

The Effect of the Monetary Policy (MP) on the Output Cost (OC) during Financial Crisis in Malaysia : From Management Perspective

Ali Shakir Mahmood¹
Md. Aminul Islam² Idris Md. Noor³

Abstract

This paper examines the effects of monetary policy on the Output Cost (OC) during financial crisis in Malaysia. Scholars have yet to agree on the issue concerning the appropriate monetary measures, particularly with respect to the question of whether or not fiscal policy are more effective tool in dealing with financial crisis. Majority of comprehensive theoretical frameworks are fragmented. Somehow, this study has been tested in developed countries. Only very few studies were conducted in developing nations. The results of this research provide theoretical support for the extended model. Moreover, this work has added to the understanding of output cost during financial crisis in Malaysia theories research.

Keywords: Monetary Policy (MP), Output Cost (OC), Financial Crisis (FC).

1. Introduction

Since its establishment, Bank Negara Malaysia (BNM) has served as the most important monetary policy-making body in Malaysia. Governed by a board of directors, BNM is tasked with multiple mandates, including maintaining price stability, sustainable economic growth and financial stability. In recent years, BNM has increasingly emphasized balancing risks to growth and inflation whenever a policy decision is made (Zeti et al., 2009). The role played by monetary policy led to a consensus that stabilization should be left to monetary policy. This response hinged on the premise that the monetary policy transmission mechanism would be less effective in the current climate, with considerable deleveraging taking place. In

-
1. PhD Candidate, School of Business Innovation and Technopreneurship, University Malaysia Perlis, Alishay74@yahoo.com
 2. Associate Professor, School of Business Innovation and Technopreneurship, University Malaysia Perlis, amin@unimap.edu.my
 3. Associate Professor, School of Business Innovation and Technopreneurship, University Malaysia Perlis idris@unimap.edu.my

addition, further easing in some cases would be limited as policy rates are already close to the zero bound.

A number of studies had examined the effectiveness of monetary policy on growth of output during the financial crisis. Nearly all of the studies mentioned fiscal policy being more effective as opposed to monetary policy during the financial crisis; hence, fiscal expansion can decrease output loss or output cost (International Monetary Fund (IMF) report, 2008a; 2008b). With respect to monetary policy, the report demonstrates the ability of countercyclical monetary policy in supporting the shortening of economic recession. Somehow, the crisis limits its efficiency. The effect of monetary policy on real output during the financial crisis was investigated by Gupta et al. (2009) and the authors reported the ability of government consumption in shortening the duration of the financial crisis. The authors further mentioned the greater effectiveness of such measure as opposed to policy that supports public investment or tax cuts. Meanwhile, Hutchison et al. (2010) who studied the impact of monetary policy during the sudden-stop balance of payments crisis in developing nations reported the linkage of fiscal expansion with smaller output cost following a sudden stop while monetary expansion did not appear to demonstrate noticeable effect. This has led the authors to suggest the coordination of monetary policy with financial crisis.

The work by Li & Tang (2010) reported the capacity of monetary expansion (contraction) in decreasing (increasing) output cost. As for monetary policy, its impact on currency crisis is not discernible. Meanwhile, financial crises in 80 countries in the period from 1980 to 1998 were examined by Goldfajn and Gupta (2003) and they concluded the ineffectiveness of monetary policy towards economies with both currency and banking crisis. Therefore, this study investigates the effect of monetary policy on real output during the financial crisis. Malaysia has experienced international crisis financially on both its national and corporate balance sheet. There have been numerous signals for financial crisis and yet the country has failed to prepare itself for the inevitable rectification. The re-pricing risk had dramatically occurred and it was a lot more than anticipated. The nature of the crisis is complex and this generates huge risks towards financial stability (Taylor, 2013; Singh & Singh, 2016).

Briefly stated, the financial crisis (both banking and currency crisis) is among the most controversial issue documented in the optimal monetary policy literature, specifically, in the topic of optimal monetary policy over the financial crisis. This has created a gap which will be bridged by this study by looking into the effectiveness of monetary policy during the financial crisis in developing nations.

Understanding the factors that determine the effectiveness of monetary policy in financial crisis with reference to central bank of Malaysia within the period from 2007 to 2014 is

crucial since instrumental theoretical perspective can be derived from it. Such knowledge leads to the creation of effective and more meaningful services in the context of monetary policy in financial crisis. This is attainable via an expansion according to a number of ways for assessing the effect of the monetary policy on the country's economy. Somehow, considering that interest rate is not applicable within the context of developing countries, changes in discount rate and international reserves are used instead. This study contribute to the literature on this subject via the effectiveness of monetary policy in Malaysia, as an effort to provide resolution to the crisis relating to banking and currency, while decreasing output cost during financial crisis Malaysia (Bin Ibrahim, 2010). It can thus be said that this study brings to the table a comprehensive theoretical focusing on the antecedent's factors of the effectiveness of monetary policy in financial crisis with reference to central bank of Malaysia in the period of (1998-2014).

The financial crisis is among the most controversial issue documented in the optimal macroeconomic policy literature, specifically, in the topic of monetary policy over the financial crisis. This has created a gap, which will be bridged by this study by looking into the effectiveness of fiscal policy during the financial crisis in developing nations.

2. Theoretical Background

2.1. Financial Crisis

The financial crisis usually has been associated with output loss or cost. The recent financial crisis in 2008 has again posed a question among the researchers as for the effectiveness of fiscal policy over the period of financial crisis. Regarding the question for appropriate fiscal measures, there is not yet consensus among the researchers whether or not fiscal policies are more effective tool to deal with financial crisis. To address this question, Fetai (2013) examine 83 financial crisis episodes in 66 developing and emerging countries. There are a lot of studies which analyzed a central banks' behavior in formulating monetary policy for the Output Cost (OC), but are mostly concentrated on the experience of developed economies. However, developing economies face a different institutional structure, as well as a different set of constraints and shocks, hence, it would be interesting to analyze how a central bank under this different economic environment performs its monetary policy mandate. So, it will observe the possible impact on the Malaysia's economic outcomes were Bank Negara Malaysia (BNM) to behave differently to what we envisaged its policy behavior has been through policy monetary for the output cost.

The 2007-09 global financial crisis has been a painful reminder of the multifaceted nature of crises. They hit small and large countries as well as poor and rich ones. As fittingly described

by Reinhart & Rogoff (2009), “financial crises are an equal opportunity menace.” They can have domestic or external origins, and stem from private or public sectors. They come in different shapes and sizes, evolve over time into different forms, and can rapidly spread across borders. They often require immediate and comprehensive policy responses, call for major changes in financial sector and fiscal policies, and can necessitate global coordination of policies. While financial crises have common elements, they do come in many forms. A financial crisis is often associated with one or more of the following phenomena: substantial changes in credit volume and asset prices; severe disruptions in financial intermediation and the supply of external financing to various actors in the economy; large scale balance sheet problems (of firms, households, financial intermediaries and sovereigns); and large scale government support (in the form of liquidity support and recapitalization). As such, financial crises are typically multidimensional events and can be hard to characterize using a single indicator.

Expansionary monetary policy with falling interest rates caused asset price booms, particularly in the U.S. housing sector United Nations Conference on Trade and Development (UNTACD 2010). This was accompanied with a rapid expansion of lending and a corresponding decline in underwriting standards and increase in risk, fuelled in part by the unregulated growth of the so-called ‘shadow banking system.’ This side of the financial system developed between 2000 and 2008 and consists of institutions and legal entities that provide financial intermediation without taking deposits. As such, they are not subject to the same regulatory oversight as institutions that do take deposits. These institutions used short-term credit to invest heavily in sub-prime mortgage-backed securities, which became increasingly risky as housing prices began to fall in the US after mid-2006. In the absence of regulatory oversight, the risk inherent in these assets were not adequately rated, yet had become increasingly dispersed throughout the global financial system. Being highly leveraged and holding what became known as ‘toxic assets’, large financial institutions in the shadow banking system began to fail as default rates began to rise. Global credit markets contracted with the decline in confidence: the record high interest rates that banks used to lend to each other almost halted inter-bank lending. This caused a global liquidity crisis and a subsequent decline in world trade triggering, through various feedback loops, a recession which has impacted real economies globally.

The financial crisis (both banking and currency crisis) is one of the most controversial issue in the literature regarding optimal macroeconomic monetary policy over the financial crisis. I attempted to fill this gap in the literature by the investigation of the effectiveness of monetary policy during the financial crisis in the developing and emerging countries and what kind of macroeconomics measure should be used in the developing and emerging countries during the economic crisis in order to alleviate economic recession (Uhlig, 2002).

2.2 Monetary Policy in Malaysia

Since its establishment, Bank Negara Malaysia (BNM) has served as the most important monetary policy-making body in Malaysia. Governed by a board of directors, BNM is tasked with multiple mandates, including maintaining price stability, sustainable economic growth and financial stability. In recent years, BNM has increasingly emphasized balancing risks to growth and inflation whenever a policy decision is made (Zeti et al., 2009). BNM also oversees other financial authorities, such as Labuan Financial Services Authority, the Securities Commission of Malaysia, and the Malaysian Deposit Insurance Corporation (BNM, 2013b). BNM implements its commitment to price stability without an explicit inflation-targeting framework (McCauley 2006). In reality, exchange rate stability represents another key monetary policy objective (McCauley 2006). In tackling competing imperatives, BNM claims that the key issue is the maintenance of a flexible exchange rate and monetary independence in the face of increasingly volatile capital flows (She, 2015).

Furthermore, Policy communication has been strengthened in recent years through regular release of policy announcements and frequent signaling through policy rates and monetary operations. Previously, monetary targets such as monetary aggregates were often kept as informal targets and not formally announced to the public (Cheong 2005). Since 2004, a newly established monetary policy committee has met at least six times a year, issuing monetary policy statements on the same day (BNM 2013c). With the implementation of a new interest framework, the overnight policy rate has become the main indicator of monetary policy stance, with moderate adjustments usually between 25 to 50 base points to signal changes in monetary policy directions. Initially set at 2.70 in 2004, the policy rate was raised incrementally to 3.50 by 2008 to combat inflationary pressure, then gradually reduced to avoid curbing growth; it has remained at 3.00 since May 2011 (BNM 2013c). Since its independence, Malaysia has achieved rapid economic growth and significant poverty reduction, while keeping a relatively successful record of curbing inflation in comparison to other developing countries. Monetary policy plays major roles in guiding investment and spending behavior to meet development and stabilization goals in both the public and private sectors.

2.3 Monetary policy in Malaysia: Institutions, history, and the issue of fiscal deficits

The framework for monetary operations and liquidity management comprises instruments for both conventional and Islamic interbank money markets, as well as monetary operations on the foreign exchange market. BNM has taken efforts to widen the range of available monetary policy instruments on the domestic money market. Current monetary instruments on the conventional money market include uncollateralized money market borrowings, repo

borrowings, BNM monetary notes and several others, whereas the introduction of Islamic monetary instruments based on Shariah concepts is intended to increase the effectiveness of monetary transmission mechanisms on the Islamic money market (BNM 2012; BNM 2013a).

On the foreign exchange market, sterilized intervention is BNM's major instrument, although it tends to work more effectively in combination with capital controls (McCauley 2006). While Malaysia abandoned its official commitment to bilateral exchange rate stability in 2005, sterilized intervention is still used to influence the level and volatility of exchange rates on a regular basis. On the other hand, the shutdown of the offshore market for ringgit in 1998 marked the beginning of de-internationalization of the ringgit, which barred the international convertibility of the ringgit and forced foreign holders of ringgit assets to repatriate their assets (Pepinsky, 2007). Despite the development of a non-deliverable offshore market in 2005, the re-internationalization of the ringgit is still a topic under discussion, possibly to be pursued, cautiously and progressively, in the future (McCauley 2006; BNM 2013).

2.4 Balancing growth and inflation: From monetary targeting to interest rate targeting

On January 26, 1959, BNM opened its doors as the central bank of Malaysia. In its early days, BNM focused on liquidity management in the financial system, primarily through prescriptions of interest rates and portfolio restrictions, which included ceilings on lending (BNM 2009). Similar to other central banks, BNM's monetary policy often reflects its reaction to prevailing economic conditions, in particular when facing external shocks (Shaari 2008).

BNM's commitment to price stability faced major challenges in the two global oil shocks in the early and late 1970s. Annual inflation in consumer prices reached a historical high of 17.3 per cent in 1974, then spiked again to 9.7 per cent in 1981 (World Bank 2013). Facing destabilizing international monetary conditions, BNM focused during this period primarily on maintaining price stability and ensuring a stable currency (Shaari 2008). By the mid-1980s, a sharp decline in global commodity prices brought the Malaysian economy and fiscal position again into trouble, and BNM stepped in to ease monetary policy, allowing the ringgit to depreciate. These steps worked in tandem with steps toward privatization and liberalization in fiscal and other macroeconomic policies to boost both domestic and export markets in a relatively short time (McCauley 2006).

The economy recovered with a growth rate of 5.4 per cent in 1987, marking the beginning of a decade of economic expansion, with an average growth rate of 9.3 per cent until the Asian financial crisis (World Bank 2013). Monetary management during this period focused on dealing with steadily growing inflationary pressures. The tight monetary policy stance

signaled by the rise of domestic interest rates, however, juxtaposed against the general perception of an undervalued ringgit, attracted substantial inflows of short-term foreign capital, which caused excess liquidity in the banking system and created a dilemma for monetary policymaking (Shaari 2008). Since sterilized intervention operations failed to constrain the inflow of short-term capital, BNM was forced to implement several temporary exchange control measures in early 1994 (BNM 1999; Shaari 2008). Prior to the mid-1990s, the major strategy for monetary policy was thus based on targeting monetary aggregates (Cheong 2005). The increasing volatility of capital inflows in the early 1990s indicated that monetary aggregates were no longer stable targets, so a shift to interest-rate targeting was considered necessary to improve effective transmission of monetary policies (Cheong 2005). As Cheong (2005) points out, the move was preconditioned by the liberalization of interest rates since the 1970s, gradual financial deregulation, and a shift in financing patterns towards a more interest-sensitive market since the 1980s).

2.5 Monetary deficit: Economic and political perspectives

Monetary policy formulation and implementation has enjoyed higher levels of institutional and behavioral independence, coupled with an explicit mandate on major policy objectives (Byun 2006; Hamilton-Hart 2002; McCauley 2006). From this perspective, strengthened policy coordination between BNM and MOF during and after the recent global financial crisis may become a double-edged sword. A comparison between BNM annual reports in 2008 and 2009 indicates an implicit attitudinal change, from emphasizing the limits of monetary policy as a demand management tool, towards stressing policy coordination between BNM and the rest of the government (BNM 2009, 2011a). On the one hand, there is a consensus among central bankers that strengthened coordination between fiscal and monetary policy can improve policy effectiveness on both sides and avoid conflicting goals.⁹ On the other hand, a joint report of the IMF and World Bank warned against potential intervention by MOF and advised BNM to stay independent and provide legal protection for its staff (IMF, 2013).

Paul Krugman has engaged with Summers on the topic of secular stagnation, and like Bernanke and Summers, sees there are a problem with the natural real interest rate. Indeed, Krugman shares much of Summers' argument, suggesting that although he doesn't use the term 'liquidity trap', like him Summers also 'works from the understanding that we are an economy in which monetary policy is de facto constrained by the zero lower bound' (Krugman 2013). Krugman's perspective, however, suggests that the current economic malaise is best understood as a 'liquidity trap', similar to that experienced by Japan in the 1990s, wherein 'monetary policy loses its grip because the nominal interest rate is essentially zero, in which the quantity of money becomes irrelevant because money and bonds are

essentially perfect substitutes” (Krugman 1998). From this perspective, the main issue is a situation where people save more than the economy can absorb, leading to a negative natural rate of interest and thus a liquidity trap where conventional monetary policies become impotent. Summers (2015), on the other hand, suggests that unlike Krugman’s liquidity trap thesis, secular stagnation views there as being ‘no assurance that capitalist economies, when plunged into downturn, will over any interval revert to what had been normal’.

2.6 Output Cost during Financial Crisis

While there is also a call for the use of macro-prudential policies, the design of such policies and their interactions with other policies, especially monetary policy, remain unclear. By constraining ex-ante financial markets participants’ behaviour, macro prudential policies can reduce the impact of externalities and market failures that lead to systemic vulnerabilities. In that way, they can reduce the risks of financial crises and help improve macroeconomic stability (Boyd and De Nicolo, 2005). But the exact design of such policies is yet to be formulated. Although it is clear that multiple tools are needed, complications are abounding.

Different financial distortions, for example, can lead to different types of risks, which in turn imply the use of multiple intermediate targets. Moreover, the relevant distortions can change over time and vary by country circumstances. Excessive leverage among corporations may give way, for example, to excessive leverage in the household sector. Factors, such as development of financial sector and exchange rate regime, can greatly affect the types of risks economies face. Much is still unknown on these factors and implications for the formulation of macro prudential policies. As new macro prudential frameworks are being established, policymakers have also been increasingly turning their attention to the complex dynamics between macro prudential and monetary policies. These hinge importantly on the “side effects” that one policy has on the other, but conceptual models and empirical evidence on these issues are still at early stages (see IMF (2013)).

It has been a challenge to explain the substantial (real) costs associated with crises. As documented, there are various theories regarding the channels by which different types of crises affect the real economy. There also exist many descriptions of the empirical patterns around crises episodes. Yet, why crises cause large costs remains an enigma. Many of the channels that lead to macro-financial linkages during normal times also “cause” the adverse effects of crises, but it is also clear that there are other dynamics at work. Normal lending seems undermined for an extended period as evidenced by credit less recoveries following crises. Monetary policy and public debt dynamics can be affected for decades, in part since governments often end up directly supporting financial systems (by injecting liquidity or recapitalization) or suffer from the expansionary policies to mitigate the costs of crises. In

great part, the major challenge is to explain the sharp, non-linear behaviour of financial markets in response to “small” shocks. While the procyclicality of leverage among financial institutions, as highlighted by its increase during the run up to the 2007-09 crisis followed by the sharp deleveraging in its aftermath, has extensively been documented (Adrian, Colla, & Song Shin, 2013), the exact causes of this behaviour have yet to be identified. Why crises involve the degree of liquidity hoarding leading to aggregate liquidity shortages and disrupt transmission of monetary policy remains a puzzle. Although credit crunches are in part attributable to capital shortages at financial institutions, these do not seem to fully explain the phenomena with lenders becoming overly risk-averse following a crisis. This lack of knowledge of the forces shaping the dynamics before and during periods of financial stress greatly complicates the design of proper policy responses.

While there are valuable lessons on crisis resolution, countries are still far from adopting the “best” practices to respond to financial turmoil. It is clear now that open-bank assistance without proper restructuring and recapitalization is not an efficient way of dealing with an ailing banking system (Laeven and Valencia, 2013; Landier and Ueda, 2013). Excessive liquidity support and guarantees of bank liabilities cannot substitute for proper restructuring and recapitalization either as most banking crises involve solvency problems and not only liquidity shortfalls. In the case of banking crises, the sooner restructuring is implemented, the better outcomes are. Such a strategy removes residual uncertainty that triggers precautionary contractions in consumption and investment, which in turn further exacerbate recessions. Still in spite of this understanding, many countries do not adopt these policy responses, including in some current crises (Claessens et al. 2013), suggesting that there are deeper factors that research has not be able to uncover or address. Moreover, issues related to restructuring of both household debt and sovereign debt require more sophisticated theoretical and empirical approaches (Laeven and Laryea, 2013).

2.7 Related Studies on the Financial Crisis

The empirical study of the money-income relationship can be traced back to Friedman and Schwartz (1963). In that study, they checked timing patterns of changes in the money growth rate in the US, and compared those to the reported peaks and troughs of the business cycles. They found that changes in the money growth rate led fluctuations in the business cycle, though those leads were varying over time. Thus, their conclusion was the short-run nonneutrality of monetary policy. Another empirical contribution in this line is made by Andersen and Jordan (1968) of the Federal Reserve Bank of St. Louis. They regressed changes in GNP on contemporary and three lagged values of changes in money stocks, and found that changes in money stock have significant impacts on output. Afterwards, this

money-output regression became known as the St. Louis equation and has been widely applied by economists in the estimation of the effects of monetary policy.

Keran (1969) applied the Anderson and Jordan (1968) model for a longer period 1919-1969 instead of 1953-1968. Keran's results were similar to Anderson and Jordan's. Monetary policy actions exceeded fiscal policy actions on the economic activities of the USA for all the sub-periods analysed, except during the period of World War II. Thus, Keran concluded that monetary policy has a central role in economic stabilization programmes. Johnson, Hathaway, Anderson & Carlson (1970) developed a small model of the U.S. economy intending to explain the movements of certain key economic aggregates, namely nominal GNP, output (real GNP), prices, unemployment and short and long-term interest rates. The model's focus was on the role of monetary aggregates, in particular, M1, in the determination of these economic variables. Their findings indicated that monetary policy actions on economic activity have a strategic role whereas fiscal actions are only effective in the short run.

In 1980, Sims (1980b) proposed a new econometric methodology, vector auto regression (VAR), to solve this identification problem.¹ VAR is a kind of extension of the St. Louis equation through including several simultaneous equations in a system. We can thus run regressions of the variables of interest on their own lagged terms, and the lagged and contemporaneous terms of the other variables in the system. The reaction of monetary policy to the state of the economy is (implicitly) modeled in the equation for the policy indicator (for example, the money stock). Then, in an identified VAR model, the unexplained part of changes in the money stock (the error term or the so-called structural innovations in the VAR literature) is interpreted as exogenous policy shocks. The estimates of the impact of these structural innovations on output give the effects of monetary policy on the real economy.

The seminal paper by Sims (1980) establishes the dynamic effects of monetary policy on real GNP, unemployment, wages, price level, and import prices for the USA and German economies. Using the recursive VAR approach with quarterly data from 1949 to 1975 for the USA and 1958 to 1976 for Germany, it was concluded that in the US, over long horizons, money innovations were the main source of changes in wages, prices, and import prices, while in Germany, money innovations do not persist sufficiently to induce a smooth, neutral response in wages, prices, and import prices. Batten and Hafer (1983) applied a modified version of the St. Louis equation to six developed countries: Canada, France, Germany, Japan, United Kingdom and the United States. They utilized a growth rate version; estimated their equation and extended the sample period. They concluded that for all six countries changes in money growth resulted more significant and have a lasting impact on their nominal income

growths. The authors further concluded that in all selected countries, the relationship between monetary policy and income was stable whereas fiscal policy results were not.

In Pakistan, Agha et al. (2005) employed a recursive VAR approach with monthly data (1996:7- 2004:3) to explore the nature of the different channels of monetary policy. Their findings suggested that while the exchange- rate channel was weak, bank lending, interest rate and asset price were channels of monetary policy. In small states, continuous macroeconomic shocks impose a big challenge for macroeconomic policy to reduce volatility (Chand, 2008). The author further explains that small states have limited capacity to use fiscal and monetary policies for stabilisation, because fiscal policy is constrained by their limited ability to raise capital; while monetary policy actions are limited by their open capital accounts and in some cases fixed exchange rate regimes.

Mishkin (2009) argues that the view that monetary policy is ineffective during financial crises is not only wrong, but may promote policy inaction in the face of a severe contractionary shock. To the contrary, monetary policy is more potent during financial crises because aggressive monetary policy easing can make adverse feedback loops less likely. The fact that monetary policy is more potent than during normal times provides a rationale for a risk-management approach to counter the contractionary effects from financial crises, in which monetary policy is far less inertial than would otherwise be typical -- not only by moving decisively through conventional or nonconventional means to reduce downside risks from the financial disruption, but also in being prepared to quickly take back some of that insurance in response to a recovery in financial markets or an upward shift in inflation risks.

In Tanzania, Montiel et al. (2012) used monthly data from January 2002-September 2010 in an identified VAR and were unable to provide strong evidence of effective monetary policy transmission. They found that the point estimates of dynamic monetary policy effects are not consistent with theoretical priors. Although a monetary expansion causes the exchange to depreciate as expected, it results in an increase in the bank lending rate and a reduction in the price level. While the expansion has a cyclical effect on real GDP, the effect proves negative over the first eight months after the expansion. They claim that poor identification is the leading alternative to their conclusion, and argue that “the particular concern is the difficulty, in a low income country with a large agricultural sector, of distinguishing aggregate demand shocks from shocks to aggregate supply” (Montiel et al. 2012, 28). From their point of view, if real GDP is primarily or substantially driven by temporary supply shocks, innovations in detrended real GDP reflect a combination of supply and demand shocks. If the monetary authority responds asymmetrically to these two types of shocks, the VAR coefficients will be imprecisely estimated and impulse responses will correspondingly be insignificant. To

investigate this concern, they claimed to have controlled for rainfall shocks as an exogenous variable in the VARs. The results are qualitatively unchanged. However, Montiel et al.'s (2012) study does not clearly show how rainfall is controlled for. It appears from a table of tests of lag order in the appendix, that the added variables are food and energy as exogenous variables to control for rainfall. However, this would hide the total effect of rainfall on economic activity. Services are also affected by weather shocks. This study proposes the use of rainfall as a variable to understand the total effect of weather on the supply side of GDP.

2.8 Fiscal Policy in Managing Financial Crisis

In the ongoing debate on the effects of monetary policy on the economy, the findings vary widely. Romer and Romer (2010) argue that the effect of a tax change on the real economy is more closely linked to an actual tax change than to an announcement of future changes. An important factor as regards the size of the multiplier is therefore at what stage of the economic cycle the economy is when the change takes effect, something which may be difficult to calculate at the time the decision is made. Passive monetary policy resulting from an interest rate close to zero may produce stronger multiplier effects than would be produced under more normal conditions. A problem in this regard is that periods with and without a zero-interest-rate policy are difficult to combine in the same time series, as they will produce very different results with regard to the multiplier.

The recent global financial crisis has revived many studies that discussed the rationale of coordination of policies after the crisis. Using GMM dynamic panel data models, Gomes da Silva and Vieira (2014) examined the conduct of policies for a panel data of 113 advanced and emerging/developing countries before and after the crisis. The findings show that monetary policy reacts counter-cyclically. Also, the interest rate mechanism proves to play an important smoothing role around the world.

3. Conclusion

This study aims to analyze the determinants of financial stress, the impact of financial stress on the real economy and the interactions between monetary policy and financial stress. Results from a panel model of the determinants of financial stress indicates the significance of global and regional variables of financial stress. Through a subsequent literature, financial stress is found to have adverse effects on the real economy, with large initial effects followed by a gradual dissipation. The results also suggest that the central banks in Malaysia tend to lower their policy interest rates when financial stress increases. This leads to improvements in economic activity, albeit often with different time dynamics compared to the impact of financial stress on economic activity. Compared to financial stress, monetary policy shocks

tend to affect output more gradually over longer lags. Lower policy interest rates are found to have a limited effect in alleviating financial stress, but can stimulate economic activity through other channels.

The effects of the global financial crisis have confirmed the increasing interaction between global financial conditions, on the one hand, and domestic financial intermediation and the effectiveness of the central bank's monetary policy, on the other. This paper details Malaysia's perspective on the financial sector reforms undertaken over the past decade, which strengthened the financial system's resilience and ensured uninterrupted domestic intermediation despite global economic and financial market uncertainty. Notwithstanding changing patterns of financial intermediation, Malaysia has been able to rely on a broad financial policy toolkit that has enabled monetary policy to focus on its main objective of maintaining price stability while giving due regard to economic developments (Malaysia Bank Negara 2015).

More generally, based on the previous studies findings suggest the necessity for monetary policy easing to help offset the contractionary effects of adverse financial shocks on the real economy. However, monetary policy easing likely also needs to be accompanied by direct financial sector interventions to restore financial stability. This may include, for example, short-term loans to alleviate liquidity shortages, direct equity injections to financial institutions to reduce solvency concerns and ensuring the sufficiency of trade credit to facilitate continued trade activities. In addition to achieving a higher effectiveness in restoring financial stability, another benefit of a targeted policy approach to restore financial stability is that it alleviates time lag issues between the policies' effects on output and the effect that higher financial stress has on output. While there is potentially such a timing mismatch for monetary policy, policy instruments that directly restore financial stress to normal levels reduces this pitfall.

References

- Adrian, T., Colla, P., & Song Shin, H. (2013). Which financial frictions? Parsing the evidence from the financial crisis of 2007 to 2009. *NBER Macroeconomics Annual*, 27(1), 159-214.
- Agha, A. I., Ahmed, N., Mubarik, Y. A., and Shah, H. (2005). Transmission Mechanism of Monetary Policy in Pakistan, *SBP-Research Bulletin*, 1: 1-23.
- Andersen, L. C. and Jordan, J. L. (1968) "Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilisation," *Federal Reserve Bank of St. Louis Review*, November 1968: 11-24.

- Bank Negara Malaysia (1999) Annual Report 1998, Kuala Lumpur: Bank Negara Malaysia.
- Bank Negara Malaysia (2009) Annual Report 2008, Kuala Lumpur: Bank Negara Malaysia.
- Bank Negara Malaysia (2013c). Monetary Stability: Overnight Policy Rate Decision and Statement [Online], http://www.bnm.gov.my/index.php?ch=mone&pg=mone_opr_stmt&lang=en
- Batten, D. S. and Hafer, R. W. (1983) "The Relative Impact of Monetary and Fiscal Actions on Economic Activity: A Cross-Country Comparison," Federal Reserve Bank of St. Louis Review, Vol. 65 (1): 5-12.
- Boyd, J. H., & De Nicolo, G. (2005). The theory of bank risk taking and competition revisited. *The Journal of finance*, 60(3), 1329-1343.
- Chand, S. (2008) "International Labour Mobility for Resilience Building in Microstates." In Briguglio, L., Cordina, G, Farrugia, N. and Vigilance, C. (eds) Small States and The Pillars of Economic Resilience. Malta: Islands and Small States Institute, University of Malta: 162-178.
- Cheong, L. M. (2005, May). Globalisation and the operation of monetary policy in Malaysia. In *Participants in the meeting*(Vol. 209).
- Friedman, M. and Meiselman, D. (1963) "The Relative Stability of Monetary Velocity and the Investment Multiplier in the United States 1897-1958." In *Stabilisation Policies*. Englewood Cliffs: Prentice-Hall.
- Ghosal, V., & Loungani, P. (1996). Product market competition and the impact of price uncertainty on investment: Some evidence from US manufacturing industries. *The Journal of Industrial Economics*, 217-228.
- Goldfajn, I., & Gupta, P. (2003). Does monetary policy stabilize exchange rate following a currency crisis? IMF staff papers, 50. Retrieved from <http://www.imf.org/External/Pubs/FT/staffp/2003/01/pdf/gupta.pdf>
- Gomes da Silva, C., Vieira, F., 2014, Monetary and Fiscal Policy in the World Economy: Coordination Before and After the Financial Crisis, *ÁREA: MACROECONOMIA APLICADA*, 36º ENCONTRO BRASILEIRO DE ECONOMETRIA
- Gupta et al. (2007), Behavior of the output during the currency crisis, *Journal of international economies*, 72, 428-450.
- Gupta, M. S., Mulas-Granados, M. C., & Baldacci, M. E. (2009). *How effective is fiscal policy response in systemic banking crises?* (No. 9-160). International Monetary Fund. <http://www.unctad-docs.org/files/CG-in-Wake-of-Fin-Crisis-Full-Report.pdf>
- Hutchison, M. M., Noy, I., & Wang, L. (2010). Fiscal and monetary policies and the cost of sudden stops. *Journal of International Money and Finance*, 29(6), 973-987.

- International Monetary Fund (2008) *Malaysia - Selected Issues*, Washington, D.C., International Monetary Fund.
- International Monetary Fund (2013). *Malaysia: financial sector stability assessment*, IMF Country Report, Washington D.C.: International Monetary Fund.
- Johnson, W. J., Hathaway, D. S., Anderson, C. F., & Carlson, R. A. (1970). Hemodialysis: Comparison of treatment in the medical center, community hospital, and home. *Archives of internal medicine*, 125(3), 462-467.
- Keran, M. W. (1969) "Monetary and Fiscal Influence on Economic Activity--The Historical Evidence," *Federal Reserve Bank of St. Louis Review*, (November): 5-24.
- Krugman, P. (2013). Revenge of the optimum currency area. *NBER Macroeconomics Annual*, 27(1), 439-448.
- Krugman, P. R. (1998). What happened to Asia?.
- Li J., and Tang I., (2010). The effectiveness of Fiscal and Monetary policy responses to twin crisis, Central University of Finance and Economics.
- McCauley, R.N. (2006). *Understanding monetary policy in Malaysia and Thailand: objectives, instruments and independence*, BIS Papers, Basel: Bank for International Settlements.
- Mishkin, F. S. (2009). Is monetary policy effective during financial crises? (No. w14678). National Bureau of Economic Research.
- Montiel P., Christopher Adam, Mbowe, W. and Stephen O'Connell (2012). "Financial Architecture and the Monetary Transmission Mechanism in Tanzania", International Growth Center Working paper 12/0343.
- Pepinsky, Thomas (2007). Autocracy, elections, and fiscal policy: evidence from Malaysia', *Studies in Comparative International Development*, 42(1/2): 136-63.
- Reinhart, Carmen M. and Kenneth S. Rogoff, (2010). Growth in a time of debt, *American Economic Review*, 100(2), 573-78.
- Ritchie, Brian K (2004). *Politics and economic reform in Malaysia*, William Davidson Institute Working Paper, Ann Arbor, MI: William Davidson Institute.
- Romer, C. & Romer, D. (2010). The Macroeconomic Effects of Tax Change: Estimates Based on a New Measure of Fiscal Shocks, *American Economic Review*, 100(3), 763-801.
- Shaari, M. H. (2008). *Analyzing Bank Negara Malaysia's Behaviour in Formulating Monetary Policy: An Empirical Approach*.
- She, X. (2015). Fiscal and monetary policy in Malaysia: Juggling economic imperatives and political reality. *Routledge handbook of contemporary Malaysia*, 148-161.

- She, X. (2015). Fiscal and monetary policy in Malaysia: Juggling economic imperatives and political reality. *Routledge handbook of contemporary Malaysia*, 148-161.
- Sims, C. A. (1980). Comparison of interwar and postwar business cycles: Monetarism reconsidered.
- Sims, C.A. 1980a. Comparison of Interwar and Postwar Business Cycles: Monetarism Reconsidered. *The American Economic Review* 70 (2):250-257.
- Taylor, J.B., 2013. Getting off track: How government actions and interventions caused, prolonged, and worsened the financial crisis. Hoover Press.
- Uhlig, H. (2002). One money, but many fiscal policies in Europe: What are the consequences?.
- United Nations Conference on Trade and Development. (2010). UNTACD Report: Corporate Governance in the Wake of the Financial Crisis: Selected International Views. Retrieved online from:
- Zeti, A. M., Shamsir, M. S., Tajul-Arifin, K., Merican, A. F., Mohamed, R., Nathan, S., ... & Tan, T. W. (2009). Bioinformatics in Malaysia: hope, initiative, effort, reality, and challenges. *PLoS computational biology*, 5(8), e1000457.