THE RELATIVE CONTRIBUTION OF DEBT TO INDONESIAN GROWTH: A CASE STUDY USING WAVELET ANALYSIS

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ARTICLE HISTORY

Received:
21 Februari 2016
Accepted:
09 Juni 2016
Online available:
30 Juni 2016

Keywords:
Debt, Budget Management, Fiscal Policy, Islamic Finance, Wavelet

ABSTRACT

This paper is an attempt to develop an account of the emerging discussion on debt versus growth in the fiscal policy. Conventional and Islamic economists and finance specialists have both agreed that there is indeed relativity in the benefit of debt. There are significant numbers of studies and literature in both domains that detail and demonstrate their doubts on the use of debt to finance the national demand. As the matter of fact, the sovereign debt crisis has pointed debt, together with corruptive government, as the culprit for unstable growth and escalated the social problems. At this juncture, this paper asks to contribute the discussions with a hypothesis that debt mechanism is the fountain source of the ineffectiveness of the fiscal policy -particularly of Indonesia. Using Wavelet, the study found that in fact, debt increases the volatility of the economy. In other words, the immediate benefit of debt could not justify for future growth loss. For policy-makers, this finding is of their interest to avoid any political cost due to the myopic view of the budget management. For Islamic finance, this finding fuels the discussion at the next level of designing Shariah-compliant risk-sharing papers that hope to positively align the need of the policy makers and the country's future.

Kata Kunci:
Utang, Manajemen Anggaran, Kebijakan Fiskal, Keuangan Islam, Wavelet

ABSTRAK

Teori dan penelitian mutakhir menyimpulkan perlunya prinsip kehati-hatian terhadap penggunaan "utang negara" dalam manajemen fiskal. Utang negara disertai dengan perilaku koruptif aparat pemerintah menjadi faktor dominan yang berkontribusi terhadap instabilitas pertumbuhan ekonomi disertai meningkatnya problem sosial-ekonomi dalam masyarakat. Penelitian ini mencoba untuk mengkonfirmasi kajian terdahulu tentang pengaruh utang luar negeri terhadap pertumbuhan ekonomi. Dengan menggunakan teknik *Wavelet*,

hasil analisa menunjukkan bahwasanya utang luar negeri meningkatkan volatilas dan risiko ekonomi Indonesia, dalam hal ini pertumbuhan pendapatan nasional. Hasil penelitian ini diharapkan dapat menjadi masukan bagi para pengampu kebijakan ekonomi agar dapat mendesain kebijakan fiskal yang lebih arif dengan mempertimbangkan ongkos ekonomi yang mungkin terjadi di masa depan. Secara tidak langsung, hasil penelitian ini memberi peluang dan penyokong bagi para praktisi dan akademisi Ilmu Ekonomi dan Keuangan Syariah untuk mengkaji lebih lanjut instrumen fiskal *non-debt* dengan prinsip berbagi risiko (*risk-sharing*) sebagai alternatif dari utang negara.

INTRODUCTION

The question asks in a national budget management is whether the country has sufficient revenues to finance all basic development projects and essential infrastructures, such as energy (or, electricity), transportations, and defence (including mitigation system against the odds of nature), that the economy needs to grow. It is typical that an emerging market often allocates 30 to 40 percent of its budget to development expenditure, of which financed by revenues from taxes and/or domestic and external borrowing (Mirakhor, 2012). So far, the conventional fiscal policy dominates most of the practices of the nations around the globe. The common practice is that, in the case of expenditure being larger than the revenue, the country has all the right to procure funding from debt -simply because debt is "cheaper" than other modes of financing.

The recent sovereign debt crisis in 2009 (and series of the economic crisis of the earlier decades) demonstrates the otherwise. Debt is not cheap, considering the future costs it entails. It may satisfy the needs to finance the present necessity expenditures, but the long-run risks following the debt might outweigh the benefit of the present -as we have witnessed in the Greece, Italy, and some EU countries. Considering such, there is tremendous attention from economists and researchers to study the "behaviour of debt", and thereon they hope for policy-makers to take advantage of their research findings to avoid future crisis.

In conjunction with Islamic Finance, the core of the subject advocates the risk-sharing principle to be applied in every financial transaction. It includes, and most importantly, the fiscal policy. Thus, fiscal policy based on risk-sharing is beyond the means of adjusting revenues and expenditures of the government, but also to

manage the risk arising from the fiscal instruments to the real sectors. Such policy organizes the participation of all economic agents in the budgeting management of the government, and therefore by this basic feature, all the economic agents have a share in the financing. Therefore, risk-sharing fiscal policy levels up the role of households to be as essentially as important as the private sectors and the government itself. These society elements; households, private sectors, and the officers, are bonded with "partnership" contract, so it reflected the true form of the democracy lingo that *"government of the people, by the people, and for the people"*.

Along with such spirit, the demand to enact a comprehensive Islamic finance system is high. It sourced from an institutional framework that adherence (or compliance) to the rules would allow the society to embark on a complete cycle of growth where today's social problems, such as (amongst others) poverty, income inequalities, poor governance, overconsumption, alienation and social fragmentation, would ultimately be eliminated. Therefore, a constant insistence on interest-rate prohibition and risk-sharing endorsement (Q.S. 2: 275) is a manifestation of faith-in-action to achieve a healthy economic and efficient financial system.

LITERATURE REVIEW

In any political system, the mandate of government and monetary authority are to coordinate the actions of agents so that there is a minimal conflict within the society. With the power vested in them, government and authority seek to safeguard the best interest of the people and undertake policies that aim to influence the actions of each society members. The policies are fiscal (for the government) and monetary policy (for central banks). Fiscal policy influences consumptions, productions, and investments by allocating budgets for projects that are of public interest and stimulate the economic performance of people. Monetary policy manages the amount of money in the economy and interest rates. As a result of an organized and coordinated action, there would be less volatility in the business and a more stable economic activity.

Regarding budget deficits situation where spending is in excess than revenue, the government has few policy options to deal with the situation. First is fiscal tightening, where the government increases the revenue, of which could be done via raising the tax rate or introducing a new tax in the structure. Secondly is to decrease the spending, or cut expenditures. However, the government can only cut expense from the discretionary spending; that is a portion of the budget that goes to the annual appropriations process each year at the parliament. Some of the expenditures, such as interest-on-debt, and mandatory spending such as social securities or government operational expenditure, are so-called "fixed", so it is a constant payment that must be paid in a given year unless a special case of

moratorium or austerity is taken. Thirdly, the government can have a combination of fiscal tightening and cutting expenditures as its fiscal manoeuvre. And lastly when there is no more room for fiscal manoeuvre, the government may raise the bar for debt level and seek for interest-bearing debt from creditors.

The stability of mainstream macroeconomics policy is now in questioned by the recent financial and economic crisis in the developed countries. The financial fiasco in the U.S., the sovereign financial crisis of E.U. region, and is paramount by myriad social problems of income inequalities, amounting public debts, poverty, and poor governance of both private and public institutions. The paradox happens when the truth falls unlike what is told in theory. Some renowned economists have elaborated why it occurred to a greater extent.

Besides the paradox, we also face the phenomena called, "fiscal impotence". Fiscal impotence happens when the government is unreliable of exerting the optimal potential of the budget to serve the best interest of the people. At such circumstances, households and private sectors consider fiscal instruments, such as tax system, as "burdensome" or even "injustice" that hence jeopardize their tax discipline. As people's contribution to development projects, programs, and services, conceptually, tax discipline is in a linear relationship with society welfare, trust to the government, and government projects. It tends to align agent's decisions with the national planning and programs and carries an "incentive effect" which can adjust individual economic decisions on production and consumption. Therefore, the impotence of the policy stimulates the problem of coordination and cooperation, as it hampers deeply on the effectiveness of public projects to growth and makes the gap between personal economic decision from the central planning and organization even further.

In the age of crisis, fiscal policy focuses so much of its attention from capital building projects to safeguarding titans of the financial market. It is not uncommon to read trillion dollars bailouts to institutions to keep them survive. Such policy is called taxpayer bailout, which taxpayers become the ultimate lender of last resort for speculative investments of private sectors, as central banks and finance ministry are authorized by current regulatory products to access people's money. Technically, through these bails out, private sectors transfer all financial risks to the taxpayers while government's role is futile in protecting the best interest of people.

By nature, such taxpayer bailout policy would likely to impact on the burden of individuals, if not on the growth of aggregate. Furthermore, the government tends to increase the source of funding from creditors (domestic or external) to seal the deficits. While monetary policy, due to its restrictions, is helpless at this stage, the use of debt becomes quick solution as well as enticing -because it meets the short-term necessity. Unfortunately, the government has often suffered "myopic view"; i.e.

the inability of the officers and policy makers to (carefully) foresee problems arising from a debt burden to the economy shortly, simply because they were either too optimistic or excited about the outcomes. The myopic fiscal policy would cause the economy performance to slow down due to debt burden in the long-run. In other words, the debt payment may cause the economy to slacken over the long-run period of service.

Plethora of studies and literature tries to observe the relationship between debt and sustainability. Recent studies by Reinhart & Rogoff (2010); Baum, Checherita-Westphal & Rother (2012); and Pattillo, Poirson, & Ricci (2011) have empirically evidenced that there is a non-linear relationship between debt and economic growth. Such non-linear relationship statistically means that debt may correspond to a positive economy until a certain threshold before it starts to contribute to a more negative growth performance. Most of these studies, hence, propose a certain statistical range for a "safe debt"; that is procuring debt without trading-off with future performance. Such threshold, usually, also infers that debt may also increase uncertainty in the economy.

While economists and researchers have identified the negative impact of debt, the policy decision on whether a procuring debt is necessary remains disputable. In the eye of politicians, procuring debt (or loan) is politically safer in comparison with fiscal tightening that, at times, causes for political costs of lost of power. Debt is preferred than cutting expenditure or increasing taxes because the later strategic decisions tend to alter people's perception and satisfaction towards the government. Debt is also preferred when there is an excessive supply of capital in the global economy that makes it cheap. Therefore, debt (and interest payment) has become one of the essential components of the government balance account (and the operation of financial "globalization").

The fiscal cliff, series of debt overhang, and debt intolerance -to name a few- are all phenomena of (interest-bearing) debt. The fiscal cliff is a situation where -after an excessive expenditure- government must cut its expenditure extensively and increasing the rate of tax to balance off the budget. Government enters into the cliff when constitution does not leave more room to take new loans because the sovereign debt has met the constitutional debt level. At another view, creditors may also be reluctance to lend money to a country that is in fiscal cliff, as there is possibility of threat for debt overhang. A country is called to be in debt overhang when she could not service the payments of the creditors. Meanwhile, emerging markets are said to be intolerance to debt since these countries are unable to service the series of debt payment, or is considered as incapable of managing the risk (poor budget management) exposed by borrowing debt.

Therefore, the focus of the study is to scrutinize the effect of debt to the sustainability of one of the most advancing emerging markets regarding growth, Indonesia. By sustainability, we look at the growth of an economy, conventionally measured by the growth of Gross Domestic Products (GDP). There are three reasons for the country selection. First, Indonesia has an active and dominant fiscal policy, which fits with the conventional rule that emerging markets organize the economy predominantly through fiscal policy. Secondly, amidst the global recession and monetary wars amongst developed economies, Indonesia still maintains its desired economic outlook in comparison with other emerging markets. Thirdly, and the final reason is that Indonesia credibility as "good debtor" to a foreign creditor that ultimately paid off in the increasing rating by the international rating agency, such as S&P's, and Fitch ratings.

RESEARCH METHOD

Due to the availability of data, this research employs aggregate output (GDP in current form, IDR) and external debt (IDR) from quarter 1 of the year 2003 to quarter 4 of the year 2012 (40 observations). For external debt, the data were taken from Bank Indonesia reports, meanwhile as for the GDP (current form) were collected from DataStream.

Fiscal Model

To understand the complexion of debt to sustainability, the methods used are recent techniques of wavelets. Wavelet is useful to our analysis because the method allows for correlation at different time-band. By different time-band, the relativity benefit of debt to growth (or, the causal relationship between the variables) could be examined in a detailed period. Such findings are more important because the previous studies have found the two characteristics of debt; non-linearity, and volatility and dynamic cross-correlations. Moreover, wavelet can be used with very fewer assumptions and useful to examine few variables. And thus, we chose Wavelet Coherence and MODWT as the method for this study.

MODWT is one of wavelet techniques which use a linear filtering operation to transform a series into coefficients according to its variations over a set of scales (Cornish et.al. 2005). MODWT produces a set of time-dependent small wave and coefficients and is suitable for analysis of variance (ANOVA). The merit of this tool is that, unlike DWT (Discrete Wavelet Transform) wavelet technique, MODWT allows researcher to work with a flexible length of data, ANOVAs are not influenced by circular shifting of the input time series, degrees of freedom increases modestly, and coefficients which it produced are uncorrelated and hence useful for statistical measures (Percival & Walden, 2000 as quoted in Cornish et.al., 2005).

The filtering operation of MODWT at the *j*th level consists of applying a wavelet (high-pass) filter $\{\hat{h}_{j,l}\}$ to yield a set of wavelet coefficients:

$$\overline{W}_{j,t} = \sum_{l=0}^{L_j-1} \tilde{h}_{j,l} X_{t-l} \quad \text{..... (4)}$$

and a scaling filter $\{\hat{g}_{j,l}\}$ to yield:

$$\overline{V}_{j,t} = \sum_{l=0}^{L_j-1} \tilde{g}_{j,l} X_{t-l} \quad \text{..... (5)}$$

To complete the filtering operation at each level of a finite time series, the MODWT coefficients are thus:

$$\widetilde{W}_{j,t} = \sum_{l=0}^{L_j-1} \tilde{h}_{j,l} X_{t-l \bmod N} \quad \text{..... (6) and}$$

$$\widetilde{V}_{j,t} = \sum_{l=0}^{L_j-1} \tilde{g}_{j,l} X_{t-l \bmod N} \quad \text{..... (7) for t = 0, …, N-1.}$$

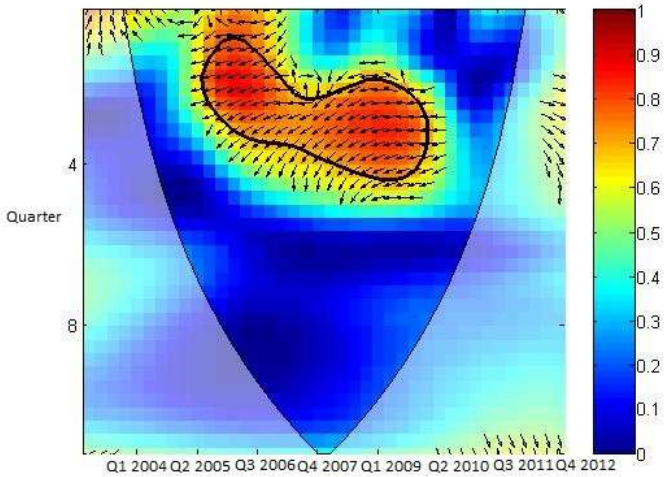
In addition to that, MODWT requires specification of a wavelet filter, such as Daubechies, Least Asymetric, Best Localized, and Coiflet, and of the index J_0 for the maximum scale of interest.

There are three considerating factors for filter selection. First is the length of the data, secondly is the complexity of the spectral density function, and thirdly is the underlying shape of features in the data (Gençay et.al, 2009). Taking these factors into account, this research employed d(4) (or, Daubechies extremal phase wavelet filter of length 4), as it is more suitable for a short length of data. The rule of thumb is that the large number of *n* (observations) would require a longer filters since the spectral density function will be more dynamic.

RESULT AND DISCUSSION

The first method to analyse the time-dynamic relationships between debt and sustainability is wavelet coherence. Fig. 1 is an image output of wavelet coherence. It can be seen that a larger section inside the wave cone stands out to be significant, in particular, the arrows inside the red colours that demonstrate an anti-phase relationship between Debt-to-GDP ratio and GDP growth. Anti-phase arrows in the short period (~1-4 quarters) around Q2 2005 - Q1 2010 mean that there is a causal relationship between the variables; that external debt leads to GDP. This result gives

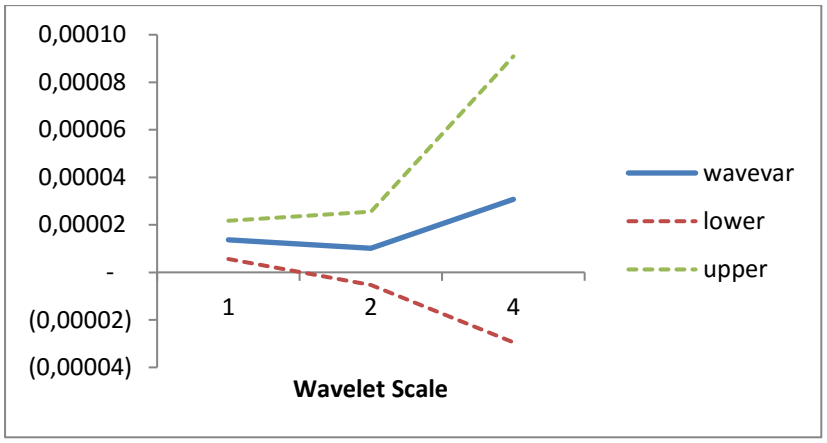
us the first indication of the causal relationship between external debt and GDP. However, it does not imply whether the relationship is positive or negative.



Source: Data Processed
Figure 1. Debt vs. GDP Growth

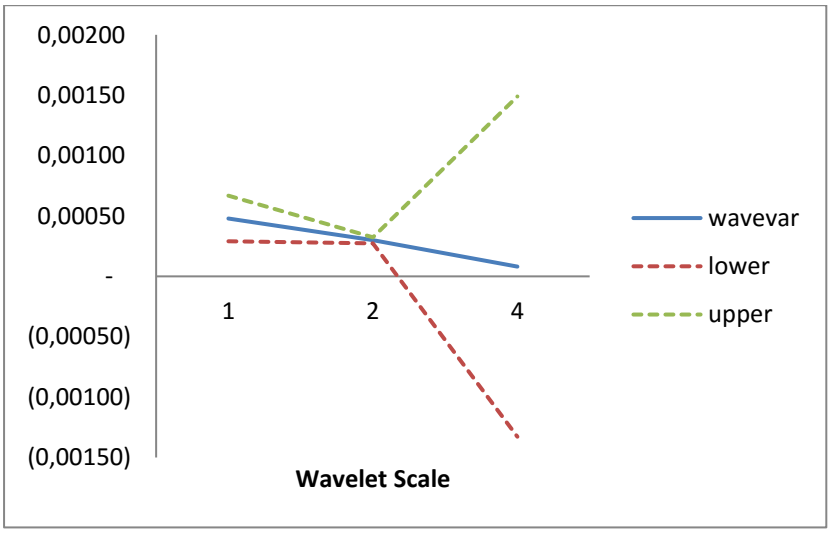
The next step is to examine further the causal relationship between external debt and GDP using MODWT Wavelet analysis is employed. Fig. 2 and Fig. 3 illustrate the MODWT-based variance of the two variables; debt-to-GDP ratio and GDP growth, at a different time scale. The straight lines in the two figures indicate the variances of the two variables and the dotted lines indicate the 95% confidence interval.

From the outputs, there is a strong evidence for non-linear relationship when the observation is done up to the wavelet scale of 4. Non-linearity is pictured by the movement of variances, that the variance shifts its direction at any wavelet scale. The scale indicates the time variable, the virtue of wavelet analysis. The line of variance shows a similarity; that both debt-to-GDP ratio and GDP growth showing a slight decrease in the shorter scale (at scale 2). Nonetheless, the earlier variable moves up as the wavelet scale increases, while the latter continues to decrease. This result implies that debt-to-GDP ratio is more volatile while GDP decreases relatively at the longer run.



Source: Data Processed

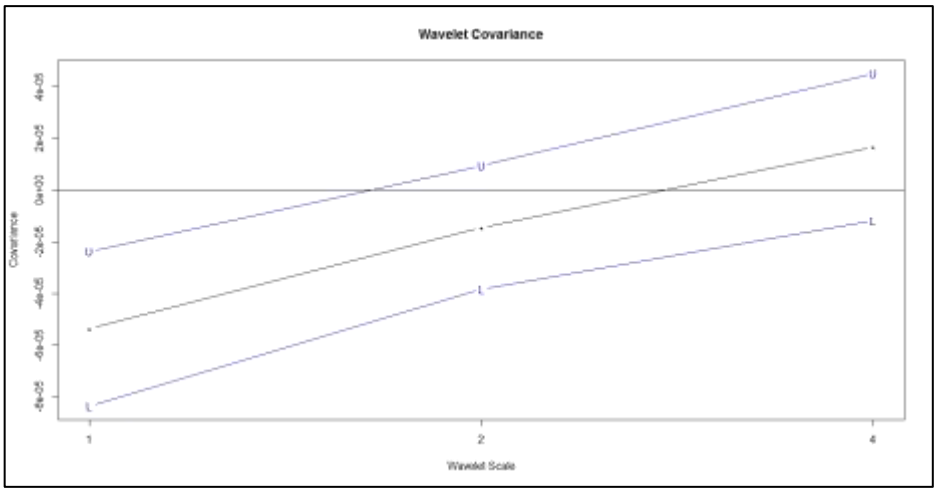
Figure 2. Estimated Wavelet Variance of Debt-to-GDP ratio



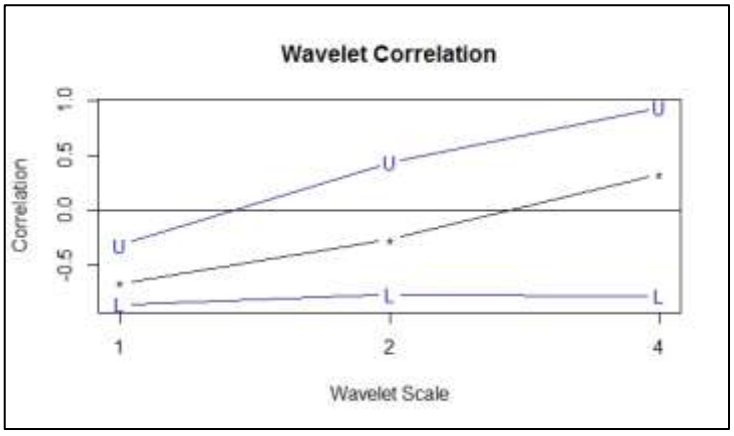
Source: Data Processed

Figure 3. Estimated Wavelet Variance of GDP Growth

Other outputs are the covariance and the correlation between the debt-to-GDP ratio and GDP growth, and Fig. 4 and Fig. 5 demonstrate both results. Fig. 4 indicates the covariance or the co-movement between the two variables, that is debt-to-GDP ratio and GDP growth, relative to times. It shows that they are moving together across the time scale. However, the wavelet covariances are negative at scale 1-2 and positive at scale 2-3. The negative co-movement of debt-to-GDP ratio and GDP growth means that there is an inverse relationship between the two variables at the lower scale (higher frequency data), while positive co-movement in the higher scale (lower frequency data). Nonetheless, further analysis on wavelet correlation analysis would demonstrate a better conclusion for findings.



Source: Data Processed
Figure 4. Wavelet Covariances



Source: Data Processed
Figure 5. Wavelet Correlation: Debt-to-GDP ratio and GDP Growth

Table 4
Wavelet Correlation

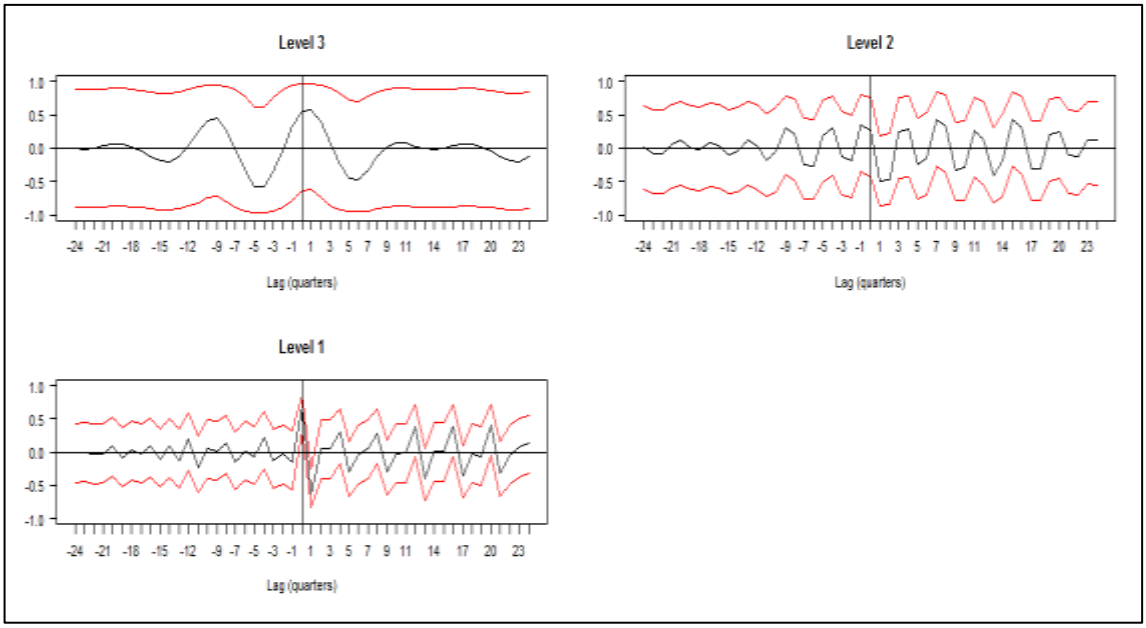
	wavecor	**lower**	**upper**
d1	(0.66422)	(0.85533)	(0.31400)
d2	(0.26346)	(0.76602)	0.43899
d4	0.33329	(0.77764)	0.93934
s3	0.99072	NaN	NaN

Source: Data Processed

The wavelet correlation is constructed to examine how the two series are related to one another throughout the time scales. The upper and lower lines (represented in blue-line) represent the 95% confidence interval. From Fig. 5, correlation is shown to increase rapidly at scale d2-d4 in comparison at scale d1-d2. Furthermore, the negative correlation is shown at scale d1-d2, while at scale d2-d4 the variables are significantly positive correlated. Despite such, Table 4 presented

that the wavelet correlation at scale 1 (Quarter 2) is -0.664 and at scale 2 (Quarter 4) is -0.263 (both are negative correlation) which confirms similar interpretation with the wavelet covariance of inverse relationships between the variables. It is observed that the relationship is different in the longer-run. At scale 4 (Quarter 16), the wavelet correlation increases to 0.333, which shows a magnitude leap from negatively correlated with a positive correlation. Such finding implies that *as debt-to-GDP ratio rises, GDP growth decreases in the shorter term*. On the contrary, the relationship of debt-to-GDP ratio and GDP growth becomes more positively correlated in the long run.

In addition to the previous findings, this study also deployed wavelet cross-correlation analysis for the causal relationship between debt and growth. The cross correlation is a more powerful tool for examining the relationship between two-time series as it considers not only the two series but also with a time shift (In and Kim, 2013). Causal relationship (in the sense of Granger causality) is the output from this analysis. Figure 6 depicts the cross-correlation analysis.



Source: Data Processed

Figure 6. Wavelet Cross-Correlation between Debt-to-GDP ratio and GDP Growth

At level 1 (the shortest period), significant positive and negative cross-correlations are observed by debt-to-GDP ratio mainly leads GDP growth (the wave is skewed to the right). Similar interpretation also applies at level 2. Inferences established at level 1 and 2 are similar to our earlier findings using Wavelet coherence which suggest that it is more likely for debt-to-GDP ratio to determine GDP growth than it is not. However, at level 3, significant positive and negative cross-correlations are also observed yet the causality seems to change. As the wave is skewed to the left, the GDP growth seems to be the leader while debt-to-GDP ratio

follows. This level 3 output tends to suggest that, in the long-run, the level of GDP determines the level of debt, and not the otherwise.

The results demonstrate a complex lead and lag dynamic interactions between external debt-to-GDP ratio and GDP growth throughout times. The results of MODWT and Wavelet cross-correlation confirm the recent findings on the non-linear relationships between debt and sustainability. Nonetheless, this study finds a detail on such relationship, in particular to Indonesia as the case study, that *debt level is a lead for GDP growth in the short-term (6 to 12 months)*. And as *from a longer period of 12 to 48 months, the relationships changed as GDP growth statistically becomes the lead for the debt level*. It is also found from the wavelet variances that *debt becomes more volatile in the long-run while GDP growth stabilizes*.

Discussion

There are three key takeaways from the above analysis. First is the tendency for debt to increase and GDP to decrease throughout times. The result from MODWT wavelet variance demonstrates that as the length of time horizon increases, the more volatile the debt-to-GDP ratio is. Such finding is complemented by the tendency for GDP growth to decrease in the long-run. The complete puzzle from the findings confirms us that Indonesia still adopts a mainstream fiscal policy that government still prefers debt in the situation where the growth of the economy is falling. Secondly, the negative covariance result of debt and growth in MODWT covariance at short scale infers for an inverse relationship between the variables. It supports the findings of wavelet variance; that the debt level increases as the rate of GDP decreases in the short run, and could not mean the otherwise. Although the relationship is intuitive, however, did not produce a causality explanation for the behaviour of the variables, as it would be explained in the third point. The last and final important assessment is the complex merit of debt to the GDP growth, which is shown by the causality relation result from the wavelet cross-correlation. As from the outputs, the causality between the debt-ratio and the GDP growth is found unique and dynamic, that debt determines GDP in the shorter-run while the GDP controls the amount of debt in the longer-run.

To sum up, there is hardly a merit of procuring debt to economic growth for the government and the people of Indonesia. This study shows that acquiring loans, specifically external debt, may hamper Indonesian economy that is reflected by a decreasing GDP growth. Intriguingly, the analysis suggests the potential harmful consequence of debt occurs particularly at the duration of 6 to less than 24 months as the rate of GDP plunges immediately to the government decision of taking loans. At such period range, debt is responsible for the movement of GDP because it is the determinant of GDP growth. Such impact, however, lessens throughout times, and as the economic condition becomes more stable in the longer-run, the necessity of

taking loans is determined by the economic ability of the nation as indicated by GDP growth.

At this juncture, the demerit of debt becomes apparent, particularly for Indonesian economy that also suggests further an important agenda of pursuing a more stable economic performance to control debt-level of the Indonesian government. It is in-line with the well-known study by Reinhart & Rogoff (2010) that shows the characteristic of debt that is inherently volatile and due to that may impair the sustainability of an economy. It is argued that the peril of debt lies in the discrepancy between the myopic view of government and the obligation of servicing interest-rate that burdens the nation's financial condition of the future. If the ground for the government to spur a big spending from borrowing is to stimulate and excite the market, the commitment to pay the rate of interest does not connect with the future when things turned not as planned. In another word, the debt bearing interest rate is too risky for an economy because it speculates about the future. The complex relationships between external debt and GDP growth which are dynamic throughout the period of study infer that the meritorious claim of debt in the fiscal policy (i.e. helping the economy to maintain a balance and healthy budget) is difficult to claim. If the positive from debt is uncertain, its negative causal relationship is certain for Indonesia.

Islamic Finance as the Alternative

Amidst the recent debt crisis, the urgency of shifting to an alternative system becomes the priority. This study collects a part of the evidence of the shortcoming of a mainstream fiscal policy and has analysed its deficiency. An alternative system should be able to organize the whole economy by improving coordination amongst the government's economic decisions, private sectors', as well as the households'. The coordination quality governs that every agent decision shall be based on the faith to a certain national economic plan that the economic plan aims at improving the stakeholder's prosperity and welfare, and also a strong adherence to the economic rules. As such, the government's economic policy becomes highly crucial in an economic system for its role as transmission channel in communicating the vision and the missions to all agents -hence the quality of coordination may be assessed by the quality of the economic policy. Therefore, like a building block, lack of the element of coordination in a poor economic policy contributes to the falling of the present system.

Islamic financial system is a system based on two basic economic principles; avoiding risk-shifting or risk-transfer, and promotion of risk-sharing. The first principle serves as the sufficient principle for an economy to be called "Islamic", but not necessarily improve the coordination element amongst the economic agent. The second principle, promoting risk-sharing, is the necessary principle of which meeting

these two principles would complete the system and level-up the system to compete for vis-a-vis the conventional system. Endorsement of risk-sharing guarantees an improvement in coordination because every economic agent is giving the equal access to the economy. The government assures for an equal access to its citizens as well as the protection of property rights in the national financial and legal system, hence providing security to an economic agent to work, produce, and invest. The government also sits as the planner of the economy because of people's trust and mandate to improve prosperity and well-being. Henceforth, people's participation in planning and economic organization comes in one packet with the duty to oversight the government's performance.

Islamic finance offers a set of fiscal policy that accommodates a balanced-budget objective and stimulates the economy as a whole. One of the recommendations is to issue risk-sharing certificates to finance the government's capital development projects. These certificates feature equity-like paper that represents the state of ownership towards an asset or a portfolio of assets and thus are not debentures. Thus, the return of the certificates is determined by the return on investment of the portfolio, of which the best proxy may be the rate of economic output or the GDP. Pegging the return with the rate of GDP has several benefits for the certificate-holders, the government, and as well as the economy. First, it broadens the responsibility and participation of certificate-holders into the investments. The certificate-holders are now entitled to a right to oversight and become the determinant of the success of the projects. Such right completes the participation of the holders; not merely as financiers, but as well as the key determinant of the success of the projects. Secondly, the government earns a more fiscal room to achieve a balanced budget objective. Pegging the return of the certificates would ensure that the payment is kept according to the nation ability to service and is not predetermined ex-ante such as interest-rate. Such feature would also project for more sustainability in the economic performance because the future performance would not be overburdened by the present interest-rate service. Thirdly, such fiscal policy would foster the principle of risk-sharing and influence economic decisions of, both the micro- and macroeconomic agents, improve coordination amongst them, and ultimately reach the common economic objective. These benefits create an incentive mechanism for the government to issue the risk-sharing certificates.

Introducing an equity instrument in the portfolio of domestic development projects carries fewer difficulties and complexity for the government. Furthermore, it allows for improvement in the domestic income distribution, provided that the certificates are low-denominated and exchanged in the retail market (Mirakhor, 2012). To stimulate demands towards the security vis-a-vis the existing government's bonds, households and private sectors must be given a substantial incentive for the

subscription, in the form of regulation and legal products, and income tax rebates or treatment -for instance. It is also envisaged that government may also convert its current debt with a perpetual security whose rate of return would be a function of the growth of the national income of the country, with a bigger vision of replacing interest-rate based government bonds (Mirakhor, 2012).

Presenting Islamic financial system as the alternative may sound too heuristic for some policy-makers since there is yet a complete representation of such economy. Such argument also points a question whether the system is compatible with any society regardless the factor of time, the socio-political-economic situation, and the legal system in a country. However, the government and policy-makers should ponder on the urgency and the demand to change and adopt a new economic strategy to cease this long economic recession. The need to restore fundamental economic values, such as coordination, cooperation, and risk-sharing that would empower the government and the people in an equitable share should be prioritized over individual financial objectives with more controls to the market. Market-power should be brought back to market; that is to households and enterprises while the government guarantees their access to the market and property rights without exclusion. These aspirations, hence, shall be the basis for the government to decide that it is the time to change and welcome the alternative system.

CONCLUSIONS

This research suggests few findings. First, there is a relative and dynamic relationship between external debt and the economic sustainability. In the short-run, the use of debt tends to cause a decrease in the economic performance. Meanwhile, the economic performance determines the level of debt in the long-run with the tendencies for a positive relationship amongst the variables. Such findings suggest that Indonesian government should avoid debt, particularly for a short-term period. It also suggests an improvement in the economy during a long-term period may tolerate for more rooms to acquire loans. These results are indeed in line with earlier studies that point out the net benefits analysis of debt to the economic sustainability. At this junction, the findings come about to one conclusion, that debt may be too risky for an economy.

The policy recommendation for Indonesian government and authorities is to avoid procuring loans at any cost. It is because the causal effect of procuring debts would hamper the growth of the economy in the short-run, hence is a big loss for an emerging economy such Indonesia. Furthermore, the government may look for an alternative system that is compatible with its constitution by endorsing risk-sharing principle in the fiscal policy -the cornerstone of Islamic financial system. One of the risk-sharing instruments that this paper proposes is the introduction of risk-sharing

certificates. Risk-sharing certificates offer several advantages for the government, households, and private sectors; such as, increasing households and private sectors participation, providing a larger fiscal room for a balanced-budget, and improving coordination between micro- and macro-economic economic decisions. If issued in low-denomination, the certificates could also ameliorate the economic problems of income-gap by improving income distribution as middle-class households have more investment options to gain optimal diversification benefits. By avoiding borrowing and endorsing such risk-sharing certificates, it could give the country an immediate relief from the risk of sovereign default and the threat of banking and financial system, and allow the economy to spur with fiscal and growth space.

BIBLIOGRAPHY

Baum, A., Checherita-Westphal, C. & Rother, P. (2012). Debt and Growth New Evidence for The Euro Area. *Working Paper Series European Central Bank.*

Cornish, C. R., Bretherton, C. S. & Percival, D. B. (2005). *Maximal Overlap Wavelet Statistical Analysis with Application to Atmospheric Turbulence*, s.l.: Kluwer Academic Publishers.

Dadkhah, Kamran. (2009). *The Evolution of Macroeconomic Theory and Policy*. Springer.

Gencay, R., Gradojevic, N., Selcuk, F. & Whitcher, B. (2009). *Asymmetry of Information Flow Between Volatilities Across Time Scales*. June.

Hetzel, Robert L. (2012). *The Great Recession: Market Failure or Policy Failure?* Cambridge University Press. New York, USA.

In, F.H., Kim, S. (2013). *An Introduction to Wavelet Theory in Finance: A Wavelet Multiscale Approach*. World Scientific Publishing, Singapore.

Keynes, J.M. (1936). *The General Theory of Employment, Interest and Money*. Macmillan. London, UK.

Mirakhor, A., Askari, H. (2010). *Islam and The Path to Human and Economic Development*. Palgrave.

Mirakhor, A. (2012). *Islamic Finance, Risk Sharing and Macroeconomic Policies*. Kuala Lumpur, ISRA Colloquium. Macmillan. New York, USA.

Mishkin, Frederic S. (2012). *Macroeconomics: Policy and Practice*. Pearson Education, Inc. Boston, USA.

Pattillo, C., Poirson, H. & Ricci, L. A. (2011). External Debt and Growth. *Review of Economics and Institutions, 2(3)*.

Peersman, Gert. (2011). Macroeconomic Effects of Unconventional Monetary Policy in the Euro Area. *Working Paper Series* No. 1397, November 2011. European Central Bank. Frankfurt am Main, Germany.

Pesaran, M.H., Shin, Y., Smith, R.J. (1999). *Bound Testing Approaches to the Analysis of Long Run Relationships*.

Pesaran, M.H., Shin, Y., Smith, R.J. (2001). Bound Testing Approaches to The Analysis of Level Relationships. *Journal of Applied Econometrics.* No.16, Page 289-326. John Wiley & Sons, Ltd.

Reinhart, C. M. & Rogoff, K. S. (2010). Growth in a Time of Debt. *American Economic Review Papers and Proceedings.*