1. The Multiplier Effect

- If the govt buys $20b of planes from Boeing, Boeing's revenue increases by $20b.

- This is distributed to Boeing's workers (as wages) and owners (as profits or stock dividends).

- These people are also consumers and will spend a portion of the extra income.

- This extra consumption causes further increases in aggregate demand.

Multiplier effect: the additional shifts in *AD* that result when fiscal policy increases income and thereby increases consumer spending

1. The Multiplier Effect

A $20b increase in **G** initially shifts *AD* to the right by $20b.

The increase in **Y** causes **C** to rise, which shifts *AD* further to the right.
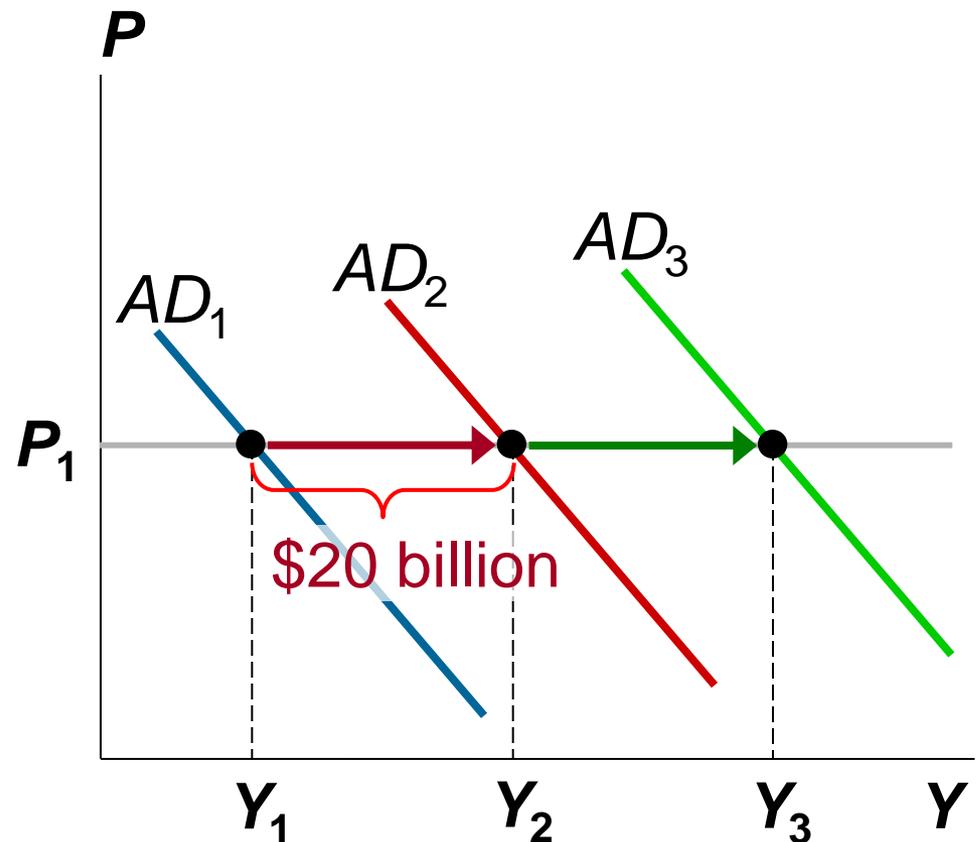
Marginal Propensity to Consume

- How big is the multiplier effect?
  It depends on how much consumers respond to increases in income.

- **Marginal propensity to consume (MPC)**:
  the fraction of extra income that households consume rather than save

  E.g., if $MPC = 0.8$ and income rises $100,
  C rises $80.

A Formula for the Multiplier

Notation: $\Delta\boldsymbol{G}$ is the change in $\boldsymbol{G}$,
$\Delta\boldsymbol{Y}$ and $\Delta\boldsymbol{C}$ are the ultimate changes in $\boldsymbol{Y}$ and $\boldsymbol{C}$

$$\boldsymbol{Y} = \boldsymbol{C} + \boldsymbol{I} + \boldsymbol{G} + \boldsymbol{NX}$$ identity

$$\Delta\boldsymbol{Y} = \Delta\boldsymbol{C} + \Delta\boldsymbol{G}$$ $\boldsymbol{I}$ and $\boldsymbol{NX}$ do not change

$$\Delta\boldsymbol{Y} = MPC\,\Delta\boldsymbol{Y} + \Delta\boldsymbol{G}$$ because $\Delta\boldsymbol{C} = MPC\,\Delta\boldsymbol{Y}$

$$\Delta\boldsymbol{Y} = \boxed{\frac{1}{1 - MPC}}\,\Delta\boldsymbol{G}$$ solved for $\Delta\boldsymbol{Y}$

The multiplier

A Formula for the Multiplier

The size of the multiplier depends on *MPC*.

E.g.,   if *MPC* = 0.5   multiplier = 2

           if *MPC* = 0.75   multiplier = 4

           if *MPC* = 0.9   multiplier = 10

$$\Delta Y = \boxed{\frac{1}{1 - MPC}} \Delta G$$

The multiplier

A bigger *MPC* means changes in **Y** cause bigger changes in **C**, which in turn cause more changes in **Y**.

Other Applications of the Multiplier Effect

- The multiplier effect:
  Each $1 increase in *G* can generate
  more than a $1 increase in agg demand.

- Also true for the other components of GDP.

  Example: Suppose a recession overseas reduces demand for U.S. net exports by $10b.

  Initially, agg demand falls by $10b.

  The fall in *Y* causes *C* to fall, which further reduces agg demand and income.