The Effect of Non-Cash Payments on Primary Sector Performance in Indonesia

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Article Information

A B S T R A C T

The purpose of this study is to examine the effect of non-cash payments on the performance of the primary sector in Indonesia. The independent variables consist of ATM/Debit cards, credit cards, e-money, check payments, and RTGS payments. The dependent variable of the primary sector is divided into two, namely agricultural GDP and mining GDP. The data used is a secondary data type with time series, observation period 2010.q1-2019.q4. The analytical method of this study uses the Error Correction Model (ECM) estimation to determine the effect of non-cash payments in the short and long term. The short-term estimation results in the mining sector only have a significant influence on the RTGS variable, while in the long term it is influenced by credit cards, e-money, and RTGS. The results of the short-term estimation of the agricultural sector have a significant effect on credit cards, checks, and RTGS, while in the long term only checks are significant.

Keywords: Non-cash payments, GDP of the agricultural sector, GDP of the mining sector.
JEL Classification Code: C01, E42, O13

INTRODUCTION

The concept of the development of communication and technology development has been known since the 1960s to initiate the progress of civilization and develop scientific potential and resources. The theory of diffusion of innovation is the process of developing communication innovations through certain channels that connect members of the social system from one location to another and over a certain period of time (Rogers, 1995).

The development of technology and knowledge from the diffusion of the innovation process has implications in various fields, including the payment system (Bank Indonesia, 2006). The technological revolution is rapidly changing the lifestyle and behavior of economic transactions to a digital platform and demands fast and all digital payment methods (Bank Indonesia 2019). The acceleration of payment instrument technology shifts the role of cash which was previously a means of payment to a non-cash form of payment. This provides benefits for all economic sectors to achieve sustainability of economic activities and sector productivity (Anshari et al. 2019; Lintangsari et al., 2018).

The demand for fulfillment of needs forces individuals to provide a means of payment to allocate their income. This assumption was initiated by the theory of money demand according to the theory of Baumol (1952) and Tobin (1956). These payment instruments are realized in the form of securities and developed into non-cash payment instruments such as those we currently use, including checks or bilyat giro, ATM-Debit cards, credit cards and electronic money (Bank Indonesia, 2014).

In Indonesia, the expansion of payment electronification has been carried out in various sectors, through the implementation of GPN interconnection and interoperability in retail payment systems, such as the non-cash program for distributing government social assistance (BOS funds), in the transportation sector (e-toll, electronic ticketing PT KAI).) and management of regional government financial transactions (e-retribution and e-parking) (Bank Indonesia, 2018).

Based on the results of the Bank Indonesia report, the growth of non-cash transactions and the use of non-cash payments has increased. The average daily retail payment transactions grew 7.3 percent, up from the second quarter of 3.08 percent. The use of ATM debit, credit cards, and electronic money grew 12.1 percent in the third quarter of 2018, an increase of 9.6 percent from the previous quarter. Meanwhile, electronic money (EU) transactions increased by 300.4 percent, as a result of the strengthening of people's preferences for transactions through digital financial technology and e-commerce.

The first quarter of 2019 showed the growth of ATM, debit card, credit card and EU transactions grew 17.1 percent or higher than 2018. Electronic money itself grew to reach 77.6 percent. ATM cards and debit cards dominate retail payment transactions with a total share of 94.8 percent with a growth ratio of 16.6 percent (Bank Indonesia, 2019).

The growth in the use of non-cash infrastructure is generally seen to increase, but the use of cash still dominates economic transactions. This is because the level of awareness of the benefits of using non-cash instruments is not understood by the public, and there are still many areas that are not covered by non-cash payment service infrastructure (Agus D.W Martowardojo, in the Bank Indonesia Newsletter, 2014). The obstacles that arise from the development of the cashless system are because this sector lacks funding facilities and distribution channels that can be reached by a wider range of consumers.

Research by Nwaolisa and Kasie

(2012) observes that various infrastructure gaps prevent the adoption and development of cashless payment systems from reaching the smallest economic actors in various economic sectors. Meanwhile, the development of a non-cash payment system, especially the primary sector, needs to be pursued, considering that the primary sector which consists of two sectors, namely the agricultural sector (agriculture, fisheries, and forestry) and the mining sector BPS (2010), is a sector that has an important role in meeting food availability and sustainability for society (Anshari et al. 2019).

Several studies have analyzed the effect of non-optimal absorption of non-cash payments in the primary sector, including according to Babcock. H. Lee., 2015; London, T., Anupindi, R. & Sheth, S. 2010 The challenge of agricultural finance is to provide secure, cost-effective financing to rural smallholders with low fraud risk, transparency and accountability. The benefits of digital payments in agriculture can provide an increase in the volume of economic transactions to create a digital ecosystem. The role of third parties (cellular network operators) is needed for service expansion to rural areas, pursuing national penetration, and new market segments that are actively transacting through digital channels. Agricultural finance innovations for rice production emerged in Ghana as a distribution service for rice suppliers to urban areas called RiMFin or Rice Mobile Finance, including Tigo Cash as a mobile network operator that connects digital transactions in Ghana (Oxford, 2013).

In the fisheries sector, the problems faced by the fishing industry are quite high (Gunakar and Bhatta, 2016; Aswathy et al., 2014) these problems are seen in the condition of fish that are easily damaged, high storage costs, transportation costs, no guarantee of catches, bid prices low and the lack of direct seller and buyer access. Therefore, information and communication technology plays a major role in connecting customers with sellers, through the innovation of more efficient transaction payment instruments (Rock, 2009; Marshall, Micheal & Coke, Oma. 2016).

Responding to problems in the fisheries sector, Prabhu and Joshi (2018) analyzed that Indian Karnataka female retailers in the fishing industry have shifted the practice of trading to digital platforms. This digital business development is carried out to guard against market demands and maintain their business. In Indonesia, one of the innovations for non-cash fisheries payments is in the form of E-Fish Pay (Husna and Diki, 2019) to eliminate fishermen's dependence on middlemen, and develop sustainable catches so that fishermen can sell fish catches through the government to private parties (restaurants). , self-service, etc).

In the future, the benefits of digital services will shape digital markets that will accelerate changes in demand, and encourage increased interest in sector products from various geographical locations (Da Silva, C.A. 2009) with the hope of increasing farmers' income and welfare prices. Based on empirical studies that have been carried out by several previous researchers, the purpose of this study is to identify the effect of non-cash payments on the performance of the primary sector in Indonesia.

METHODOLOGY

I The scope of the research includes the GDP of the agricultural sector and the GDP of the mining sector from the period 2010.q1 – 2019.q4 with non-cash payment instruments. The dependent variable consists of the GDP of the primary sector, namely the agricultural sector (agriculture, fisheries, forestry), and the mining sector. The independent variables used ATM/ Debit card transactions (debit), credit card transactions (credit), electronic money

(e-money), check payments (cheques), and RTGS payments (RTGS). The data sources for this research were taken from Bank Indonesia and the Central Statistics Agency.

This study uses the Error Correction Model (ECM) analysis model from Domowitz-El-Badawi. The test was carried out in three stages, namely, the data stationary test (unit root test), cointegration test, and error correction model test (Widarjono, Agus.2013). The estimation model used in this study is as follows:

$$\Delta log y_{(1,2)} = \beta_0 + \beta_1 \Delta log\_atmdebet_t + \beta_2 \Delta log\_kredit_t + \beta_3 \Delta log\_e\text{-}money_t + \beta_4 \Delta log\_cek_t + \beta_5 \Delta log\_rtgs_t + Resid_t + \varepsilon_t$$

Where, GDP is primary sector income (log_y1, agricultural GDP; log_y2, mining GDP), log_atmdebet is ATM/debit card transactions, log_credit is credit card transactions, log_e-money is electronic money transactions, log_cek is check payment transactions, log_RTGS is transactions RTGS payment, resid is the residual error, 0,1....5 is the regression coefficient, t is the time/period to t.

RESULT AND DISCUSSION

The first step is to test the ECM, the variable is first tested for data stationarity with the Phillip Perron test option as shown in Table 1. The results of the data stationarity test on the research variables at the level level show that the t-statistic value is smaller than the t-table, which means it is not stationary at the level level. level, then the ADF test is carried out at the first difference level. The results obtained were that all variables were stationary at the first difference level (table 1), calculated from the t-statistic value greater than the t-table value.

Cointegration test is used to test the resulting regression residuals are stationary or not. Cointegrated variables

can show a long-term relationship between research variables. Cointegration test results show that the two observational models have cointegration values at the level level, as seen from the ADF value greater than the critical value 1%, 5%, 10%. It can be concluded if the primary sector shown from the regression model of agriculture and mining has a long-term relationship.

Based on the short-term test criteria when the probability is less than 10%, 5%, and 1%, the effect of the dependent variable on the independent variable is significant, and vice versa. Based on table 3 the error correction variable (resid) is positive and significant in the agricultural sector, it can be said that the ECM specification used is valid according to the Domowitz-Elbadawi model. While the residual value of the positive mining sector is not significant, the results of the ECM model are assumed that economic actors will always find results that are not always the same as reality.

The short-term estimation results show the effect of non-cash payments in the primary sector in the agricultural sector as indicated by the credit card, check payments, and RTGS payments which significantly affect agricultural GDP. Indicated by the probability values of the two variables which are smaller than 10%, 5%, and 1%. While the results of the short-term estimation of the mining sector, a significant effect only occurs in the RTGS variable. It is indicated by the probability value which is smaller than 5%.

The effect of using credit cards is significantly negative on agricultural GDP in the short term, with a negative coefficient value of 1.116432 billion rupiahs and 1%. This means that every increase in credit card use will reduce agricultural sector income (Y1) by 1.116432 billion rupiahs. The negative value of the use of credit cards in the agricultural sector indicates that credit cards have not been able to increase agricultural income even though they have

a significant impact, considering that the realization of the KUR access program has experienced a slowdown and the shift in the distribution of non-production KUR funds to the production sector is still below the target (Bappenas, 2020).

The use of check payment media has a significant positive effect on the GDP of the agricultural sector in the short term, with a coefficient value of 0.4077156 billion rupiahs and 5%. This means that every increase in the use of payments through checks will increase the income of the agricultural sector by 0.4077156 billion rupiahs. This shows that the payment medium by check helps speed up payment transactions and simultaneously provides efficiency benefits in increasing agricultural GDP (Bappenas, 2020).

The use of RTGS payment media on agricultural GDP is significantly negative in the short term, with a coefficient value of 0.1180558 billion rupiahs and 10%. This means that every increase in the use of RTGS payment media will reduce agricultural sector income by 0.1180558 billion rupiahs, although the effect of using RTGS is significant on the GDP of the agricultural sector.

In the primary mining sector, only the use of the RTGS payment media has a significant positive effect on mining GDP. This means that every increase in the use of RTGS payment media will increase mining sector income by 0.1184703 billion rupiahs. While the influence of non-cash variables has no significant effect on the increase in mining GDP, this occurs because cost recovery occurs in the upstream mining sector and has not been evenly distributed in the payment sector at the mining retail level (Daruri, Deni. 2014).

The long-term estimation results that have a significant positive effect on the agricultural sector only check payments of 1.065361 billion rupiahs with a probability value of 1%, meaning that every increase in the use of check payments will increase

agricultural sector income by 1.065361 billion rupiahs. It can be concluded that the penetration of non-cash payments has not been fully established in the agricultural sector in the long term. Lack of infrastructure and technology at the basic level can affect a sector in choosing cash or non-cash payment modes in completing economic activities (Gunakar and Bhatta, 2016; Rooj and Sengupta (2020). In the mining sector, the use of credit card payments is significantly negative, e-money significant positive and RTGS payments have a significant positive effect on mining GDP income, each coefficient is -1.091506 for credit cards, 0.1036149 for e-money and 0.4211431 for RTGS payments Based on long-term results of knowledge and infrastructure of non-payment technology -cash via credit cards, e-money, and RTGS payments have been realized. Doefleitner et.al (2017); Nashari et. al (2019) digital developments provide benefits for all economic sectors to achieve productivity and accelerate economic transactions.

CONCLUSION

This study aims to identify the effect of non-cash payments on the performance of the primary sector in Indonesia. The regression results show that the non-cash payment infrastructure absorption is mostly absorbed by the mining sector in the long term. The effect of using non-cash payments is positive and negative on the GDP of the mining sector. Meanwhile, in the agricultural sector, the implementation of the use of non-cash payments only occurred in the short term for the credit card, check, and RTGS variables, with the same effect as the mining sector. The realization of payment instruments in these two sectors is contradictory, given the support for infrastructure development that has not been maximized and the absorption of digital knowledge in all agricultural and mining sector activities. Recommendations for further researchers can compare the

effect of non-cash payments between countries and add other variables that are more dominant indicating the effect of non-cash payments on the performance of the primary sector.

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ATTACHMENT

Tabel 1
Hasil Uji Stasioner Data Sektor Primer

Variabel	Level		Keterangan	First Difference		Keterangan
	t-stat	t-tabel		t-stat	t-tabel	
log_y1	7,482	3,548	Stationer	7,775	3,552	Stasioner
Log_y2	2,366	3,548	Tidak Stasioner	3,803	3,552	Stasioner
log_atmdebet	1,426	3,548	Tidak Stasioner	6,517	3,552	Stasioner
log_kredit	2,817	3,548	Tidak Stasioner	6,230	3,552	Stasioner
log_emoney	0,629	3,548	Tidak Stasioner	5,352	3,552	Stasioner
log_cek	2,383	3,548	Tidak Stasioner	6.221	3,552	Stasioner
log_rtgs	3,455	3,548	Tidak Stasioner	6,900	3,552	Stasioner

Sumber: data diolah (STATA) print-out disusun ulang

Tabel 2
Hasil Uji Derajat Kointegrasi Sektor Primer

Variabel	ADF	Nilai Kritis			p-value
		1%	5%	10%	
Pertanian	6,063	3,655	2,961	2,613	0,0000**
Pertambangan	4,032	3,655	2,961	2,613	0,0013**

Sumber: data diolah (STATA) print-out disusun ulang
Catatan: **) signifikan pada α=5% ditingkat level

Tabel 3
Hasil Analisis Sektor Primer Jangka Pendek dan Jangka Panjang

| Var. Depen | Var. Indep | Metode Analisis | | | | | |
		Koef.	Prob.	Jangka Pendek	Koef	Prob.	Jangka Panjang
GDP Pertanian	Kartu ATM/Debet	-0,0850948	0,671	x	0,0972941	0,726	X
	Kartu Kredit	-1,116432	0,000	*	-0,2387248	0,447	X
	E-money	0,00067358	0,880	x	-0,0465812	0,195	X
	Cek	0,4077156	0,046	**	1,065361	0,002	*
	RTGS	-0,1180558	0,085	***	-0,1880894	0,114	X
	Resid	0,3996169	0,011	*	-	-	-
GDP Pertambangan	Kartu ATM/Debet	0,0971227	0,613	x	0,394128	0,147	X
	Kartu Kredit	-0,2020066	0,310	x	-1,091506	0,001	*
	E-money	0,016829	0,692	x	0,1036149	0,004	*
	Cek	-0,0897923	0,629	x	-0,1979638	0,658	X
	RTGS	0,1184703	0,083	***	0,4211431	0,001	*
	Resid	0,1442062	0,284	x	-	-	-

Sumber : data diolah (STATA) print-out disusun ulang
Catatan: x) tidak signifikan *) signifikan pada α=1%, **) signifikan pada α=5%, ***) signifikan pada α=10%