Bank of England

# Tariffed with the Same Brush: confronting today's challenges to trade

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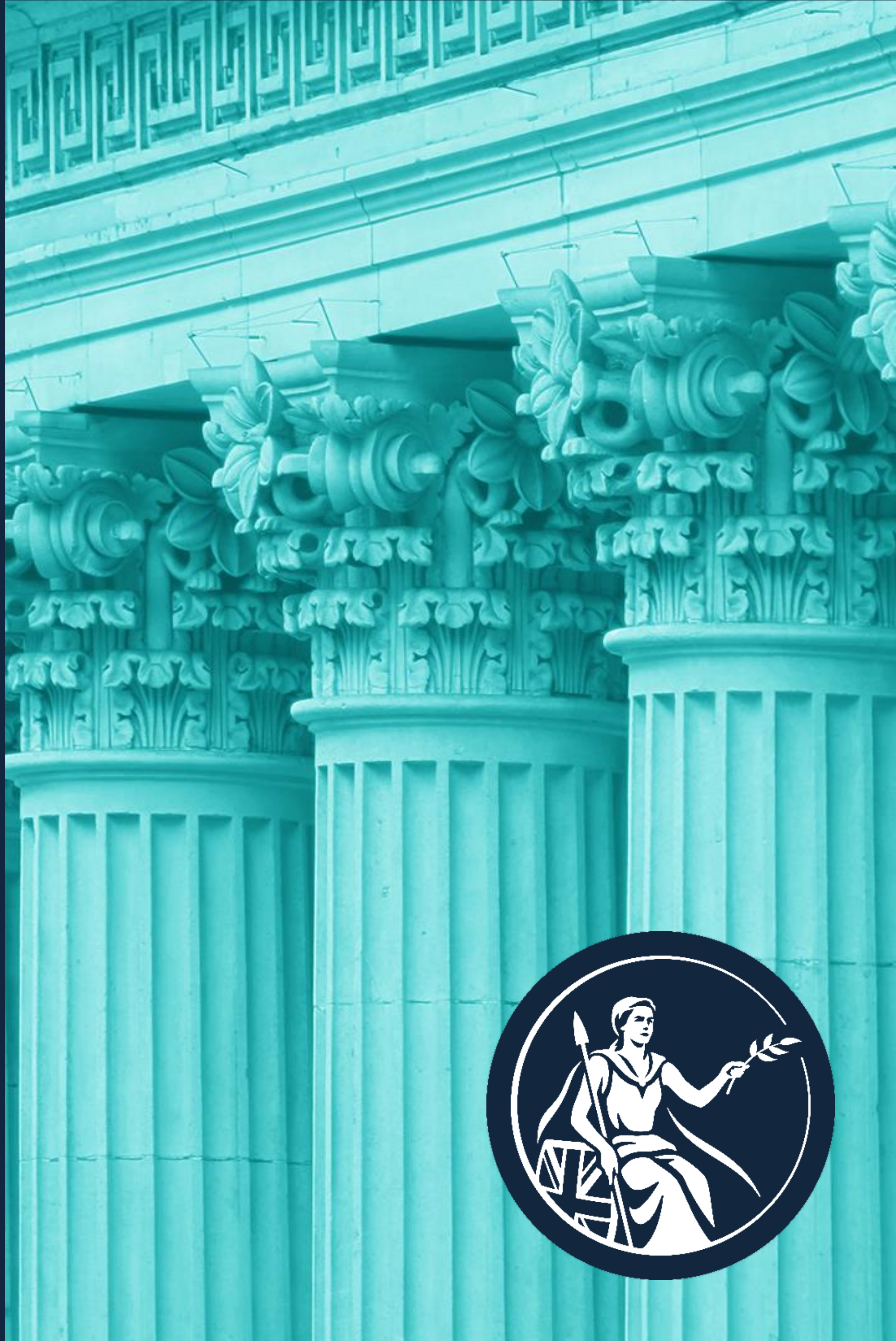

# Online Appendix

# Decomposition of Inflation into Costs and Profits

- CPI can be written as the sum of all unit costs (observable) incurred by the domestic sellers of that item and their residual profits (unobservable) to study the contributions of costs and profits on inflation (Dhingra and Page 2022, Dhingra 2025 Dow Lecture).
- Let $C$ be a matrix of Consumer Price Index where rows denote time and columns denote different 2-digit COICOP items.
- Similarly, $M$ and $D$ are matrices containing 2-digit CPA import price indices and domestic producer price indices, that are recorded from price quotes of firms in the economy, including services.
- Residual profits of retailers selling consumer products is $V$.

# Data

- CPI, Output PPIs, Services PPIs and Import PPIs at a monthly frequency/ quarterly for services from the Office for National Statistics (ONS).
- Concordance of Coicop and CPA provided by the ONS for the UK.
- Energy prices and wages are available at a monthly frequency from the ONS.
    - Domestic energy prices come from the ONS and imported energy prices from BEIS.
    - Wage rates are obtained for each 2-digit CPA category (which maps one-to-one to the 2-digit SIC classification).
- Tax shares in prices are derived from the tax series using the tax share in the supply-use tables.

# Methodology

- CPI = Domestic cost of retailer + Import cost of retailer + Residual retailer profits:

$$C^T \equiv A_d^T D^T + A_m^T M^T + V^T \quad (1)$$

- Domestic producer price = Domestic cost of producer + Import cost of producer + Residual producer profits:

$$D^T \equiv B_d^T D^T + B_m^T M^T + V_d^T \quad (2)$$

- We do not typically have direct measures of residual profits $V$, $V_d$. Infer them from the CPI and PPI identities of equations 1 and 2 respectively because we have the other variables in the equations.

# Methodology

- From the domestic price index identity, get the the domestic producer prices in terms of import prices and residual profit margins as

$$D^T \equiv \left[I - B_d^T\right]^{-1} D^T + B_m^T M^T + V_d^T \quad (3)$$

- Substituting into the CPI identity, inflation consists of the direct contribution of imports in the CPI basket (first term on the RHS), the indirect contribution of imports (through domestic inputs that use imported inputs themselves), the residual profits of domestic suppliers (third term) and the residual profits of domestic retailers (last term).

$$C^T \equiv A_m^T M^T + A_d^T\left[I - B_d^T\right]^{-1} B_m^T M^T + A_d^T\left[I - B_d^T\right]^{-1} V_d^T + V^T \qquad (4)$$