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The importance of Low-Value Payment Systems (LVPS) in economies is undeniable. Safe and efficient LVPS promote financial inclusion, economy formalization, and reduce transactional costs for agents. In this article, we study the role of cash and electronic payments in the payment ecosystems of Colombia and the world, and the factors that determine their demand.

For these purposes, we address the following research questions:

What are the determinants of demand for cash and electronic payment systems internationally?

To answer this question, we model the demand for cash and electronic payments using panel data from 66 countries: 20 developed and 46 developing countries, for the period 1991-2015.

Our results indicate that the growing demand for cash worldwide occurs despite the negative effect that electronic payments have on its use. In our estimates, this effect is counteracted by the greater demand derived from growth in economic activity, reduction in opportunity costs, and an upward trend not explained by traditional factors.

Given that electronic payments limit cash demand, we ask what determines their adoption.

We study the behavior of the volume of electronic payments per capita worldwide, assuming that their adoption follows an S-shaped process, with an initial phase of accelerated growth, followed by a deceleration phase, until reaching market maturity. We show that both the long-term adoption level and the adoption speed are dominated by economies' per capita income levels. Additionally, we find that adoption speed is lower in countries with more restrictive fiscal and financial regimes.

In summary, we identify the factors that drive increased cash demand, despite the substitution effects resulting from the dynamic growth in electronic payment adoption.

What are the determinants of cash demand and its substitute means of payment in the Colombian case? (Such as deposits in checking and savings accounts).

The cash-to-GDP ratio and per capita cash balances show an increasing trend in Colombia, especially since the beginning of the 21st century.

To understand this dynamic, we model real cash as a function of cash transactions, approximated by real GDP and the nominal interest rate on 90-day term deposits and annual inflation, as opportunity costs of cash. Additionally, we include and an indicator of innovations in payment systems that substitute cash, along with indicators of informality and illegal activities.

The results show that the long-term behavior in transaction volumes, lower opportunity costs of money, and to a lesser extent, the dynamics of the informal and illegal economy explain the growing demand for cash in Colombia, despite the substitution effect of advances in electronic payments. We also highlight a growing trend in cash demand that is not explained by the variables considered. Regarding the GMF (Financial Transaction Tax), its impact appears to be concentrated at the initial stages of its implementation.

To analyze cash behavior in a context of various substitute means of payment, we model the ratio of cash to deposit accounts. We find that this ratio decreases due to higher levels of per capita income and lower opportunity costs. However, the reduction in cash holdings in favor of electronic payment methods is inhibited by the use of cash in informal and illegal activities and by factors yet to be identified.

What are the determinants of the adoption, use, and acceptance of payment cards in Colombia?

Although growth in the use of electronic LVPS in Colombia has been significant in the 21st century, it still falls short of international standards. Indeed, 92.4% of Colombian adults report preferring cash to other payment instruments in terms of frequency, and 90.0% in terms of payment value. Likewise, in urban centers, electronic payments are accepted only in 15% of consumers' daily transactions.

To understand why electronic payment system utilization is low in Colombia, we empirically study the cost-benefit factors that determine adoption decisions of consumers and merchants in the context of payment cards.

On the consumer side, we find that as income increases, labor formalization grows, the relative costs of accessing and using payment cards decrease, and card acceptance by merchants expands (network externalities), there will be a faster transition toward greater use of electronic payments.

On the small merchant side, we find that they view payment card acceptance as a competitiveness factor, with advantages being more significant for larger merchants and where the average transaction value is high. However, perceptions of high costs, increased tax burdens, distrust in the financial system, and the complexity of adoption often deter them from accepting payment cards.

Our results suggest that supply policies encouraging competition in merchant acquiring services and making end-user access to electronic payment systems more affordable, along with demand policies promoting formality and financial education, would lead to greater use and acceptance of electronic payments, benefiting all Colombians.