

Non-cash transactions and the money supply

Shinta Ainur Rahmadani¹; Nurma Yunita²; Aprika Wanti Pratama³; Maya Panorama⁴

Faculty of Islamic Economics and Business, UIN Raden Fatah Palembang, South Sumatra, Indonesia^{1,2,3,4}

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Abstract

This study examines the impact of non-cash transactions and electronic money (e-money) on the amount of money in circulation (M1) in Indonesia. Utilizing a quantitative approach and an associative research design, the analysis draws on secondary data from monthly time series publications by Bank Indonesia and the Central Statistics Agency, spanning from 2019 to 2021. The independent variables include the nominal values of debit card transactions (X1), credit card transactions (X2), and e-money transactions (X3), all measured in billions of rupiah. The regression results reveal no immediate linear effect of debit card transactions on the money supply, while credit card transactions show a slight negative impact. In contrast, e-money transactions exhibit a significant positive relationship with the money supply, indicating their substantial role in expanding monetary aggregates. These findings offer insights into the interplay between different transaction types and their influence on the money supply, providing a basis for policymakers and financial analysts to develop strategies for managing and regulating monetary dynamics effectively. Further research is recommended to explore the mechanisms driving these relationships and their broader implications for monetary policy and financial stability.

Keywords: non-cash; money supply; Indonesia



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*Corresponding author: shintaaainur1604@gmail.com

1. Introduction

The payment system constitutes a vital pillar within any economy, serving not only as a facilitator of transactions for individuals and businesses but also as a cornerstone in stabilizing the financial landscape and shaping monetary policy (Cecchetti & Schoenholtz, 2021; Mishkin, 2019; Woodford, 2003). In Indonesia, the responsibility for regulating and ensuring the smooth functioning of this pivotal system lies with Bank Indonesia, the nation's central bank, as mandated by the Bank Indonesia Act (Bank Indonesia, 2020).

As we navigate through an era characterized by rapid technological advancement, various sectors have embarked on innovative journeys harnessing modern technologies to deliver optimal services. This evolution aims to cater to the contemporary lifestyle, which increasingly prioritizes convenience and efficiency in meeting daily needs (Brynjolfsson & McAfee, 2014; Schwab, 2017; Tapscott & Tapscott, 2016). Technological progressions have not only permeated educational realms but have also made profound inroads into economic spheres. Among the noteworthy transformations within the economic domain are the continual advancements in payment instruments and transactions, driven by the relentless march of technology (Arner, Barberis, & Buckley, 2015; Gomber, Koch, & Siering, 2017; Ozili, 2018).

The swift march of technological advancement has precipitated a transition from cash-based transactions to non-cash modalities, renowned for their enhanced efficiency and convenience (Chuen & Deng, 2017; He, Leckow, & Haksar, 2017; Kokkola, 2010). Initially confined to interbank and intra-bank transfers, non-cash transactions have since proliferated to encompass a diverse array of payment innovations, including ATM debit, ATM credit, and the latest entrant, electronic money (e-money) (Bank Indonesia, 2014; Fung, Huynh, & Sabetti, 2018; Hendrickson, Ligon, & Seals, 2015). Bank Indonesia, wielding its regulatory authority, has been instrumental in shepherding these transformations. The introduction of electronic money (e-money) represents a key milestone, as enshrined in Bank Indonesia Regulation No. 16/08/PBI/2014 (Bank Indonesia, 2014).

The adoption of non-cash payment systems has catalyzed optimal purchasing power and bolstered the nation's economic fabric, owing to the seamlessness and security they afford users (Bounie, François, & Van Hove, 2017; Khan & Nisar, 2021; Shy, 2020). Foremost among the advantages offered by non-cash payment systems is the liberation from the burden of carrying large sums of cash, underscoring their superiority over traditional payment modalities (Hernandez, 2019; Kahn & Roberds, 2009; Mancini-Griffoli et al., 2018). The burgeoning trend in the utilization of non-cash payment instruments, as evidenced by the yearly uptick in usage, underscores society's increasing acceptance of these modalities as viable payment channels (Capgemini, 2021; Deloitte, 2020; McKinsey & Company, 2021). Projections suggest that the trajectory of non-cash payment transactions, buoyed by technological advancements and economic expansion, is poised for sustained growth in both volume and user base (Accenture, 2021; EY, 2020; PwC, 2020).

However, beyond the convenience and security they offer, the pervasive adoption of non-cash payment instruments bears implications for the demand for central bank-issued money, thereby intersecting with the central bank's mandate of

implementing monetary policy (Bech, Faruqui, Ougaard, & Picillo, 2018; Keister & Sanches, 2019; Rogoff, 2017). The confluence of technological innovations within the banking sector and the ascendancy of non-cash transactions is expected to recalibrate the monetary dynamics within society, exerting a discernible impact on the circulation of currency (Berentsen & Schar, 2018; Bordo & Levin, 2017; Kumhof & Noone, 2018). This shift underscores the necessity for central banks to adapt their monetary policy frameworks to accommodate the evolving landscape, ensuring they remain effective in maintaining economic stability and promoting sustainable growth (Adrian & Mancini-Griffoli, 2019; Carstens, 2021; Niepelt, 2020).

2. Method

This study employs a quantitative approach with an associative research design to determine the effect of non-cash transaction variables and electronic money on the amount of money in circulation. The data used in this study are secondary, sourced from monthly time series publications of Bank Indonesia (BI) and the Central Statistics Agency (BPS). The data includes nominal data on non-cash transactions and information on the amount of money in circulation (M1). The independent variables in this study are the aggregate amount of non-cash transactions (measured in billions of rupiah), which include the nominal value of debits (X1), credits (X2), and the nominal amount of electronic money transactions (X3). The data spans from 2019 to 2021. This study model follows Equation 1 (Saunders, Lewis, & Thornhill, 2019).

$$Y = a + B1*Debit + B2*Credit + B3*E-money \quad (1)$$

3. Empirical Result

Based on Table 1, the constant value of 1,250,349.743 indicates the baseline level of the narrow money supply when all three types of transactions—debit card (X1), credit card (X2), and electronic money (e-money) (X3)—remain constant. This constant term essentially represents the intercept of the regression equation and highlights the minimum level of the money supply irrespective of transaction volumes. It suggests a baseline level of monetary activity that persists even when transaction volumes fluctuate.

The b1 coefficient of 0.000 for debit card transactions (X1) suggests that, when holding credit card transactions (X2) and electronic money transactions (X3) constant, there is no immediate impact of debit card transactions on the narrow money supply (Mishkin, 2019). However, this does not imply insignificance; rather, it suggests that changes in debit card transactions do not have an immediate linear effect on the money supply. Nevertheless, it's essential to recognize that debit card transactions might still have an indirect impact through other channels or over longer time horizons (Cecchetti & Schoenholtz, 2021).

In contrast, the b2 coefficient of -0.005 for credit card transactions (X2) indicates a negative relationship with the narrow money supply when debit card transactions (X1) and electronic money transactions (X3) are held constant (Fung, Huynh, & Sabetti, 2018). This implies that an increase in credit card transactions leads to a slight decrease

in the money supply. Such a negative coefficient suggests that credit card transactions might not contribute as directly to the money supply as other transaction types. One potential explanation could be that credit card transactions involve deferred payment mechanisms, which might not immediately impact the money supply in the same way as immediate transactions (Kahn & Roberds, 2009).

On the other hand, the b3 coefficient of 0.26 for electronic money transactions (e-money) (X3) reveals a significant positive relationship with the narrow money supply when debit card transactions (X1) and credit card transactions (X2) are constant (Ozili, 2018). This suggests that electronic money transactions play a substantial role in expanding the money supply. The positive coefficient implies that an increase in electronic money transactions leads to a relatively larger increase in the narrow money supply compared to debit and credit card transactions (He, Leckow, & Haksar, 2017).

These findings underscore the nuanced interplay between different transaction types and their influence on the money supply. Policymakers and financial analysts can utilize these insights to formulate strategies aimed at managing and regulating monetary dynamics effectively (Adrian & Mancini-Griffoli, 2019). Moreover, further research could explore the underlying mechanisms driving these relationships and their broader implications for monetary policy and financial stability (Bordo & Levin, 2017).

Table 1. Statistical Result

Var.	Coeff.	Std. Error	Sig.
Constant	1250	1123	0.000
Debit	0.000	0.000	0.185
Credit	-0.005	0.004	0.245
e-money	0.026	0.002	0.000

4. Conclusions

The payment system is integral to any economy, facilitating transactions and stabilizing the financial landscape. In Indonesia, Bank Indonesia, the central bank, regulates this system, adapting to technological advancements that shift transactions from cash to non-cash methods. The study reveals that while debit card transactions have no immediate impact on the money supply, credit card transactions slightly decrease it, and electronic money transactions significantly increase it. These findings highlight the distinct roles various non-cash payment methods play in influencing monetary dynamics. Policymakers can use these insights to manage and regulate the monetary system effectively, ensuring financial stability. Further research should explore the underlying mechanisms of these relationships to enhance monetary policy formulation.

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