Digital Payments and Consumption: Evidence from the 2016 Demonetization in India

Sumit AGARWAL (National University of Singapore), Pulak GHOSH (Indian Institute of Management Bangalore), Jing LI (Singapore Management University) and Tianyue RUAN (National University of Singapore)

Capital Market Development: China and Asia
1 July 2021

Digital payments have been growing strongly around the world. Between 2014 and 2017, the share of adults using digital payments rose by 11% globally – from 41% to 52%.

In their paper titled, “Digital Payments and Consumption: Evidence from the 2016 Demonetization in India,” **Sumit Agarwal, Pulak Ghosh, Jing Li,** and **Tianyue Ruan** studied whether and how households’ adoption of digital payments affects their spending decisions.

To examine that, the authors focused on a unique episode in the adoption of digital payments known as Demonetization: the overnight removal of 86% of the existing paper currency in circulation by the Indian government in November 2016.

Since Demonetization drained the currency in circulation and affected individuals’ ability to use cash in transactions, it forced cash-dependent individuals to switch to digital payments. An individual’s exposure to this forced switch is proportional to his/her prior cash dependence. Thus, using payments data from India’s fourth largest supermarket chain, the authors compared changes in spending patterns across individuals with varying degrees of prior cash dependence and show that digital payments lead to a substantial increase in consumer spending.

The authors found that prior cash dependence captures the forced switch to digital payments. Usage of digital payments rose by 3.38% for a 10% increase in prior cash dependence following Demonetization. Such a forced switch to digital payments is associated with a highly statistically significant increase in spending: moving from the 25th to the 75th percentile of prior cash dependence is associated with a 15% increase in spending. Moreover, interestingly, the increase in spending persisted until the end of the authors’ sample period – September 2017 – despite the demonetized notes being replenished a few months after November 2016.

Highlighting the ramifications for different payment methods in India following the Demonetization, the authors showed that cash payments dropped from around 72% to 60% while debit card payments took off from around 22% to 32%. However, credit card payments remained largely flat, with a slight uptick around the demonetization exercise.

The authors then dug deeper to sharpen their understanding of the spending response post-demonetization. First, they analyzed different types of spending and found that previously cash-reliant individuals increased their non-food spending and durable spending relative to their food spending and non-durable spending.

Second, they examined measures of supermarket spending variety and shopping intensity. They found that these measures respond to the forced switch to digital payments in a consistently positive and highly significant manner.

Third, they investigated the composition of the observed increase in spending by examining the quantity and price of goods purchased and found strong evidence that consumers who were forced to switch to digital payments purchased expensive goods in narrowly defined categories following the Demonetization.

Fourth, they analyzed response heterogeneity across individuals and uncovered substantial heterogeneity whereby lower-spending individuals experienced a much larger switch to digital payments and a much larger spending response relative to higher-spending individuals.

Lastly, the authors addressed four key concerns with their empirical approach: income shocks, credit supply, suppliers' pricing responses, and consumers' moving to the formal market.

The authors first addressed the conjecture that a spurious correlation between prior cash dependence and income shocks might explain their findings. However, reduced economic activity and widespread uncertainty following the Demonetization make positive income shock very unlikely. Besides, the authors had controlled for the time-series fluctuation of the national and regional economic conditions in their regression specifications.

The authors then addressed the concern that perhaps increased credit supply through credit cards augmented spending post-Demonetization. However, as noted, credit card payments remained almost flat in the period following the Demonetization. The decline in cash usage was mostly compensated by an increase in debit card usage. Thus, it is unlikely that an increased credit supply could explain the results.

The authors further considered if the effect of digital payments on spending could be explained by an increase in product prices. However, they found no evidence of a general increase in price level following the Demonetization. Nonetheless, the authors had also controlled for the time-series fluctuation of the general price level in their regression model.

Finally, the authors addressed the concern that a shift of consumers from informal to formal markets (shopping centres) after the Demonetization could explain the increase in spending. However, the authors pointed out that new consumers that arrived after the Demonetization were excluded from their analysis. Besides, the significantly higher increase in non-food spending and durable spending runs also help undermine this concern as spending in informal markets typically involves fresh produce and non-durable goods. Thus, a shift of purchases from informal markets to supermarkets among existing supermarket consumers did not drive their results.