9450-9491

García-Santana, M., & Ramos, R. (2015). Distortions and the size distribution of plants: Evidence from cross-country data. SERIEs, 6, 279–312. https://doi.org/10.1007/s13209-015-0129-y

Gelb, A., Mengistae, T., Ramachandran, V., & Shah, M. K. (2009). To formalize or not to formalize? Comparisons of microenterprise data from Southern and East Africa (CGD Working Paper No. 175). Center for Global Development. https://doi.org/10.2139/ssrn.1473273

Gordon, R. H., & Li, W. (2009). Tax structures in developing countries: Many puzzles and a possible explanation. Journal of Public Economics, 93(7–8), 855–866. https://doi.org/10.1016/j.jpubeco.2009.04.001

Griliches, Z., & Hausman, J. A. (1986). Errors in variables in panel data. Journal of Econometrics, 31(1), 93–118. https://doi.org/10.1016/0304-4076(86)90058-8

Hall, R. E., & Jones, C. I. (1999). Why do some countries produce so much more output per worker than others? The Quarterly Journal of Economics, 114(1), 83–116. https://doi.org/10.1162/003355399555954

UNIVERSITAS
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Hallward-Driemeier, M., & Pritchett, L. (2015). How business is done in the developing world: Deals versus rules. Journal of Economic Perspectives, 29(3), 121–140. https://doi.org/10.1257/jep.29.3.121

Heckman, J. J., Ichimura, H., & Todd, P. E. (1997). Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme. The Review of Economic Studies, 64(4), 605–654. https://doi.org/10.2307/2971733

Ho, D. E., Imai, K., King, G., & Stuart, E. A. (2007). Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference. Political Analysis, 15(3), 199–236. https://doi.org/10.1093/pan/mpl013

Hopenhayn, H. A. (1992). Entry, exit, and firm dynamics in long run equilibrium. Econometrica, 60(5), 1127–1150. https://doi.org/10.2307/2951541

Hsieh, C.-T., & Klenow, P. J. (2009). Misallocation and manufacturing TFP in China and India. Quarterly Journal of Economics, 124(4), 1403–1448. https://doi.org/10.1162/qjec.2009.124.4.1403

Hsieh, C.-T., & Olken, B. A. (2014). The missing "missing middle." Journal of Economic Perspectives, 28(3), 89–108. https://doi.org/10.1257/jep.28.3.89

Hubbard, R. G. (1998). Capital-market imperfections and investment. Journal of Economic Literature, 36(1), 193–225. https://business.columbia.edu/sites/default/files-efs/pubfiles/581/581.pdf

International Monetary Fund. (2017). Indonesia: Financial system stability assessment (IMF Country Report No. 17/152). https://www.imf.org/~/media/Files/Publications/CR/2017/cr17152.ashx

International Monetary Fund. (2024). Indonesia: Financial sector assessment program — Financial system stability assessment (IMF Country Report No. 2024/272). https://www.elibrary.imf.org/view/journals/002/2024/272/article-A001-en.xml

Julio, B., & Yook, Y. (2012). Political uncertainty and corporate investment cycles. The Journal of Finance, 67(1), 45–83. https://doi.org/10.1111/j.1540-6261.2011.01707.x

UNIVERSITAS
GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Kleven, H. J., Knudsen, M. B., Kreiner, C. T., Pedersen, S., & Saez, E. (2011). Unwilling or unable to cheat? Evidence from a tax audit experiment in Denmark. Econometrica, 79(3), 651–692. https://doi.org/10.3982/ECTA9113

León-Ledesma, M. A.(2016). Potential Growth, Misallocation, and Institutional Obstacles: Firm-Level Evidence Asian Development Review, 33(2), 119–143. http://dx.doi.org/10.2139/ssrn.2811529

Manski, C. F. (1990). Nonparametric bounds on treatment effects. The American Economic Review, 80(2), 319–323. https://www.jstor.org/stable/2006592

Méon, P.-G., & Weill, L. (2010). Is corruption an efficient grease? World Development, 38(3), 244–259. https://doi.org/10.1016/j.worlddev.2009.06.004

Meza, F., Pratap, S., & Urrutia, C. (2019). Credit, misallocation and productivity growth: A disaggregated analysis. Review of Economic Dynamics, 34, 61–86. https://doi.org/10.1016/j.red.2019.03.003

Midrigan, V., & Xu, D. Y. (2014). Finance and misallocation: Evidence from plant-level data. American Economic Review, 104(2), 422–458. https://doi.org/10.1257/aer.104.2.422

Moll, B. (2014). Productivity losses from financial frictions: Can self-financing undo capital misallocation? American Economic Review, 104(10), 3186–3221. https://doi.org/10.1257/aer.104.10.3186

Nasution, A. (2015). How Indonesia reformed its risky financial sector. East Asia Forum. https://eastasiaforum.org/2015/04/24/how-indonesia-reformed-its-risky-financial-sector/

Oberfield, E. (2013). Productivity and misallocation during a crisis: Evidence from the Chilean crisis of 1982. Review of Economic Dynamics, 16(1), 100–119. https://doi.org/10.1016/j.red.2012.10.005

Olken, B. A., & Barron, P. (2009). The simple economics of extortion: Evidence from trucking in Aceh. Journal of Political Economy, 117(3), 417–452. https://doi.org/10.1086/599707

Olley, G. S., & Pakes, A. (1996). The dynamics of productivity in the telecommunications equipment industry. Econometrica, 64(6), 1263–1297. https://doi.org/10.2307/2171831

UNIVERSITAS
GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Otoritas Jasa Keuangan. (2014). Peraturan Otoritas Jasa Keuangan Nomor 19/POJK.03/2014 tentang layanan keuangan tanpa kantor dalam rangka keuangan inklusif. Otoritas Jasa Keuangan. https://ojk.go.id/id/kanal/perbankan/regulasi/peraturan-ojk/Pages/9peraturan-otoritas-jasa-keuangan-tentang-layanan-keuangan-tanpa-kantor-dalam-rangka-keuangan-inklusif.aspx

Petersen, M. A., & Rajan, R. G. (1994). The benefits of lending relationships: Evidence from small business data. The Journal of Finance, 49(1), 3–37. https://doi.org/10.1111/j.1540-6261.1994.tb04418.x

Pomeranz, D. (2015). No taxation without information: Deterrence and self-enforcement in the value added tax. American Economic Review, 105(8), 2539–2569. https://doi.org/10.1257/aer.20130393

Republic of Indonesia. (2007). Instruksi Presiden Nomor 6 Tahun 2007 tentang kebijakan percepatan pengembangan sektor riil dan pemberdayaan usaha mikro, kecil dan menengah. https://kur.ekon.go.id/landasan-hukum

Republic of Indonesia. (2011). Undang-Undang Nomor 21 Tahun 2011 tentang Otoritas Jasa Keuangan. https://ojk.go.id/en/regulasi/otoritas-jasa-keuangan/undang-undang/Pages/Law-of-the-Republic-of-Indonesia-Number-21-of-2011-on-Financial-Services-Authority.aspx

Restuccia, D., & Rogerson, R. (2008). Policy distortions and aggregate productivity with heterogeneous establishments. Review of Economic Dynamics, 11(4), 707–720. https://doi.org/10.1016/j.red.2008.05.002

Restuccia, D., & Rogerson, R. (2013). Misallocation and productivity. Review of Economic Dynamics, 16(1), 1–10. https://doi.org/10.1016/j.red.2012.11.003

Restuccia, D., & Rogerson, R. (2017). The causes and costs of misallocation. Journal of Economic Perspectives, 31(3), 151–174. https://doi.org/10.1257/jep.31.3.151

Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. Biometrika, 70(1), 41–55. https://doi.org/10.1093/biomet/70.1.41

UNIVERSITAS
GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Rosenbaum, P. R., & Rubin, D. B. (1985). Constructing a control group using multivariate matched sampling methods that incorporate the propensity score. The American Statistician, 39(1), 33–38. https://doi.org/10.1080/00031305.1985.10479383

Rubin, D. B. (2001). Using propensity scores to help design observational studies: Application to the tobacco litigation. Health Services and Outcomes Research Methodology, 2(3–4), 169–188. https://doi.org/10.1023/A:1020363010465

Schündeln, M. (2013). Appreciating depreciation: Physical capital depreciation in a developing country. Empirical Economics, 44(3), 1277–1290. https://doi.org/10.1007/s00181-012-0592-2

Sequeira, S., & Djankov, S. (2014). Corruption and firm behavior: Evidence from African ports. Journal of International Economics, 94(2), 277–294. https://doi.org/10.1016/j.jinteco.2014.08.010

Shen, J. (2023). Capital misallocation and financial market frictions: Empirical evidence from equity cost of capital. International Review of Economics & Finance, 87, 486–504. https://doi.org/10.1016/j.iref.2023.04.012

Shleifer, A., & Vishny, R. W. (1993). Corruption. The Quarterly Journal of Economics, 108(3), 599–617. https://doi.org/10.2307/2118402

Solow, R. M. (1957). Technical change and the aggregate production function. The Review of Economics and Statistics, 39(3), 312–320. https://doi.org/10.2307/1926047

Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. The American Economic Review, 71(3), 393–410. https://www.jstor.org/stable/1802787

Sundararajan, V. (1988). Financial reform and monetary control in Indonesia (IMF Working Paper No. 88/004). International Monetary Fund.
https://ssrn.com/abstract=884526

Svensson, J. (2003). Who must pay bribes and how much? Evidence from a cross section of firms. The Quarterly Journal of Economics, 118(1), 207–230. https://doi.org/10.1162/00335530360535180

UNIVERSITAS
GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Uras, B. R. (2014). Corporate financial structure, misallocation and total factor productivity. Journal of Banking & Finance, 39, 177–191. https://doi.org/10.1016/j.jbankfin.2013.11.011

Varian, H. R. (2010). Intermediate microeconomics: A modern approach (8th ed.). W. W. Norton.

Wooldridge, J. M. (2010). Econometric analysis of cross section and panel data (2nd ed.). MIT Press.

World Bank. (2020). Doing Business 2020: Comparing business regulation in 190 economies — Economy profile of Indonesia. http://documents.worldbank.org/curated/en/760081575000864905

World Bank. (2022). Indonesia economic prospects: Financial deepening for stronger growth and sustainable recovery. World Bank Group. https://www.worldbank.org/en/country/indonesia/publication/indonesia-economic-prospects-iep-june-2022-financial-deepening-for-stronger-growth-and-sustainable-recovery

World Bank. (2024). World development indicators: Domestic credit to private sector (% of GDP) and manufacturing value added (% of GDP) [Data set]. World Bank DataBank. https://data.worldbank.org

World Bank Group. (2015). Indonesia—World Bank Enterprise Survey (WBES) 2009 (Ref. IDN_2009_ES_v02_M_WB) [Data set]. Enterprise Surveys. https://www.enterprisesurveys.org/en/data

World Bank Group. (2023). Indonesia—World Bank Enterprise Survey (WBES) 2023 (Ref. IDN_2023_WBES_v01_M) [Data set]. Enterprise Surveys. https://www.enterprisesurveys.org/en/data

Zellner, A. (1962). An efficient method of estimating seemingly unrelated regressions and tests for aggregation bias. Journal of the American Statistical Association, 57(298), 348–368. https://doi.org/10.1080/01621459.1962.10480664