ISBN: *978-623-92201-0-5*

INTERPLAY OF FINANCIAL STRUCTURE AND FINANCIAL AGENT BEHAVIORS IN ECONOMIC WELFARE

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Abstract. *This paper unearths the interaction of financial intermediaries as financial structure and financial agent's behaviors in shaping economic welfare given the dynamic nature of economy. The paper acts as an intuitive walk with interconnected conclusions from one finding to another and raises the issue through juxtaposing opposite economic policies (no-usury policy in ancient Greek civilization and modern capital market) with strikingly similar economic outcomes of wealth inequality. It sheds light that financial structure and agent's behaviors have more important influence compared to that of financial instrument in shaping welfare. Through historical overview, it shows the responsiveness of economy (acceptance and adoption of interest rate). The qualitative synthesis suggests that economic policies ought to possess complementary approaches to overcome structural (moral hazard and credit risk) and behavioral issues (agent's speculative tendency and predictive ability). The practical implication is capital and liquidity requirements to financial intermediaries for structural issues and Tobin tax and commitment of long-run fiscal policy for behavioral ones. The reflexive nature of economy has a theoretical and managerial implications that economic policies ought to be constantly evaluated and give a sense of security to intermediaries and agents to yield the most satisfactory outcomes.*

Keywords: *economic welfare; financial architecture; financial intermediaries; financial agents; behavioral economics*

INTRODUCTION

The use of interest rate in investment system has had a purpose of bridging lender's willingness to forgo present consumption and borrower's ability to pay for capital that are available to them presently. Investments with more uncertainty and greater tendency of failure deems higher cost of capital. The higher the risk, the higher the returns demanded by investors. In essence, interest rate has become a tool to quantify risks to enforce fairness.

With such purpose, it follows that the use of interest rate which ensures fairness deems an equal wealth distribution. The modern economy has widely accepted, adopted, and even required interest rate as a tool in the investment system (although some exceptions exist), especially in capital markets. Allegedly then, the global wealth distribution ought to be even. However, Statistic Portal shows that 0.8% of the world's population owns just a little less than half of the global wealth, while 68% of the population comprised of individuals who own less than 10 thousand U.S. dollars of net worth in comparison. Without a doubt, there are multiple variables of a nation's wealth distribution, yet one must have wondered the magnitude of effect that financial instrument, in this case interest rate, and its policy, has on equality. If the exercise of interest rate is the best policy because it encourages fairness, the state of the economy should be at its maximum potential. And this would deem, at least, close-to-equal distribution of wealth. However, the statistics does not seem to support it. With such unequal distribution of wealth, a closer investigation to an economy where interest rate is not exercised is executed. Kron (2011) conjures a wealth distribution curve in ancient Greek civilizations or the classical period, where no-usury policy is exercised. Among 31,000 male Athenians, only 3% is liable to pay taxes because their wealth surpasses a certain limit. The Lorenz wealth distribution curve shows that ancient Athens has a Gini coefficient of 0.708 and US has 0.71 in 1953, 4 and 0.704 in 1998. Kron concludes that the Athenian wealth distribution

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Despite the contrast of interest rate policies, the wealth distributions of modern economy and that of ancient Greek civilization have an uncanny resemblance. It is apparent that other factors persist beyond mere financial instruments such as interest rate which affect wealth distribution and the economy as a whole. Wealth equality, influenced by the use of interest rate, is one of the components of financial stability in economic welfare, which comprised of two forces: structural, which is the nature of an economy's financial architecture, and behavioral, which is the rationale and actions of financial agents. Extensive literature presents sturdy evidence of a direct correlation between an economy's financial structure and its welfare. Beck, Demirgüç-Kunt, and Levine (2007) attribute 60% to the development in financial service industry for the income increase in the poorest quintile and 40% for inequality decrease. Gole and Sun (2013) find a positive inclination in economic outcomes through the intermediation that financial services offer. In addition, the contemporary findings on financial agent's rationale and course of actions have enabled economists to conjure theories that better explain market phenomena. Findings in behavioral economics are suggestive and persistent to show the realness of influence that psychology has on economy.

The core issue of this paper is to illuminate how the structural variables (financial architecture) and agent's behaviors are associated with economic welfare and how they interplay with one another. The aim is to create an intuitive walk through extensive dissections of pertained literature (qualitative approach), in hope to aid to policy-making strategies. There are several limitations within this paper: *omission of supremacy analysis, exclusive factors of interest, omission of causalities assignation*, and *economic science focus*. The investigation is carried out with literature review (whose objectivity, reliability, and validity are examined based on a criterion described in methodology) that delves in the structural and behavioral variables, particularly, the ones that explain the interaction and implication among the variables with economic welfare. The findings and synthesis infer moral hazard and credit risk in financial intermediaries as the structural problems and the speculative tendency and predictive ability of agents as the behavioral problems. Moral hazard precipitates risky credits which gives rise of bubble and overshadow burst and crises (bank runs) while agent's speculative propensity create a short-term gain-focus that escalates overvaluation of assets (exceeding the fundamental values), aggravating the situation. Agent's predictive ability disrupts optimality of iterative government policy. The practical remedies are: Basel III and CRD IV for moral hazard, Tobin tax for agent's speculative tendency, and long-run fiscal policy commitment for agent's predictive ability.

LITERATURE REVIEW

Firstly, an explanation on the rationale of no-usury policy in classical period is laid out as a stepping stone. The policy is the basis of Hellenistic economy. With religion being a prominent element of the society, Xenophon, successor of Socrates, correlates priority of morality with handling resources. He encourages giving managerial positions to men "with a ruling soul, *archaic* man". Baloglou (2012) mentions this tangibility of economics with morality as the "particular characteristic of the Ancient Greek Oikos [that] distinguishes...[itself] from the modern one.". With such importance on morality in the civilization, Aristoteles categorizes economic transactions into such: Commodity-Commodity', Commodity-Money-Commodity', Money-Commodity-Money', Money-Money-Money' (Baloglou, 2012). The list is arranged in descending manner in ethical spectrum where breeding money is highly frowned upon because it hoards wealth in one place rather than distribute it and the ac is associated with greed. To this reason, no-usury policy is implemented, and emulated by other civilizations of the age.

However, the dynamic nature of economy and real growths has tackled the notion of greed to be associated with interest rate. Zarlenga (2010) states that by 1956, loanable funds with interest entailed was overwhelmingly accepted. The modern economy, started after Smith's (1776) Wealth of Nations, progresses to be ever capitalistic. Smith emphasizes the necessity of interest rate for it acts as a compensation borne by the borrowers for the opportunity cost that investors agree to incur on themselves by lending money. This view is the basis of the use of interest rate in current investment system.
Real economic growths have also given rise to high complexity in financial system, which is evident through the change of perspective on interest rate from classical period to modern economy. The more complex the financial system is the more evident is the need to employ a sound design of financial architecture for well-functioning economy to deliver satisfactory outcomes. However, intermediaries pose a risk on the economy due to their interconnectedness. Past crises have corroborated the magnitude of fatality incurred by welfare through the (contagion of) failures of intermediaries. Studies confirm direct correlation of structure with welfare and calls for the best policy to govern the financial structure of an economy. Yet contrary to traditional belief that economy should and could be quantified and predicted through canonical mathematics, real life instances do not suggest just so. Bernoulli's utility theory becomes the enlightenment in the realm of behavioral economics, because it involves and attempts to explain the nature of financial agents. The digression from canonical calculations is not only probable but persistent in everyday life. Von Neumann and Morgenstern (1944) and Friedman and Savage (1948, 1952) also expounds on the abstractness agents' behavior. Although debates linger, the existence of behavioral variables which digress economic outcomes from mathematical predictions are evident. Findings in behavioral variables would be a decision-making tool for policies governing financial agents, which eventually direct the economic welfare.

In light of the realness on structural and behavioral effects on welfare, a synthesis from these studies are conducted:

No.	Researcher	Title
1	Fisher (1933)	The Debt-Deflation Theory of Great Depressions
2	Friedman and Savage (1952)	The Expected-Utility Hypothesis and the Measurability of Utility
3	Prescott and Kydland (1977)	Rules Rather than Discretion: The Inconsistency of Optimal Plans
4	Nadauld (1978)	The Interest Rate Elasticity of Networth in Savings Institutions
5	Tobin (1978)	A Proposal for International Monetary Reform
6	Shiller (1981)	Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?
7	Prescott and Kydland (1982)	Time to Build and Aggregate Fluctuations
8	Fischer (1991)	Growth, Macroeconomics, and Development

9	Thakor (1996)	The design of financial systems: An overview
10	Thaler (1999)	The End of Behavioral Finance
11	Akerlof (2002)	Behavioral Macroeconomics and Macroeconomic Behavior
12	Goldstein and Pauzner (2005)	Demand-deposit Contracts and the Probability of Bank Runs
13	Beck, Demirgüç-Kunt and Levine (2007)	Finance, Inequality and the Poor
14	Palley (2010)	Destabilizing Speculation and the Case for an International Currency Transactions Tax
15	Wooldridge (2012)	Econometric analysis of cross section and panel data
16	Delis, Hasan, and Kazakis (2012)	Bank Regulations and Income Inequality: Empirical Evidence
17	Gole and Sun (2013)	Financial Structures and Economic Outcomes: An Empirical Analysis
18	Takahashi and Okada (2013)	An Agent-Based Model of Business Cycle with Gestation Period
19	Flannery and Hankins (2013)	Estimating Dynamic Panel Models in Corporate Finance
20	Carletti and Leonello (2016)	Regulatory Reforms in the European Banking Sector

METHODOLOGY

The type of the research is descriptive processed by systemic literature review. To evaluate the internal and external credibility (stability and consistency) of the sources, validity test is executed in order to conclude if the source findings could be generalized (Sekaran and Bougie, 2010). The source reliability is based on the "degree of consistency with which instances are assigned to the same category by different observers or by the same observer in different occasion," (Silverman, 2006).

A synthesis from the literatures is used to dissect the extent of influence and association that financial structure and agent behavior have on economic welfare (sources include articles, journals, books, lectures, websites, and posts). Major themes investigated are: financial intermediaries as structure and their influence on the economy, the persistent interaction of behavior variables in economy, and the mitigations and remedies of issues on financial structure and agent's behaviors. Selecting the literature would be a process based on the guidelines provided by Sekaran and Bougie, involving:

1. Consideration on how literature title is pertinent to the theme investigated
2. Relevance evaluation of the abstract on its purpose, general methodology, findings, and conclusions and towards the proposed theme
3. Further consideration on the first chapter of the literature for clearer picture on how the literature is relevant
4. Credibility evaluation based on the quality of the journal that publishes it: impacts and number of citations

FINDINGS AND ARGUMENT

Systematic literature follows that researches on the issues investigated, starting from the structural variables, are dissected for their implications, followed by deductive conclusions. Gole and Sun (2013) find a positive correlation between a nation's financial structure and its economic outcomes. Beck, Demirgüç-Kunt, and Levine (2007) attribute 60% to the financial service development for income increase in the poorest quintile and 40% for inequality decrease. Delis, Hasan and Kazakis (2012) emphasize the significant effects that banking regulation, one key element in financial architecture, has on welfare.

These findings infer that more developed financial intermediaries as financial structure the smoothens leading economic indicators and induce the better would the economic outputs be. With such importance, Fischer (1991) and Fisher (1933) agree that macroeconomic management ought to be alert with structural indicators, since on the structural side, macroeconomic policy plays a vital role in economic outcomes and ought to address the risk associated with intermediaries: moral hazard due to asymmetric information and credit leniency which is a recurring theme in financial intermediaries.

However, if orthodox economic theories truly capture reality, instable indicators would not have been generated because theoretically there are cures for every economic dysfunction. Fisher (1933), Shiller (1981), Thaler (1999), and Akerlof (2002) confirm a persistent digression of theoretical economics and reality. Keynes (1936) particularly argues that speculation is the starter of the evils that deviates market from efficiency due to its short-term horizon. The ineffectiveness of Black Scholes Merton model in Black Monday suggests just so. Findings has inferred and even confirmed the gravity of danger that agent's short-term profit focus (speculation) has on economic welfare. Another behavioral problem in economy is agent's predictive ability. Kydland's and Prescott's (1977) argue on nonoptimality of discretionary policy. Despite an agreed-upon social objective, discretionary policies (such as lowering tax rate in times of recession) have perverse effects on economic stability or at most only work subpar. Such phenomena occur due to the consistency of responsiveness in discretionary policies and the ability of agents to predict the government actions given the current economic status. In addition, the very implementation of discretionary policy changes the nature of economy which requires another set of regulations to respond to it, and so forth. Although agents

only act on imperfect information to formulate predictions on government plans, optimal policy control is invalidated because the agent behavior is a variable in selecting "optimal" policy. In other words, agents' current decisions are influenced by their expectations of future policy, and the responsive economic policy is iterative and is expected by agents. Such is the paradox of macroeconomic policy-making.

Fortunately, academics and practitioners have shifted to formulating theories which integrates this abstract component of economy Soros' (2009) theory of fallibility and reflexivity sheds light on economic phenomenon more realistically than canonical theories. The data on human bases their actions are impaired due to the pervasion of fallibility, and naturally their actions would not yield the initial expectations. This phenomenon is salient in social science because human beings are not merely observers of the truth, like they are in physical science, but are also participants that "create" reality. Economic academics and practitioners ought to be aware of such demarcation between the natural and social sciences. While economists know that natural sciences involve laws that reign absolute, they might not be aware that the laws in social sciences do not have the same nature due to human fallibility and reflexive influence on reality. The different states of governing laws deem that the methodologies of justifying and falsifying theories ought to also differ.

Abstinence of formulating causalities, as Gole and Sun (2013) have done and this paper emulates, could be the first step towards achieving appropriate methodology in social science, it allows room for reverse relationships. Unlike natural science, a change in an independent variable does not necessarily mean a predetermined change in a dependent variable. Consistent with Soros's reflexivity, using dynamic panel estimator further eliminates strict exogeneity and allows researchers to focus on the interactive connections between variables rather than assigning causes and outcomes. Given the correct methodology, the government then should be better prepared to implement structural and behavioral policies given the discussed issues, which are moral hazard and credit leniency for financial structure and speculative tendency over investing and predictive ability in agent's behavior. The banking regulatory reforms of Basel III and CRD IV encourage global financial structures to be financially sound to an unprecedented extent. The capital buffer acts as structural discouragement for moral hazard, as intermediaries have no other choice than to internalize the investment risks to their own entities' health, which allows safer fund allocations and more probability of returns to depositors.

However, although the buffer policy discourages risky credits, it does not shield the economy from financial agents' propensity to speculate. Tobin tax or Financial Transaction Tax (FTT) imposes tax on agents who perform arbitrage in currency. The tax combats excessive flow of money in the money market resulting from agents seeking profit in currency discrepancies. Further discouragement on short-term profit maximizing could also be exercised by enlarging the scope of Tobin tax. Not only should it be implemented on currency, but also on ranges of securities and derivatives. Meanwhile, agent's predictive capability on government policy should be assuaged through consistent, long-run commitment in fiscal policies, as Kydland (2019) prescribes. It is important to note that the consistency should be implemented to the fiscal policy itself, not the repetition of policy in response to the state of economy, which betrays the consistency being discussed. Rather than adding more to the uncertainties of financial and commodity markets, the government ought to enforce certainty in tax policies.

CONCLUSIONS

For the practical implications on the structural issues, the moral hazard and credit risk (which lead to bank runs and systemic cripple) is overcome by intermediaries' internalization of investment risk through capital and liquidity requirements which act as a buffer, while the practical implications on behavioral side is FTT and commitment for long run fiscal policy. FTT limits speculation or short-term profit seeking. Together, both implications holistically target problems where one overcomes issues which another could not tackle: Tax on securities discourages asset value volatility, which is what the buffer is exercised for. In addition, to contain agent's predictive ability, consistent long-run fiscal economic policy is recommended. Contrary to the argument that consistency would feed predictability, it yields more satisfactory economic outcomes than changing tax policies. The reason behind this is the non-uniformity of agent's expectation of future policy, which requires multiple "unpredictabilities"/responses in economic policy, which is infeasible and is almost surely contradictory. Another reason is the mitigation of agent's uncertainties; the consistent fiscal policy induces government credibility to the public. The fact that some after thoughts on the recommendations persist underline the yet-imperfect nature of the policies themselves. However, although the methodology and practical prescriptions require on-going process of consummation, it could hardly be otherwise when it comes to economics, due to its dynamic nature. The recommendations discussed implies managerial and theoretical considerations that the mitigations ought to be evaluated on reflexive nature of economy. Nonetheless, given the circumstances and prospects, they are promising, both for implementations and for improvisations.

REFERENCES

Akerlof, G. (2002). Behavioral Macroeconomics and Macroeconomic Behavior. *American Economic Review*, 92(3), pp.411-433.

Allen, F. and Santomero, A. (1998). The theory of financial intermediation. *Journal of Banking & Finance*, 21(11-12), pp.1461-1485.

Baloglou, C. (2012). The Tradition of Economic Thought in the Mediterranean World from the Ancient Classical Times to the Hellenistic Times until the Byzantine Times and Arab-Islamic World. In: J. Backhaus, ed., *Handbook of the History of Economic Thought*, 1st ed. Springer-Verlag New York, pp.8-30.

Beck, T., Demirgüç-Kunt, A. and Levine, R. (2007). Finance, inequality and the poor. *Journal of Economic Growth*, 12(1), pp.27-49.

Carletti, E. and Leonello, A. (2016). Regulatory Reforms in the European Banking Sector. In: T. Beck and B. Casu, ed., *The Palgrave Handbook of European Banking*, 1st ed. Palgrave Macmillan UK, pp.295-318.

Crockett, A. (2009). *Reforming the Global Financial Architecture*.

Delis, M., Hasan, I. and Kazakis, P. (2012). Bank Regulations and Income Inequality: Empirical Evidence. *SSRN Electronic Journal*.

Flannery, M. and Hankins, K. (2013). Estimating dynamic panel models in corporate finance. *Journal of Corporate Finance*, 19, pp.1-19.

Fischer, S. (1991). Growth, Macroeconomics, and Development. In: S. Fischer and O. Blanchard, ed., *NBER Macroeconomics Annual 1991, Volume 6*. MIT Press, pp.329-379.

Fisher, I. (1933). The Debt-Deflation Theory of Great Depressions. *Econometrica*, 1(4), pp.337-357.

Friedman, M. and Savage, L. (1948). The Utility Analysis of Choices Involving Risk. *Journal of Political Economy*, 56(4), pp.279-304.

Friedman, M. and Savage, L. (1952). The Expected-Utility Hypothesis and the Measurability of Utility. *Journal of Political Economy*, 60(6), pp.463-474.

Goldstein, I., & Pauzner, A. (2005). Demand-deposit contracts and the probability of bank runs. *Journal of Finance, 60,* 1293-1327.

Gole, T. and Sun, T. (2013). Financial Structures and Economic Outcomes: An Empirical Analysis. *IMF Working Papers*, 13(121), pp.1-29.

International Monetary Fund (2017). Indonesia: Financial System Stability Assessment-Press Release and Statement by the Executive Director for Indonesia. *IMF Staff Country Reports*, 17(152).

Kahneman, D. (2017). *The Psychology of Investors*.

Kaminsky, G. and Reinhart, C. (1999). The Twin Crises: The Causes of Banking and Balance-of-Payments Problems. *American Economic Review*, 89(3), pp.473-500.

Keynes, J. M. (1936). *The general theory of employment, interest and money*. Macmillan Cambridge University Press. pp. 119-223.

Keister, L. and Moller, S. (2000). Wealth Inequality in the United States. *Annual Review of Sociology*, 26(1), pp.63-81.

Kron, G. (2011). The Distribution of Wealth at Athens in Comparative Perspective. *Zeitschrift Für Papyrologie Und Epigraphik*, vol. 179. pp. 129–138.

Kydland, F. and Prescott, E. (1977). Rules Rather than Discretion: The Inconsistency of Optimal Plans. *Journal of Political Economy*, 85(3), pp.473-491.

Kydland, F. and Prescott, E. (1982). Time to Build and Aggregate Fluctuations. *Econometrica*, 50(6), p.1345.

Kydland, F. (2019). *Consistent economic policy and economic development*.

Minsky, H. (1977). The Financial Instability Hypothesis: An Interpretation of Keynes and an Alternative to"Standard" Theory. *Challenge*, 20(1), pp.20-27.

Nadauld, S. J. (1978). The Interest Rate Elasticity of Networth in Savings Institutions. Unpublished dissertation, University of California.

Otoritas Jasa Keuangan (2016). *POJK.03/2016 MINIMUM CAPITAL ADEQUACY REQUIREMENT FOR COMMERCIAL BANKS*. Jakarta, p.13.

Palley, T. (2000). Destabilizing Speculation and the Case for an International Currency Transactions Tax. 44(3), pp.70-89.

Reinhart, C. and Rogoff, K. (2011). From Financial Crash to Debt Crisis. *American Economic Review*, 101(5), pp.1676-1706.

Roberts, M. and Whited, T. (2011). Endogeneity in Empirical Corporate Finance. *SSRN Electronic Journal*.

Sekaran, U. and Bougie, R. (2010). *Research methods for business*. New York: Wiley.

Shiller, R. (1981). Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?. *American Economic Review*, 71(3), pp.421-36.

Smith, A. (1776). *Wealth of the nation*.

Silverman, D. (2014). *Interpreting qualitative data*. London: Sage publ.

Soros, G. (2009). *General Theory of Reflexivity*.

Statista. (2019). *Worldwide wealth distribution by individual net worth 2018 | Statistic*. [online] Available at: https://www.statista.com/statistics/203930/global-wealth-distribution-by-net-worth/ [Accessed 4 Dec. 2018].

Takahasi, I. and Okada, I. s(2013). An Agent-Based Model of Business Cycle with Gestation Period. pp1-19.

ISBN: *978-623-92201-0-5*

Tobin, J. (1978). A proposal for International Monetary Reform. *Eastern Economic Journal,* 4, pp. 153 - 59.
Thakor, A. (1996). The design of financial systems: An overview. *Journal of Banking & Finance*, 20(5), pp.917-948.
Thaler, R. (1999). The End of Behavioral Finance. *Financial Analysts Journal*, 55(6), pp.12-17.
Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data*. Cambridge, Mass, MIT Press.
Zarlenga, S. (2010). A Brief History of Interest. *AMI American Monetary Institute RSS*. pp. 1-4.