ELABORATION OF ESTIMATING TRI SAMAYA CONCEPT SINEFFECT OF MACROECONOMIC INDICATORS ON DEMAND FOR MONEY: TIME SERIES STUDY

Putu Krisna Adwitya Sanjaya, Faculty of Business and Tourism Economics, University of Hindu Indonesia, Denpasar, Bali 80238, Indonesia, krisnasanjaya50@yahoo.co.id
Made Heny Urmila Dewi, Faculty Economics and Business, Udayana University, Denpasar, Bali 80234, Indonesia
Ni Putu Martini Dewi, Faculty Economics and Business, Udayana University, Denpasar, Bali 80234, Indonesia

ABSTRACT- Introduction. The demand for money has a strategic position for the monetary authority in formulating fundamental policies to maintain the stability of a country's economy. This study aimed to determine the determinants of money demand in Indonesia, either simultaneously or partially. **Method.**This research used *time series*data of 1990 Q: $_1$ - 2019 Q: $_4$ period and usedquantitative analysis *distributed lag*model. This study found the fact that national income, inflation, US dollar exchange rate and money demand in the previous period partially and simultaneously have a significant effect on demand for money during the analysis period. **Result**. Value of R^2*Goodness of Fit*= 0.950 indicated 95.00 percent of variations in money demand in Indonesia can be explained or influenced by variations in the amount of national income, inflation, United States dollar exchange rate and demand for money in the previous period while the remaining 5.0 percent is influenced by other variables, the constant coefficient and long-run regression coefficient, = (1 - 0.210) = 0.79. δ = 0.79 means that the adjustment time is 0.79 x 12 months = 9.48 months = 285 days. The long adjustment time is caused by the expectations of individuals or economic actors. **Conclusion.** The results of this study were expected to be able to enrich the development of science so that it could become a reference in similar research in the future. In line with *Tri Samaya as* Hindu concept, it is hoped that the authorities, economic actors and *stakeholders* in making decisions related to the demand for money need to consider the past *(atita)* current *(wartamana)* and future *(anagatha) aspects* so that decisions are made wiser and more effective for overcoming problems that occur in order to achieve development goals and economic prosperity.

Keywords: Macroeconomics, Demand for Money, *Tri*Samaya, Time Series

I. INTRODUCTION

Demand for money has a strategic role for the monetary authority in formulating appropriate policies to maintain economic stability[1]. The money demand analysis is an indicator study of the economic magnitude needed to support government policy in the monetary sector[2]. Money and credit play very important role inmodern economic activity and can be very helpful, but also can disrupt the world economy[3]. Also, family economic factors have an impact on physical and psychological conditions such as stress in the family so that self-esteem occured[4,5,6]. The circulation of money from the demand side is a part of monetary sector that supports the national economy in Indonesia so that the money supply causes equilibriumof economy**.**

The policy that regulates the money supply is called monetary policy[7]**.** As an integral part of macroeconomic policy, monetary policy in Indonesia plays an important role in economic development. Thus, together with other macro policies such as fiscal, income, and balance of payments policies, monetary policy is directed to achieve the targets of economic growth and equitable development including income and expansion of job opportunities, as well as price stability and balance of payments.[8]

Demand for banknotes and checks are determined by the needs of the community in maintaining liquidity[9]**.** One of the basic characteristics of demand for money is that people are attracted to purchasing power of their money, namely the value of cash balances in the form of goods that can be purchased with cash so that money is here as means of payment or a medium of exchange in the economic system. Demandfor money can also be influenced by several macroeconomic variables such as national income, exchange rates, and inflation. By looking at the economic condition of developing countries like Indonesia, which is so risky that there will be disequilibrium, especially since it experienced an economic crisis at the beginning of the

decade of 1997, study for forecasting monetary conditions in developing countries like Indonesia is an urgent matter to do. As reflected in research that researched demand for money in Korea, it found that in the long-run equilibrium people's real income and the interest rate still affect the demand for money in the broad sense (M2) while for money demand in the narrow sense (M1) this variable is not very influential[10]. As well as other research showed that the failure to find a significant relationship between exchange rates and money demand can be derived from the assumption of linear dynamic adjustment process for long-run equilibrium variables which after nonlinearity is introduced, using the concept of partial amounts, exchange rate movements can have a significant effect on demand for money. The research also showed using Iranian data and estimating the demand for money in Iran. Splitting the movement of the dollar value into positive partial numbers and negative partial numbers, the study also found that dollar appreciation and dollar depreciation have an asymmetric effect on the demand for money in Iran.

Based on above views and phenomena, the widest possible opportunity is opened to explore various concepts of macroeconomic quantities to enrich and even perfect existing theories. In this case, the conception of Hinduteachings Tri Samaya deserves to be exposed in the jungle of economics, considering that Hindu literary texts have discussed the issue of social organization from the smallest - the family to the largest - the state (Government sector) which is also one of the actors in the economyactivities[12]. To find out the importance of the monetary sector about the demand for money in Indonesia, a scientific study is needed which is expected to become a basic reference for policymaking by implementing it with the concept of Hinduteachings Tri Samaya. This is the location of the novelty of this study which is supported by empirical data, including external variables, so that this research becomes important to review.

II. METHOD

This study used time-series quarterlydata from 1990: Q_1 to 2019: Q_4. The argument in using 1990: Q_1 as the basic year of research was data availability, the minimum number of data requirements in time series data testing, while 2019: Q_4 was the last year with existing quarterly data. This study used a causal quantitative research method design because it aimed to obtain evidence of cause and effect between the research variables being managed using data sourced from Bank Indonesia, National Planning and Development Agency, and the Central Bureau of Statistics. The model specification used is a distributed lag which is formulated through the following equation:

LMD = f (GNP, Inf, Kurs, LMD $_{t-1}$) ....(1)

Where LMD is money demand in a broad sense, GNP is national income, Inf is inflation, the Exchange rate is the exchange rate of United States Dollar against Rupiah, and LMD $_{t-1}$ is the demand for money in the previous period.

This study will observe the application of distributed lag modelon the demand for money in Indonesia with the effect of each explanatory variable using the computer application Eviewssoftware 10. Before testing the regression model, the time series data stability is tested by using stationary, co-integration, and then the classical assumption test which includes multico-linearity, heteroscedasticity, and autocorrelation tests so that the model used meets the rules of Best Linear Unisex Estimator[13]

III. RESULT

3.1 Validity Test The *Time Series*
Data user needs to be tested for its validity which includes stationary tests and cointegration tests.
1) StationaryTest
The stationary test is performed to determine the nature of the data used in the study, which is expected to have a data variance that is not too big and has a tendency to get close toitsmeanvalue.

Table 1
Stationary Test Results with Unit Root Test

Variable	ADF	Value McKinnon Critical Value			Information
		1%	5%	10%	
LMD	-10,719	-3,486	-2,886	-2,579	Stationary in the order (1)
GNP	-10.5964	-3.4950	-2.8869	-2.5817	Stationary in the order (

					1)
INF	-11,346	-3,486	-2,887	-2,579	Stationer of the order (1)
USD	-10,169	-3,487	-2,886	-2,580	Stationer of the order (1)

Source: Analysis Results, 2020

The results of data stationary testing can be shown in table 1, which can be concluded that all data were in acondition stationary. This can be seen in the Augmented Dickey-Fuller (ADF) value which is smaller than the McKinnon critical value at the 5 percent significance level.

2) Co-integration Test

Co-integrationtesting is very important to do when developing dynamic econometric models (Winarno, 2017). Thus the interpretation of the model will not be misleading. The results of the co-integration test can be explained in table 2 which showed that the money demand variable is integrated with all the independent variables studied. This can be seen from the likelihood ratio values which are greater than the critical value at the 5 percent significance level.

Table 2
Co-integration Test Results with Johansen Test Between
Demand for Money Variables (LMD) with each Independent

Independent Variable	Eigenvalue	Likelihood Ratio *	Critical Value 5%	Information
GNP	0.040	18,487	15,494	Lag interval 1 to 4
INF	0.137	20,800	15,494	Lag interval 1 to 4
USD	0.060	20.644	15.494	Lag interval 1 to 4
LMD t-1	0.099	15.477	15.494	Lag interval 1 to 4

Source: Analysis Results, 2020
Description: * Likelihood Ratio = *Trace Statistics*

3.2 Classical Assumption

1) Multico-linearityTest

Multico-linearity test in this study was conducted using Klein test model which compares lower cases (the correlation between each independent variable) if R^2 y Xi, Xj .... Xn> r^2 Xi, Xj .... Xn it can be concluded in the model to avoid problems multico-linearity. Based on the output of the test can be explained that the coefficient of determination of multiple linear (R^2 = 0950) is greater than the coefficient of determination all regressions auxiliary to the national income, inflation, exchange rate, and demand for previous period with the value of R^2 each independent variable is equal to 0.796, 0.244, 0.568, and 0.761, it is concluded that in the model there is no multico-linearity problem.

2) Heteroscedasticity Test

Heteroscedasticitytest is carried out to test whether the model has inequality of variance from one observation to another. In this study, the heteroscedasticity test was carried out using themodel, Breusch Pagan Godfrey test namely by comparing the significance value of Obs * R-Squared with the value of the real value, if Obs * R-Squared is greater than the real level value, there is no heteroscedasticity. Through the analysis results, it was found that the Obs * R-Square model value was 0.138> from the 0.05 level, it could be concluded that the research model did not contain heteroscedasticity problems.

3) Autocorrelation test

The model used to determine whether there is an autocorrelation problem in this study to use the Langrange multiplier test, which is to compare (Obs *) R Square that must be greater than 5 percent significance probability, so it can be said that in the model there is no autocorrelation problem in the research model, the Obs *significance value R Square of 0.091 is greater than 5 percent real level, meaning that the model used in this study did not contain autocorrelation[13].

3.3 Short-Run Estimation of Money Demand

Specifications for the *distributed lag* model are used to determine the determinants of money demand in Indonesia 1990 Q:$_1$ - 2019 Q:$_4$, with the following regression equation.

$$Y_t = \delta\beta_0 + \delta\beta_1 X_{1t} + \delta\beta_2 X_{2t} + \delta\beta_3 X3_t + \delta\beta 4x(1-\delta)Y_{t-1} + \delta u_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

Information:

Y_t	= Demand for Money
Y_{t-1}	= Demand for Money of the previous period
β_0	= Constants
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_{Di}$	= Intercept X_{1t}, X_{2t}, X_{3t} and X_{3t-1}
X_{1t}	= GNP
X_{2t}	= Inflation
X_3t	= United States Dollar Exchange Rate
u_t	= Residual

Table 3
Results of Regression Testing *Distributed Lag Analysis*
Variable Demand for Money with each Variable

Dependent Variable	Independent Variables	Coefficients Regression	*Standard Error*	t-Value	Sig
Demand for Money (Y)	GNP (X$_1$)	0.147	0.0244	6.070	0.000
	INF (X$_2$)	0.020	0.009	2.102	0.037
	USD (X3)	0.943	0.056	16.563	0.000
	Demand for money (Y_{t-1})	0.210	3.220	6.539	0.000
Constant = 2.689			F-Value = 545.088		
R Square = 0.950			Sig = 0.000		

Source: Analysis Results, 2020

Table 3 showed that expectations by using distributed lag indicate that the value of R^2 Goodness of Fit obtained a figure of 0.950, which means that 95.00 percent of variations of demand for money in Indonesia that can be explained or influenced by variations in the amount of national income, inflation, the United States dollar exchange rate and demand for money in the previous period, while the remaining 5.0 percent is influenced by other variables. This was not included in the research model. Table 3 also showed that simultaneously the variables raised in this study using the approach are *distributed lag* known to have a significant effect on the 5 percent level of demand for money in Indonesia during the analysis period. Partially the Gross National Product, inflation, the United States dollar exchange rate, and demand for money in the previous period had a positive and significant effect on the demand for money in Indonesia in 1990 Q:$_1$ - 2019 Q:$_4$ with a significance value that was smaller than the real level of 5 percent.

3.4 Estimation of *Multiplier* Long-Run Demand for Money

From the regression analysis, the long-run coefficient can be calculated as follows:

$$\beta_t = \frac{\delta\beta_t}{\delta} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad \ldots\ldots\ldots\ldots \quad (3)$$

δ	=	1 - 0.210	=	0.79
β_1	=	0.147 / 0.210	=	0.70
β_2	=	0.020 / 0.210	=	0.09

β_3 = 0.943 / 0.210 = 4.49

For the constant-coefficient and long-term regression coefficient, the constants and the short-term regression coefficient are divided by δ. Where δ = (1 - 0.210) = 0.79. δ = 0.79 is the adjustment coefficient, namely the coefficient that makes natural demand for money equal to the estimated demand for money, in this case, an adjustment time of 0.79 x 12 months = 9.48 months = 285 days is required. Adjustment period long enough it can be caused by expectations of the individual or economic agent if in the future is expected that there will be an increasing interest rate of money is assumed that the economy was stable, then people will still tend to deviate its money in financial institutions that may be implicated in the decline Estimating patterns of demand for money because high-interest rates will increase the marginal propensity to save of individuals, this is in line with classical monetary theory. According to classical theory, the related saving communityis a function of the interest rate. The higher the interest rate, the higher the people's desire for saving, this means that at a higher interest rate people will be motivated to sacrifice or reduce expenditure for consumption to increase theirsavings.

IV. DISCUSSION

Tri Samaya:As Pillars toEstimate Macroeconomic Indicators of Demand for Money

*Vedas*scripture is a source of Hinduism. In terms of source, *Veda* is divided into two major parts, namely *VedaSruti* and *Vedasmrti (Manavadharmasastra* II.10 and *Sarasamuccaya,*sloka 37). *Veda Sruti* consists of four*Veda* namely *Reg veda, Samaveda, Yayurveda* and *Atharvavedagroups. Veda Smrti* is a collection of Hindu teachings that contain interpretations of God's revelations. Apart from being based on sources, *Vedas* scripture can also be divided based on their contents, namely *Jnanakanda* which contains the matters related to *tattwa* or philosophy and *Karmakhanda* which discusses the moral order and ceremonies[14]. *The Veda* is a sacred teaching that is taught orally. The writing of *Ved*a was done around the fifth century BC.

All religions imply messages, teachings and moral values that are able to influence the practice of their adherents according to the faith and piety of each individual[15]. In Hinduism, the values regarding the proper and wrong, good and bad behavior in business activities are based on the concept of human dignity as a divine creation. Humans were created in the most perfect form compared to all other created creatures and consist of *raga* and *atman*. The spiritual dimension is a gift from God that is given only to humans, with the human spirit getting meaning in his life *(Sarasamuccaya, Sloka* 81). The efforts used to explore the role of Hindu religious values in global life need to begin with understanding the profound meaning of *revelations.*God'sin the *Vedas*. *Veda is* very rich in ideas and values that can be used as references in behavior to face life's challenges. The exploration of Hindu values through the disclosure of the profound meaning of *words* God'sas written in the *Veda*, shows that there are values which are very *urgent* in economic activity. In the essential management, function is planning. Planning determines the basis and even determines the success of an organization in the future, as well as in the process of making policies in a country, especially those that are very fundamental and control the lives of many people such as the monetary sector (demand for money). Planning must be formulated carefully and in depth by calculating all the potential and resources that are owned. By giving the mistakes in implementing planning can have implications for not achieving thingdesired.

Hinduism has a concept of time known as *Tri Samaya* which consists of *atita* (past), *wartamana* (current) and *anaghata* (future)[16] . These three concepts seem capable of being used as planning pillars in privileging macroeconomic indicators that affect the demand for money in Indonesia for a macro-socioeconomic fragment. The interpretation is that the process of planning and implementing policies that must be pillar in time with a method that has a measurable level of achievement, therefore it is necessary to review the past, present, and various predictable probabilities in the future. *Atita* or the past is very *urgent* to be considered in planning the current desire of individuals to hold money. This is evidenced in the findings of this study that the regression coefficient of the variable demand for money in the previous period was positive 0.210, which means that if the demand for money in the previous year increased by 1 percent, the demand for money in Indonesia would also increase by 0.210 billion Rupiah, assuming macro indicators. The economies that are raised in this study, such as national income, inflation, and the exchange rate of the rupiah against US

dollar are constant. Or in other words, the current period of demand for money (analysis period) is also influenced by the previous period's demand for money, where the present *(Wartamana)* is the reality that is owned by individuals or society when planning will need or ask for money.

The current condition is the accumulation of *equities* collected based on past experiences. Individuals who can read good reality will be able to find *opportunities* to build their existence and develop themselves to be better to achieve *welfare* which must be based on the concept of *Catur Purusa Artha* as a view of life in carrying out all life activities including in terms of carrying out economic activities which consist of four parts namely: *Dharma, Artha, Kama, and Moksa*[17]. The concept of *Dharma* is the teaching of truth, as a view of life and as a guide to human life as an economic actor. *Artha is in* the form of material as life support, *Kama* is a desire and *Moksa* is the union of *soul* and *paramaatman*, so it can be concluded that the purpose of human life always requires *Artha, Kama, Moksa*[18], as stated in the Book of *Sarasamuccaya* Sloka 262[19], which reads:

> *Dharmenarthah samaharyo dharmalabdham tridha dharnam,*
> *Kartvyam dharma paranam manavena prayatnatah*

Meaning:

> *And the way you try to get something, it should be based on dharma, funds earned by effort should be divided into three, for the implementation (costs) to achieve the three; pay attention to it*.

The third concept of Tri Samaya is *Wartamana* which is also very decisive in *planning* because *planning* is currently being prepared which can be used to read all opportunities, predict obstacles that will arise as well as determine plans to overcome all obstacles. In the conception of Hinduism, namely *Tri Samaya,* namely *anagatha* or the future, it includes all hopes and goals to be achieved by individuals in terms of holding money. Good planning always leads to the future by considering the present *(wartamana)* and the money capital that has accumulated in the past *(atita).* So the important point here is how time can be managed properly as implied in Sloka 269 of *Sarasamuccaya* scriptures[19],

> *Avandhyam divasam kuryad dharmatah kamator thatah,*
> *Gate hi divase tasminstadunam tasya jivitam*

Meaning

> *Don't let that time pass uselessly, give it a chance to bring use that time, maybe it can be used to complete the good deeds: therefore make good use of that time.*

In the economics context, one of the characteristics of prediction is very important to predict and read every future business opportunity, this is also synchronous if it is correlated with the most important meaning of *anagatha* itself[20,21,22,23,24,25]. Based on the explanation above, the *Tri Samaya* concept can be used as a reference in economic activities, especially in Hindu management related to holding money (circulation of the amount of money in circulation). This concept explains the importance of planning which is based on time. An inseparable unity of time between past *(atita)*, present *(wartamana)* and future *(anagatha).* This cannot be separated from the planning function which determines future activity, so that a mature, rational and measured consideration is needed so that the objective of economics, namely, *welfare in society,* for economic actors can be realized.

The achievement of Indonesia's national development is strongly influenced by economic development because economic development is a primary factor in supporting and at the same time driving development itself, whereas economic development is very much determined by stability in terms of economic conditions (not crisis) creating stable economic conditions, in essence, there must be a synchronization of policies. Whether issued by the government or by the monetary authority.

V. CONCLUSION

National income, inflation, United States dollar exchange rate, and demand for money in the previous period simultaneously and partially have a significant effect on the demand for money in Indonesia 1990: Q_1 - 2019: Q_4 with a confidence level of 95 percent. The concept of Hinduteachings *Tri Samaya* can be actualized in formulating and supporting policies taken by economic actors. *Tri Samaya* explained how economic activity especially related to demand for money needs to be explored in an aggregate manner and then later elaborated to support success in carrying out economic activities to achieve development and welfare goals because at the macro the economic concept in Hinduism is like a wheel. The axis is Hinduism itself, while the wheel is economy. *Vedanta* can be actualized as a foundation to embody the welfare of the community.

REFERENCES

1. Arora, S. et al. Nonlinear and nonparametric modeling approaches for probabilistic forecasting of the US gross national product. Studies in Nonlinear Dynamics and Econometrics, 17(4), 395–420. 2013
2. Sanjaya, PKA. Money Economics Based On Empirical Research (1st ed.). Cv Sedari Press. 2019
3. Lucas, RE et al. On the stability of money demand. Journal of Monetary Economics, 73, 48–65. 2015
4. Suhron, M. Asuhan keperawatan jiwa konsep self esteem/ Care of Mental Nursing The concept of self-esteem. Jakarta: Mitra Wacana Media; 2017
5. Suhron M., Asuhan keperawatan konsep diri: Self esteem/ Self-concept nursing care: Self esteem (Self-esteem nursing care), "Publisher, Ponorogo: Unmuh Ponorogo Press. 2016
6. Suhron M, A Yusuf, R Subarniati, F Amir, Z Zainiyah. (2020). How does forgiveness therapy versus emotion-focused therapy reduce violent behavior schizophrenia post restrain at East Java, Indonesia ?. International Journal of Public Health Science (IJPHS) 9 (4), 214-219
7. Natsir M .. Empirical Analysis of the Effectiveness of the Transmission Mechanism of Monetary Policy in Indonesia through the Exchange Rate Path for the Period 1990: 2 - 2007: 1. Journal of Development Economics, 7, 1 –17. 2017
8. Krisna, A. Easy Method to Understand Introduction to Macro Economy (PS Wibawa, Ed .; 1st ed.). CV Sastra Darmastuti. 2018
9. Pfajfar D., et al. Inflation expectations and monetary policy design: Evidence from the laboratory. Macroeconomic Dynamics, 22 (4), 1035–1075. 2018.
10. Hwang JK. The Demand for Money in Korea: Evidence from The Cointegration Test. International Advances in Economic Research. 2002
11. Bahmani OM, et al. Nonlinear ARDL approach and the demand for money in Iran. Economics Bulletin, 35 (1), 381–391. 2015
12. Dewi, AA. et al. The elaboration and values of Hindu management in modern organizations. 15, 1–11. 2017
13. Ghozali, I. Multivariate and Econometric Analysis (II). Diponegoro University Publishing Agency. 2017
14. IGN Gorda. Hindu Religious Values and Balinese Entrepreneurs' Economic Ethics. 1995.
15. Sanjaya, PKA. Business Ethics and Entrepreneurship in Bali's Economic Development: From a Hindu Perspective. Dharmasmrti: Journal of Religion and Culture, 18 (1), 93–101.2018
16. Worda, N. Tri Samaya. Pearl Veda. 2017.
17. Werasturi, D. Concept of Corporate Social Responsibility based on Chess Purusa Artha. Journal of Multiparadigma Accounting, 319–335. 2017
18. Suardana, IR Initiates Hindukonomi. Wartham. 2016
19. Kadjeng, IN Sarasamuccaya. The Bingbingan and Religious Life Counseling Project Spreads in the Nine Dati II. 1997
20. Mankiw, NG Introduction to macroeconomics. Chriswan Sungkono translation. Jakarta: Four Salemba, 1–81. 2006
21. Utama, S. Econometrics (1st ed.). CV. Main Literature. 2017
22. Widarjono, A. Econometrics: Introduction and Its Application (4th ed.). UPP STIM. 2013
23. Winarno, WW. Econometric and Statistical Analysis with Eviews (5th ed.). UPP STIM YKPN. 2017

24. Sanjaya, PKA et al. Determinants Influencing Customer Loyalty To An Indonesia Online Shop Shopee:A Case Study In Denpasar City, Bali. Solid state Technology. Vol 63(5). 2020
25. Sanjaya, PKA. HutanLestari :AspekSosialEkonomi Yang Mempengaruhinya. UNHI Press.Ed 1. 2020