

## 103: LIST OF VARIABLES

(foreign variables carry an asterisk,  
superscript  $e$  denotes the expected value of a variable or change)

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### 1. Stock variables

- $K$  Capital stock
- $W$  Net wealth of a country (net claims on the future output of the rest of the world)
- $M$  Domestic nominal money supply
- $M^*$  Foreign nominal money supply
- $B$  Domestic (government) bonds

### 2. Flow variables

- $Y^{GNP}$  Income (Output)—Gross National Product, the income generated by domestic factors of production in one year.  $Y^{GNP}$  roughly equals national income
- $C$  Consumption of private households
- $G, T$   $G$ : Government spending,  $T$ : Taxes
- $I$  Investment,  $I = \Delta K$  (increase of capital stock)
- $EX$  Exports (value; volume  $X$ :  $EX = P X$ )
- $IM$  Imports (value; volume  $M$ :  $IM = P^* M$ )
- $CA$  Current account balance, assumed to be roughly  $CA \approx EX - IM$  (net exports).

The financial view  $CA = \Delta W$  is precise.

A current account surplus is equivalent to net foreign lending. Domestic consumers give up consumption of their goods today in exchange for future consumption of foreign goods. A current account surplus is therefore an accumulation of claims on the future output of the rest of the world. A current account deficit is equivalent to net borrowing from abroad. If *private* capital flows do not match the current account surplus (or deficit), the central increases or reduces its reserves accordingly. Reserves are part of the country's net wealth.

- $S$  Savings,  $S = I + CA = \Delta K + \Delta W$ . In an open economy, national savings are applied to domestic investment and foreign lending.

$Y^{GDP}$  Output—Gross Domestic Product, the production of goods and services within domestic borders in one year. Domestic wealth invested abroad yields interest income for domestic residents:  $R^* \cdot W$ . So,  $Y^{GNP} = R^* \cdot W + Y^{GDP}$  and the precise current account balance is  $CA = R^* \cdot W + EX - IM$ .

### 3. Prices

- $E$  *Nominal* (spot) exchange rate (denominated in [USD/units of foreign currency]). A *nominal* appreciation is a decrease of  $E$ .
- $E^e$  Expected future nominal exchange rate.
- $F$  *Forward nominal* exchange rate (denominated in [USD/units of foreign currency]<sub>tomorrow</sub>)
- $P$  Domestic price level (price of domestic consumption basket). Individual prices:  $p_i$ . So,  $P = a_1 p_1 + \dots + a_i p_i + \dots + a_N p_N$
- $P^*$  Foreign price level (price of foreign basket)
- $q$  *Real* exchange rate, defined as  $q \equiv \frac{EP^*}{P}$  (denominated in quantities: [1]). It denotes the relative price of a unit of the foreign consumption basket (numerator) in terms of the domestic consumption basket (denominator). A *real* appreciation is equivalent to a reduction of  $q$ .
- $R$  *Nominal* interest rate; long-term:  $R^{LT}$
- $\pi^e$  (Expected) inflation rate,  $\pi^e \equiv \frac{\Delta^e P}{P}$
- $r^e$  (Expected) *real* interest rate;  $R^{LT} = r^e + \pi^e$ .