

# Digital Payments and the Steepening Phillips Curve

## Evidence from ASEAN Credit Card Transactions

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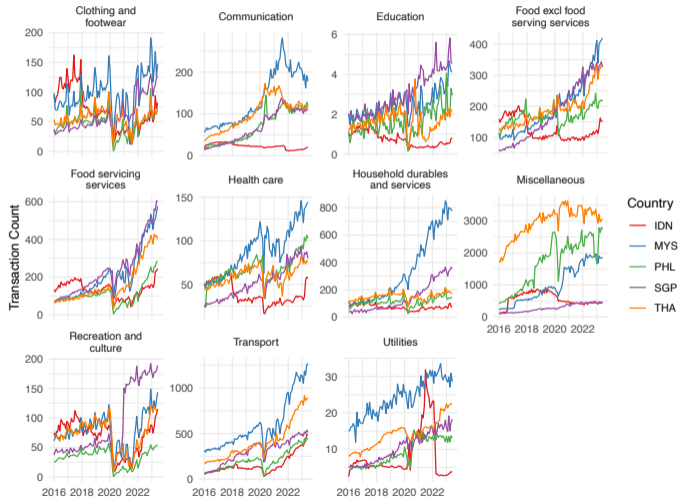
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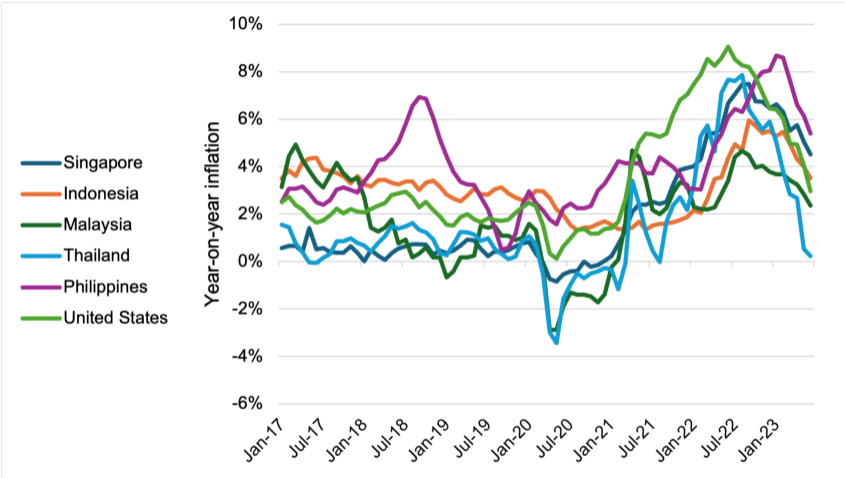
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# Increasing digital payment adoption in ASEAN

## Sectoral card transaction counts



# CPI inflation in ASEAN, permanent or transitory?



Source: CEIC Database.

# Inflation out of control, why?

## Supply-side causes:

- Increased food and energy prices
- Geopolitical uncertainty
- Supply-chain disruptions

## Demand-side causes:

- Government stimulus and fiscal policies
- Loose monetary policies
- Shift in consumer preferences

We argue that payment digitalization could be a reason behind more volatile inflation.

# The Phillips Curve and merchants' pricing behavior

The **Phillips Curve** describes the trade-off between inflation and unemployment.

You can have:

- lower unemployment at the cost of higher inflation, or
- lower inflation but with more unemployment,

but this is not always consistent.

The trade-off is stronger when prices are more flexible.



## Important messages for items in your Cart:



Authentic Tea House Ayataka No Sugar Japanese Green Tea (24 x 300ml) has increased from **S\$10.51** to **S\$11.90**

Figure: Price changes in cart.

# The paper in a nutshell...

## Background:

- The Phillips curve estimates the relationship between output and inflation.
- Increasing card adoption provides an opportunity to conduct high-frequency analyses.

## Our hypothesis:

Digitalization by merchants  $\xrightarrow[\text{price changes}]{\text{More frequent}}$  Stronger card-spend-inflation linkage

## What we do:

- We use Mastercard transaction data to proxy the Phillips curve relationship.
- We estimate the sectoral Phillips curve in 5 ASEAN countries.
- We investigate the role of card adoption and e-commerce.

# Mastercard transaction data

## Monthly transaction data (2016M1:2023M6)

- Transaction volume in USD
- Transaction count
- Spend per merchant
- Average ticket size

## Macroeconomic data (CEIC)

- Price indices
- Real effective exchange rate

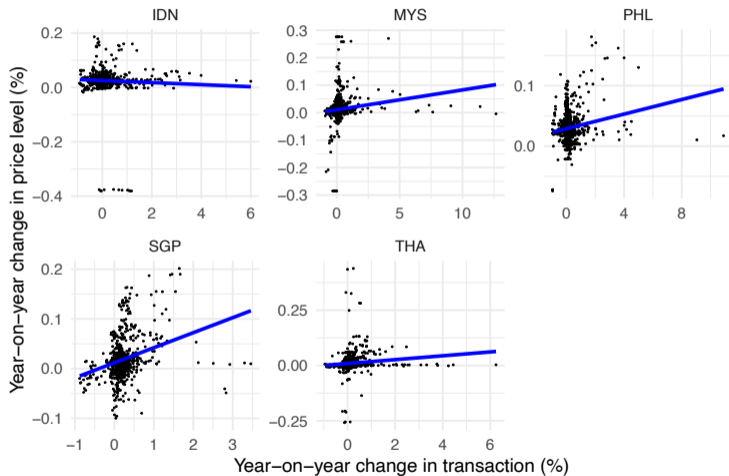
## Authors' calculations

- Inflation forecasts from ARIMA models

## Sectors under consideration

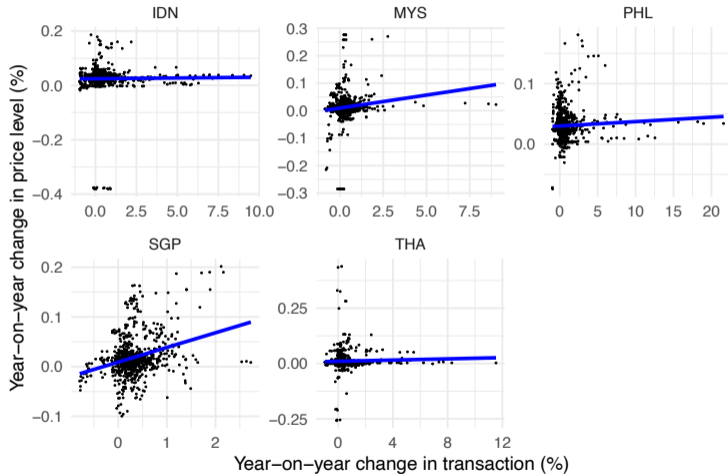
- Clothing and footwear
- Communication
- Education
- Food excluding food-serving services
- Food serving services
- Health care
- Household durables and services
- Miscellaneous goods and services
- Recreation and culture
- Transport
- Utilities

# Inflation vs transaction volume





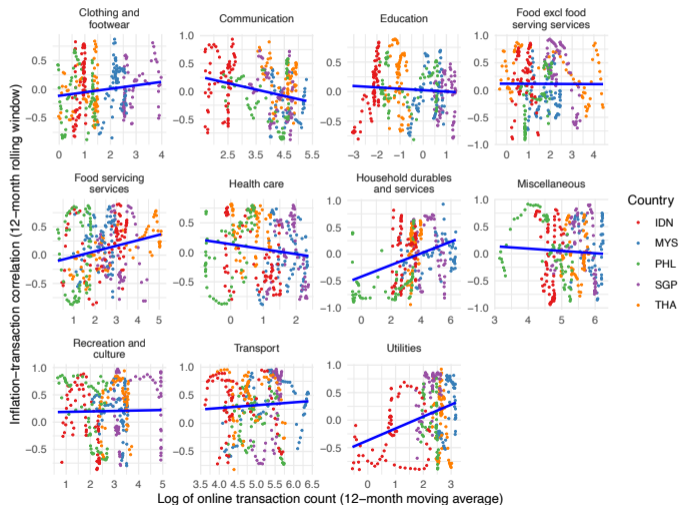
# Inflation vs online transaction volume





# Steepening sectoral Phillips curves

Card-spend-inflation correlation vs transaction count



Evidence found in most sectors  
except:

- Communication
- Education
- Health care
- Miscellaneous

# Steepening sectoral Phillips curves

Estimation with all shifters

We estimate the effect of each shifter in steepening the Phillips curve

- difference-in-differences
- overall, online, and in-person transactions for each shifter
- e-commerce activities have strong effects than in-person transactions

<b>Shifter</b>	<b>Overall</b>	<b>Online</b>	<b>In-person</b>
Transaction count		+	
Spend per merchant	+	+	+
Average ticket size			
Merchant count		+	

+ denotes a significant effect.

## Concluding remarks

In general, a positive relationship between spend and inflation exists

- an opportunity for inflation analyses using alternative data

Two factors strengthen the spend-inflation relationship:

- card adoption – proxied by transaction count, spend per merchant, merchant count
- e-commerce – proxied by online transaction count, spend per merchant, merchant count

The future of inflation dynamics: volatile but short-lived

- prices are more flexible with the increasing e-commerce activities
- solving supply- and demand-side issues brings inflation back to normal quickly