EIS 9/2015

Cointegration of Monetary Policy in Gcc Countries as Measure of Economic Integration

Submitted 04/2015

Accepted for publication 07/2015

# Cointegration of Monetary Policy in GCC Countries as Measure of Economic Integration

**Pawel Mlodkowski**

Sohar University, P.O Box 44, Al Jameah Street, Sohar 311, Oman

http://dx.doi.org/10.5755/j01.eis.0.9.12807

## Abstract

Economic integration in the world is not always an explicit and intentional process. For some regions we are able to observe unintentional coordination of economic policies that results from following similar institutional and legal solutions. One of such cases can be recognized in the nominal sector of the national economy. As a consequence, a group of countries may be forming a de-facto currency union. It could alternatively compose an OCA without any need for forced nominal convergence. This paper focuses on monetary policy stance and its developments in the period from 1981 to 2013 of a very special group of resource-based economies. The GCC countries share many similarities in the underlying exchange rate regime solutions. They are in the same time following some explicit economic integration initiatives. It happens, however, that due to the financial turmoil after 2008, many of the integration processes have been reversed, or stopped. An empirical research tries to answer a question of the extent to which the integration process in nominal sector has been developing. For this purpose the monetary policy stance correlation is measured. Observing its developments, with a cointegration analysis in a standard (non-structural) VAR model, delivers interesting insights into an issue of the GCC as an OCA. With statistical data provided by the World Bank (WDI Database) it is possible to observe significant convergence in monetary policy stance among all but one of the GCC countries. This study draws attention to a broader picture of a region that has potential of benefiting from a common market. However, not all GCC countries seem to be suited for economic integration in nominal sector. It is Bahrain that shows significant divergence for the whole period covered. There may be many country-specific factors, but persistence of asymmetry in monetary policy in this particular case allows for skeptical thoughts. If the GCC initiatives are continued, the economic integration will be more challenging in the new situation. As the observed convergence in monetary policy stance has been present from late 1970s one could suggest that it could have been a non-intentional process, but a result of similar exchange rate regimes. However, the latter divergence has been a result of conscious changes in the economic policies that affect the nominal sector.

**KEYWORDS:** monetary policy, monetary integration, GCC, economic integration, MPSI.

## Introduction

In today's globalized and increasingly integrated world, another issue emerges – the consequences of economic stability and the efficiency of monetary policy flowing from developments in relative restrictiveness domestically and globally. Capital flows are no longer restricted due to liberalized balance-of-payments accounts. International capital movements are driven by differences in the rates of return between domestic and foreign assets, with the former being, to some degree, influenced by domestic monetary policy. This may have a blurring effect on any study trying to identify the international coordination of monetary policy in a small open economy. Therefore, a new instrument is required to capture restrictiveness developments for international comparative studies and economic integration studies. This is one of reasons for

European Integration Studies
No. 9 / 2015
pp. 198-206
DOI 10.5755/j01.eis.0.9.12807

studying monetary developments in more than one country. This approach is intended for both policy analysis and formulation and for testing the channels of monetary policy transmission in the globalized world. The following study on the similarity in monetary policy stance shall fill the gap in the literature on the GCC countries as the OCA.

## Monetary policy assessment methods in brief

The efficiency of monetary policy in achieving its goals requires knowledge of variables influencing private agents' reaction to changes in monetary policy stance they perceive. These variables are very often perceived as characteristics of the financial sector (Bernanke and Blinder, 1992, Kashyap and Stein, 2000) or features of the non-financial sector entities (Bernanke and Gertler, 1995, Gertler and Gilchrist, 1994). There is a wide variety of monetary policy assessment methodologies. Some are based on market interest rates prevailing in the economy (Ng, Smith, and Smith, 1999) or in a specific market (Goodfriend, 1993) or focus on specific market rates (Nilsen, 2002). Other make use of information included in monetary aggregates and in their rates of change (Abell, 1991). Another appraised method uses non-borrowed reserves (Bernanke and Mihov, 1998). Bernanke and Mihov (1998) point out the need to consider money supply jointly with money demand. This is what the MPSI methodology offers. An index, like the MCI approach (Freedman, 1994), is also very popular. A separate group of measures is based on the "narrative approach" (Friedman and Schwartz, 1963, Romer and Romer, 1989, Boschen and Mills, 1991). In this case the timing of monetary impulses (but not their strength) is recognized and search for responses of real variables follows. There is an eclectic approach too. It uses a combination of several of the aforementioned methods to recognize and measure monetary shocks (Christiano, Eichenbaum, Evans, 1996, Kashyap and Stein, 2000).

However, some of variables that are used to measure monetary policy stance are not free from the problem of endogenous behavior (Ellingsen and Söderström, 2001). Some are just lacking in credible theoretical foundations (Bernanke and Mihov, 1998). They often assume an incorrect nature of the underlying time series features, as pointed out by Eika, Ericsson and Nymoen (1996). This study of monetary policy stance in the GCC countries is intended to offer an alternative approach to methods used in studies reviewed by Ugai (2007). Using the Monetary policy Stance indicator (MPSI) concept and controlling for some international developments, it is possible to provide some evidence on similarity in the monetary policy stance in some of the GCC countries over the period 1981-2013.

## MPSI Methodology

The core idea at the roots of the proposed method is an alternative interpretation for short-term shocks of money velocity. Money velocity (V) can be derived directly from the Fisher's equation (exchange equation MV=TP). This variable is defined as the relationship between the nominal value of transactions (T*P) and the nominal money stock (M) servicing those transactions. The nominal GDP may be a good proxy for nominal money demand since it is the total expenditure on final goods and services (one of the approaches used in compiling this aggregate). Calculating the ratio of money demand to money supply offers a basis for compiling a proxy for developments in monetary conditions (MPSI).

Money velocity describes the manner, in which agents in the economy use money. The monetarist model assumes that money velocity is constant. However, is it really? When we focus on factors that could be responsible for changing the behavior of a society on this matter, the theory offers us "financial innovations" as a reason for **decreasing** average real money balances (i.e. demand for cash) and increasing velocity. For velocity based on M2, one observes, however, a systematic negative trend (Figure 1).

This is obviously inconsistent with the monetary economics theory. The example of GCC countries

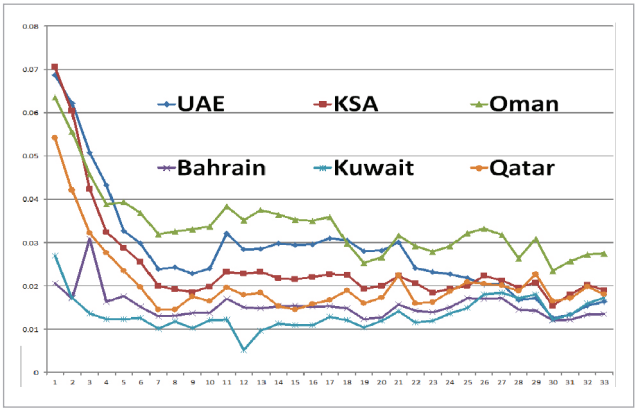



Figure 1
Money velocity (M2-based) for GCC countries 1976-2013 (Author)

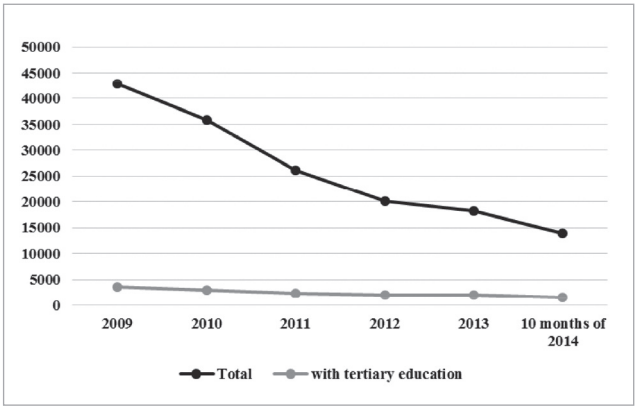



Figure 2
Random country example of money velocity shocks for different money aggregates 1996-2008 (Author)

is not unique. Velocity is systematically decreasing. It is argued that in spite of significant "financial innovation" (that should drive velocity up) some other factors offset this effect. The first point is that broader monetary aggregates are beyond control of the central bank, as proved already by Revenkar and Yoshino (1990). There seem to be some other forces behind these clear and sharp, short-term but significantly homoscedastic developments in VM0.

They are far from being good proxies for either transaction money stock or targets of monetary policy. Instead, the proposed MPSI method focuses on velocity of currency in circulation (high-power money) proxy. Any change in the manner society uses currency should be gradual. For sure, it should not look like the fluctuations observed in the empirical data (Figure 2). The suggestion is that monetary policy is responsible for this behavior. Short-term shocks of money velocity are fully a part of a transmission mechanism, as suggested already by Reynard (2007). This view is explicitly consistent with several methods for capturing monetary policy stance. The most obvious examples of methods consistent with the proposed one are: (1) the "credit channel" (Kashyap and Stein, 2000) and (2) the "balance sheet channel" (Bernanke and Gertler, 1995) and with commonly used econometric models (3) assuming an indirect impact of monetary policy on inflation (Gertler and Gilchrist, 1994).

The Monetary Policy Stance Indicator (MPSI) is defined as the first difference time series of money velocity, expressed as a percentage change over the preceding period. Due to such formulation it is able to capture both the qualitative and quantitative information on monetary situation. With assumption of the constant velocity, money growth rate that offsets actual rate of growth for output at the same ratio means that there is no reason for prices to adjust. A similar interpretation can be found in Reynard (2007, p. 26). It was, however, already Henry Thornton (1802) who proposed the same interpretation.

The MPSI seems to be independent from many, if not from most, of the postulated disadvantages and technical weaknesses of all other methods. It is also independent from specific features of monetary policy reaction function. It requires no modeling of any kind or estimating any of unobservable variables (i.e. output gap). The aforementioned weaknesses are the reason for criticisms of all past monetary policy stance assessment frameworks.

The MPSI method assumes **nominal rigidity** during the current period (at least one quarter). Otherwise, any change in the real money supply in relation to demand for real cash balances is removed by the price adjustment resulting in super neutrality of money.

Compilation of the MPSI must be based on **the high-power money**, or money available for transactions in the shortest horizon. Therefore, aggregates like M0 must be used. These aggregates' behavior depends in the least extent on the specific features regarding society and the financial sector. Another point is that a central bank has direct and credible control over them.

The MPSI is based on a **proxy of the nominal transactional money demand** – the GDP. This design mitigates any problems that might be associated with controlling for the income demand element in the total money demand.

Using the nominal GDP also deals with the problem of **controlling for new assets prices**, when one evaluates monetary policy. Prices of non-perishable, long-lasting assets newly produced are included in both "C" and "I". Including monetary base (M0) in the compilation of MPSI allows for controlling **for financial and real assets' prices**.

MPSI represents a quantitative and qualitative measure of monetary conditions in the economy induced by intentional and unintentional monetary policy. This is why it is suggested that money supply/demand movements (implicitly) represent monetary policy exogenous shocks as well as endogenous reactions to some other variables and shocks. This is invariant with operating procedures and regimes, as monetary imbalance is the cause of inflation and money is neutral in the long run.

It is possible to implement the abovementioned method for capturing monetary policy stance in international comparative studies and in research focused on international interdependency and economic integration studies (Mlodkowski, 2008). The empirical exercise that follows offers an in-depth insight into economic integration over time in monetary policy stance. As such, it is a valuable reference for any discussion on the causes and consequences of regional economic cooperation, like the GCC initiative, that aims to mimic the one in Europe.

## Short history of the GCC economic integration

The Persian Gulf and its coast is a strategic region for the global economy. It contains the biggest reserves of crude oil in the world. According to OPEC statistics, this region[1] is in possession of almost 64% of proven total crude oil reserves. The Gulf Cooperation Council gathers five out of seven countries that are located in the Arab Gulf, namely Kuwait, Saudi Arabia, Bahrain, Qatar, and United Arab Emirates. Oman is the last member, although not regarded as located in the Arab Gulf. However, it is of strategic importance due to its neighborhood with the Strait of Hormuz. This is the only water passage leading from the Persian Gulf to the open sea. According to Energy Information Administration, about 90% of oil transited from the Arab Gulf went through the Strait of Hormuz. Taking into consideration all of these factors, the importance of the GCC countries for the international economic relations cannot be underestimated.

Given the historical instability in the GCC region, the economic and monetary integration could be desirable for the purpose of maintaining sustainable growth and peace. This would firm the connections between the members and create collective security in face of external threats. It could also soothe some border conflicts that are still present. Indeed, the GCC planned to introduce a common currency already in 2010. However, due to global financial crisis and its waves, the idea has been abandoned by governments of some of the GCC countries. Apart from political rationale, there is a set of crucial economic benefits that a group of highly integrated countries could capture, if a common market and a common currency are effectively achieved. First of all, a single currency in the GCC region will lead to the removal of the transaction costs (Mlodkowski, 2013). As proved, in a formal theoretical model by Mlodkowski & Bywaters (2012), such situation fuels economic growth. In addition, companies operating in more than one country will be able

1 Including Iran, Iraq, Saudi Arabia, Kuwait, Qatar, United Arab Emirates and Oman.

to reduce costs, and delivery time of cross-border money transfers. Another benefit is the elimination of the uncertainty about the foreign exchange rates that may inhibit the foreign trade to some extent (Mlodkowski, 2007). The favorable consequences of the common currency in this aspect include the increase of the general economic efficiency, and further economic integration via intensified intraregional trade in the non-oil sectors. This is particularly important for the GCC fiscal stability. Finally, the GCC members with a common currency and common customs policy could strengthen their bargaining power in negotiating trade agreements.

Next to the benefits of a common currency, there are some potential drawbacks as well. This basically originates from the fact that, all of the members will have to give away a portion of their autonomy both in monetary, as well as in fiscal policy (Mlodkowski, 2008). The implication is that no country will be able to change the value of its currency against another currency in case of some macroeconomic problems. However, there is a very good argument against this theoretical drawback. For most of the GCC countries the fixed exchange rate regime operated successfully for many years. There was no need to use depreciation in order to deal with external imbalance. Instead, this is the fiscal policy that has to handle any internal imbalances (Mlodkowski, 2009). Another potential drawback is due to spill-over effects. The abovementioned potential issues may never become problematic, as active monetary policy has been rarely seen in the region. For many years all of the GCC countries operated in a setup that is called pseudo-monetary union with the USA (and with each other) due to the fixed exchange rate regime that prevailed until the first decade of the 21st century.

Summarizing, all six members of the GCC countries are similar in terms of history, geography, politics (monarchies with limited participation), population (small size, except Saudi Arabia), with the majority of Sunni (except Bahrain), culture, language, and religion. In economic terms, hydrocarbon resources are dominant. Oil accounts for one third of the GDP, for three quarters of government revenue and for three quarters of exports (Hanna, 2006). Owing to high prices of oil at the turn of millennia, their economies significantly expanded. However, oil price developments in 2014/2015 exercise negative impact on all of the GCC countries.

There has been big scale economic integration initiative in the region. The Gulf Cooperation Council introduced a custom union in 2003. It should have granted the free movement of goods, services, people and capital. This was supposed to help to deal with possible asymmetric shocks. However, the actual situation in 2015 is far from what is understood as the common market or a customs union. There are still very long and time consuming customs procedures at the internal GCC borders. They result in increasing transactions costs for all stakeholders. It is worth noting that cultural and language similarities make the movement of people and capital far easier than in the EU.

It was already more than a decade ago, in 2004, when the GCC countries agreed on the convergence criteria for the purpose of a currency union. These were partly adopted from the European Monetary Union set of criteria. They included in the GCC such elements as:

- budget deficit less than 3% of GDP,
- public sector debt less than 60% of GDP,
- currency reserves in excess of 4 months of imports,
- interest rates not higher than the average of the three lowest countries by more than 2%,
- and inflation not higher than the weighted average of the six countries by more than 2%.

In case of the first criterion, one should remember that all GCC countries budgets depend strongly on crude oil price. With severe deterioration of the oil price in late 2014 and in early 2015 many of the GCC countries face the threat of substantial and permanent deficits. As noted already by

Mlodkowski (2010), it may lead to detrimental effects for the economic growth via the crowding-out of private investment.

The GCC members are relatively open economies. Central governments have been promoting FDI for many years (Jadresic, 2002). Moreover, they have been harmonizing rules and regulations with regard to economic activity. All GCC members' currencies used to be pegged to the US dollar. The USD used to act as an anchor for external value of all GCC currencies. This situation started to change due to the most recent financial crisis. Some of the GCC countries decided to follow a different approach, and pegged the external value of their national currencies to a basket of currencies. Such decisions were a step back in the process of economic and monetary integration.

## Cointegration of monetary policy in the GCC countries

Data used for the empirical study on the de-facto monetary integration comes from the World Bank on-line WDI Database. For some of the GCC countries consistent time series for the nominal GDP and narrow monetary aggregates start in 1960s. However, this is only the period from 1981 to 2013, when all of the observations for all of the countries are available. Therefore, in spite of possibility to conduct individual studies for the period as early as 1960-1970, the results presented reflect the period 1981-2013.

Money velocity based on the annual observations for the nominal GDP and M0 aggregate was compiled in the first step of the empirical analysis. Then, the MPSI was derived, as the first difference series for VM0. Figure 3 presents VM0 for all GCC countries: Bahrain, KSA, Kuwait, Oman, Qatar, and UAE.

The main idea to capture a process of monetary situation convergence among the GCC countries called for correlation study. It could be expected that with similar exchange rate arrangements and similarities in the underlying real sector activities, there should be a significant similarity in monetary conditions developments over time. Using a moving correlation coefficient with a five year long window allows observing relative changes in nominal sector among pairs of countries. There are 15 pairs made of six of the GCC countries. Correlation coefficients for the period 1981-2013 are presented in Table 1.

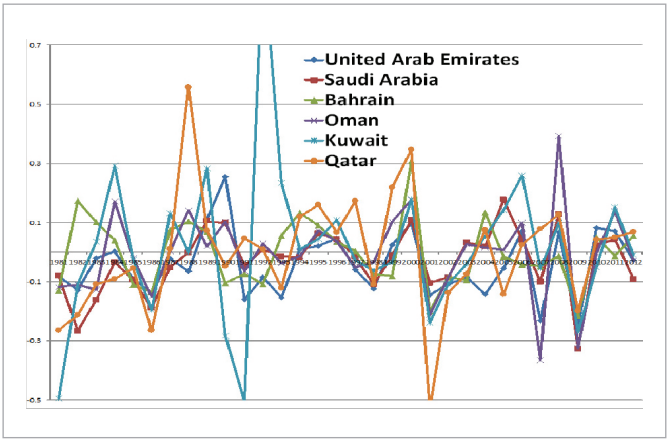



Figure 3
Money velocity (VM0) in the GCC countries 1981-2013 (Author)

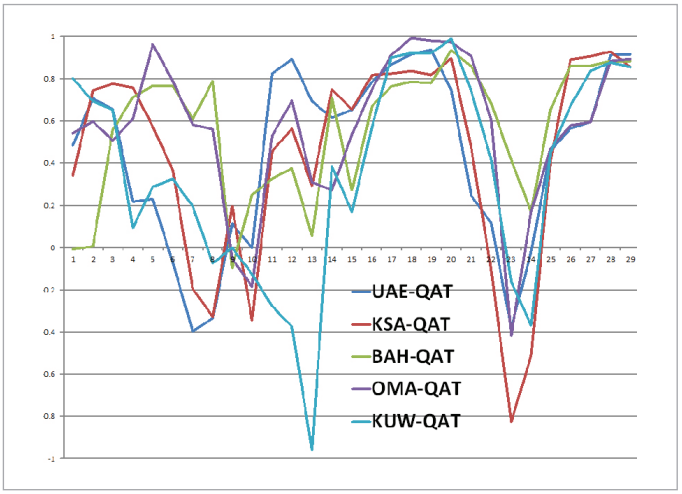
| | UAE | KSA | BAH | OMA | KUW | QAT |
|---|---|---|---|---|---|---|
| UAE | 1 | | | | | |
| KSA | 0.67 | 1 | | | | |
| BAH | 0.33 | 0.29 | 1 | | | |
| OMA | 0.71 | 0.72 | 0.38 | 1 | | |
| KUW | 0.22 | 0.38 | 0.29 | 0.39 | 1 | |
| QAT | 0.38 | 0.48 | 0.56 | 0.54 | 0.27 | 1 |

Source: Author.

Table 1
Correlation coefficients of monetary policy stance indicator for the GCC countries for the period 1981-2013

Bahrain seems to be the only outlier in the GCC group concerning monetary policy stance. The rest of the countries used to perform continuously in a manner that justifies a conclusion on significant and far-reaching similarity in monetary policy. It can be observed in Figure 4.

Figure 4
MPSI moving correlation Coefficient for all GCC countries (Author).

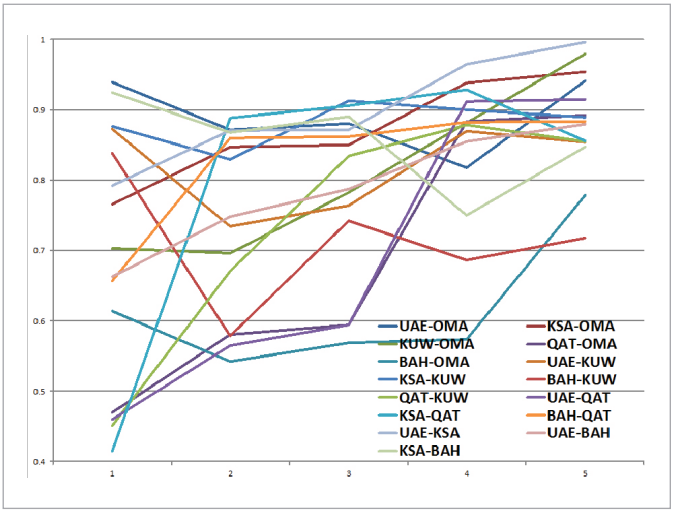



For the whole period covered (1981-2013) the correlation coefficient remained positive and significantly different from zero. It oscillated in the upper region for its range, close to plus unity. Such situation calls for a conclusion that this de-facto coordination of monetary policy creates favorable conditions for creation of a monetary union. Substituting national monetary policies with a common one would not generate asymmetric shocks, as monetary situation has been identical in countries considered. In fact, the observed performance at each country level has been as if there has been one common central bank for the GCC countries already. Referring to the OCA literature and to the de-facto monetary unions section one can conclude that the central bank that has been responsible for formulation of monetary policy for all of them has been the Federal Reserve of the USA. Therefore, any arguments against the common central bank for the GCC countries, based on "giving up monetary policy independence" have been lacking any ground, as there has been no such independence so far.

## Conclusions

The empirical study on similarity of monetary policy stance in the GCC countries over the period of the last three decades delivers an interesting picture. Due to factors discussed earlier in this paper, there has been a significant high positive correlation of the monetary policy stance in the region. When compared with the situation in Europe, prior to the creation of the EMU in 1999, it is obvious that the GCC countries have been suited for a currency union in much greater extent that the EU countries (Mlodkowski 2011). This has been achieved by means other than the nominal convergence criteria, formulated for the EMU members in the Maastricht Treaty. The GCC countries compose an OCA, but still formal monetary integration is not present. There is an alternative situation that we may label "de-facto monetary integration". In the same time, the EMU countries enjoy the common currency benefits in spite they do not meet the OCA criteria, and they do not perform in a manner justifying the common monetary policy.

Figure 5
Correlation coefficients for MPSI in the most recent period 2010-2014 (Author)




As the presented case shows, the formal monetary integration may be postponed due to some other considerations. The EMU example indicates that political will is able to overcome reservations resulting from not meeting the OCA criteria that used to be pronounced as justifying cre-

ation of a common currency. Political factors are able to mitigate also the fact of explicit violation of the limits and requirements imposed on EMU member states. By comparison, it is highly possible that the reason for not observing a new common currency in the GCC countries is also 'political'. Otherwise, we should have a new GCC common currency in the global economy that would definitely become an important reserve currency, and a unit of account and payments for international trade in hydrocarbons.

## References


Abell, J. D. (1991). Distributional Effects of Monetary and Fiscal Policy: Impacts on Unemployment Rates Disaggregated by Race and Gender. *American Journal of Economics and Sociology*, 50(3), 269-284. http://dx.doi.org/10.1111/j.1536-7150.1991.tb02294.x

Bernanke, B. S. & Blinder, A.S. (1992). The Federal Funds Rate and the Channels of Monetary Transmission. *The American Economic Review*, 82(4), 901-921.

Bernanke, B. S. & Gertler, M. (1995). Inside the Black Box: The Credit Channel of Monetary Policy Transmission. *Journal of Economic Perspectives*, 9(4), 27-48. http://dx.doi.org/10.1257/jep.9.4.27

Bernanke, B. S. & Mihov, I. (1998). Measuring Monetary Policy. *Quarterly Journal of Economics*, 113(3), 869-902. http://dx.doi.org/10.1162/003355398555775

Christiano, L. J., Eichenbaum, M. & Evans, Ch. (1996). The Effects of Monetary Policy Shocks: Evidence from the Flow of Funds. *The Review of Economics and Statistics*, 78(1), 16-34. http://dx.doi.org/10.2307/2109845

Eika, K. H., Ericsson, N. R. & Nymoen, R. (1996). Hazards in Making a Monetary Conditions Index Operational. *Oxford Bulletin of Economics and Statistic*s (Special Issue) In A. Banerjee and D.F. Hendry (Ed.). The Econometrics of Economic Policy, 58(4), 765 – 790.

Ellingsen, T. & Söderström, U. (2001). Monetary Policy and Market Interest Rates. *The American Economic Review*, 91(5), 1594-1607. http://dx.doi.org/10.1257/aer.91.5.1594

Freedman, C. (1994). The Use of Indicators and of the Monetary Conditions Index in Canada, In T. J. Baliño, C. Cottarelli (Ed.). Frameworks for Monetary Policy Stability: Policy Issues and Country Experiences (Chapter 18, pp. 458 – 476), International Monetary Fund, Washington D.C.. http://dx.doi.org/10.2307/1927148

Friedman, M. & Schwartz, A. (1963). Money and Business Cycles. *Review of Economics and Statistics*, 45, 32-64.

Gertler, M. & Gilchrist, S. (1993). The Role of Credit Market Imperfections in the Monetary Transmission Mechanism: Arguments and Evidence. *Scandinavian Journal of Economics*, 95(1), 43-64. http://dx.doi.org/10.2307/3440134

Goodfriend, M. (1993). Interest Rate Policy and the Inflation Scare Problem: 1979-1992. *Federal Reserve Bank of Richmond Economic Quarterly*, 79(1), 1-24.

Hanna, D. (2006). A New Fiscal Framework for GCC Countries Ahead of Monetary Union. Retrived January, 6, 2015 from http//se2.isn.ch/serviceengine/Files/ESDP/25144/../Open_Brief_May06.pdf

Jadresic, E. (2002). On a Common Currency for the GCC Countries. IMF Policy Discussion Paper No. 02/12, Washington: International Monetary Fund.

Kashyap, A. K. & Stein J. C. (2000). What Do a Million Observations on Banks Say about the Transmission of Monetary Policy?. *The American Economic Review*, 90(3), 407-428. http://dx.doi.org/10.1257/aer.90.3.407

Mishkin, F. S. (2008). Globalization, Macroeconomic Performance, and Monetary Policy. NBER Working Paper No. 13948.

Mlodkowski P. (2007). Non-European Monetary Unions. History and Operations. WN PWN, Warsaw.

Mlodkowski, P. (2008). Similarity in Economy-Wide Reaction for Monetary Policy as another OCA Criterion. Monetary Policy and Trade Credit. *Banks and Bank Systems*, 3(2), 5 – 13.

Mlodkowski, P. (2009). Cooling Down Economy with Fiscal Policy in a Monetary Union. *The Soka Economic Studies Quartely*, 2009, XXXIX(1), 51 – 60.

Mlodkowski, P. (2010). A new theory of the crowding–out effect in the open economy. *The Shogaku Ronso*, 3(1), 21-40.

Mlodkowski, P. (2011). Monetary Policy Stance of the EMU Countries in the Pre-Integration Period. *Nierówności Społeczne a Wzrost Gospodarczy*, 19, 31 – 43.

Mlodkowski, P. & Bywaters D. (2012). The Role of Transactions Costs in Economic Growth. *International Japan Economic Policy Studies*, 7, 53 – 66.

Mlodkowski, P. (2013). European Integration, Transactions Costs and the Efficiency of Econom-

ic Processes. *European Integration Studies: Research and Topicalities*, 7, 102-109. http://dx.doi.org/10.5755/j01.eis.0.7.4080

Ng, Ch. K., Smith, J. K., & Smith, R. L. (1999). Evidence on the Determinants of Credit Terms Used in Interfirm Trade. *The Journal of Finance,* 54(3), 1109-1129. http://dx.doi.org/10.1111/0022-1082.00138

Nilsen, J. H. (2002). Trade Credit and the Bank Lending Channel. *Journal of Money, Credit and Banking*, 34(1), 226-253. http://dx.doi.org/10.1353/mcb.2002.0032

Revenkar, N. S. & Yoshino, N. (1990). An 'Expanded Equation' to Weak-Exogeneity Tests in Structural Systems and a monetary Application. T*he Review of Economics and Statistics*, 72(1), 173-177. http://dx.doi.org/10.2307/2109757

Reynard, S. (2007). Maintaining Low Inflation: Money, Interest Rates, and Policy Stance. *Journal of Monetary Economics*, vol. 54(5), 1441-1471. http://dx.doi.org/10.1016/j.jmoneco.2007.06.018

Romer, Ch. D. & Romer, D. H. (1989). Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz. In O. J. Blanchard and S. Fischer, (Ed.). NBER Macroeconomics Annual 1989 (pp. 121-170). Cambridge, MA: MIT Press. http://dx.doi.org/10.3386/w2966

Thornton, H. (1802). An Enquiry into the Nature and Effects of the Paper Credit of Great Britain.

Ugai, H. (2007). Effects of the Quantitative Easing Policy: A Survey of Empirical Analyses. *Monetary and Economic Studies*, 25(1), 1 – 48.

## About the author

**PAWEL MLODKOWSKI**

**Ph.D. in Economics**

Faculty of Business, Sohar University

**Address**
P.O Box 44, Al Jameah Street, Sohar 311, Oman
E-mail: PMlodkowski@soharuni.edu.om