

### Product Adjusts to Demand

In Keynesian macroeconomics, product adjusts to the aggregate demand for goods.

If demand exceeds product, firms produce more, to meet the demand. If product exceeds demand, firms produce less, since there is no reason to produce what cannot be sold.

In the short run, product equals demand.

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### Consumption Demand

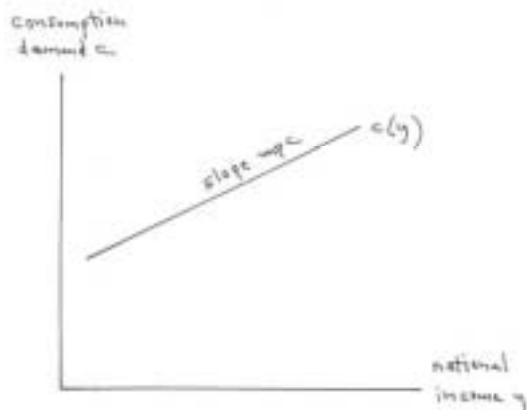
Real consumption demand  $c$  is an increasing function of real national income  $y$ ,

$$c(y).$$

One refers to  $c(y)$  as the *consumption function*.

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Figure 1: Consumption Function



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### Marginal Propensity to Consume

The marginal propensity to consume  $mpc$  is the increase in consumption demand when national income rises by one.

If national income rises by a small amount  $\Delta y$  and this rise causes consumption to increase by  $\Delta c$ , the marginal propensity to consume is the ratio,

$$mpc = \frac{\Delta c}{\Delta y}.$$

In calculus,

$$mpc = \frac{dc}{dy}.$$

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The marginal propensity to consume is greater than zero but less than one,

$$0 < mpc < 1.$$

When national income rises by one, consumption also rises, but by less than one.

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### Exogenous Investment Demand

In the simplest Keynesian model, investment demand is exogenous. Expected profitability is the key determinant of investment demand. Psychological attitudes—optimism or pessimism by businessmen—are an important influence on expected profitability.

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### Exogenous Fiscal Policy

Real government spending  $g$  on goods and services is exogenous.

Tax policy—which influences consumption and investment demand—is exogenous.

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### Demand Equals Product

In the short run, demand equals product:

$$c(y) + i + g = y. \quad (1)$$

Here  $y$  plays a dual role. On the left,  $y$  is national income. On the right,  $y$  is national product. That national income equals national product means that the same variable can represent both.

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### Solving for the National Income and Product

Solving for the national income and product means solving the single equation (1) for the single unknown  $y$ .

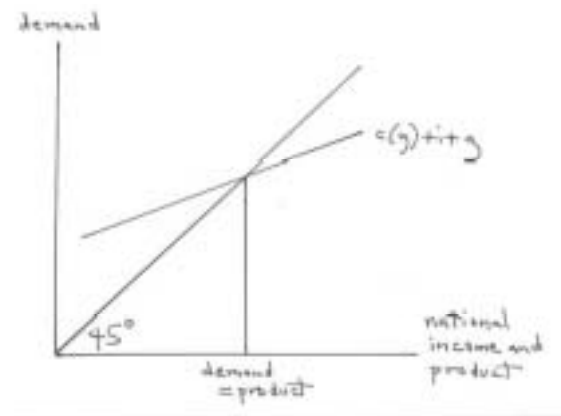
In figure 2, the  $45^\circ$  line shows where demand equals product.

The demand line shows demand as a function of national income. The slope of the demand line is the marginal propensity to consume, and so is less than one.

The solution is where the demand line crosses the  $45^\circ$  line; there demand equals product. This crossing solution accounts for the name “Keynesian cross model.”

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Figure 2: Demand Equals Product



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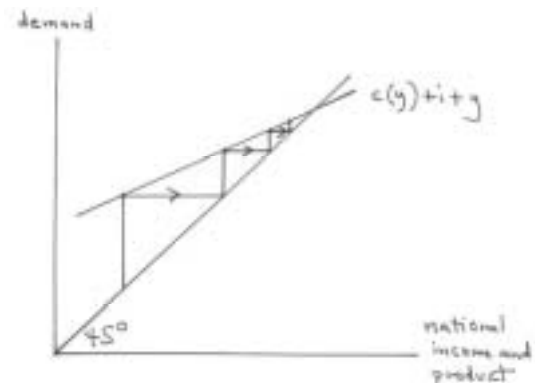
### The Adjustment of Product to Demand

Figure 3 schematically shows the adjustment of product to demand. Suppose initially that demand exceeds product. Firms produce to meet this demand. That national product has increased means that national income has increased. This increase in income raises demand, but by a smaller amount, since the marginal propensity to consume is less than one.

Hence the gap between demand and product has fallen. This process continues until demand equals product.

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Figure 3: Adjustment of Product



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<p>Macroeconomics <span style="float: right;">Keynesian Cross</span></p> <p style="text-align: center;"><b>No Full Employment</b></p> <p>In the Keynesian model, economic forces do not push the economy to full employment.</p> <p>Unemployment can persist indefinitely.</p> <p style="text-align: center;">13</p>	<p>Macroeconomics <span style="float: right;">Keynesian Cross</span></p> <p style="text-align: center;"><b>Fiscal Policy</b></p> <p>Expansionary fiscal policy increases the national income and product.</p> <p>An increase in government expenditure adds directly to aggregate demand, which raises the national income and product.</p> <p style="text-align: center;">14</p>
<p>Macroeconomics <span style="float: right;">Keynesian Cross</span></p> <p style="text-align: center;"><b>Tax Cut</b></p> <p>The consumption function <math>c(y)</math> expresses consumption demand in terms of national income, for a given income tax policy.</p> <p>For a given national income, if the income tax on consumers is reduced, then disposable income is higher, so consumption demand rises. The consumption function shifts upward, and the national income and product increases.</p> <p style="text-align: center;">15</p>	<p>Macroeconomics <span style="float: right;">Keynesian Cross</span></p> <p style="text-align: center;"><b>Monetary Policy</b></p> <p>Money is absent from the Keynesian cross model, and there is no role for monetary policy.</p> <p style="text-align: center;">16</p>
<p>Macroeconomics <span style="float: right;">Keynesian Cross</span></p> <p style="text-align: center;"><b>Price Level</b></p> <p>The price level has no role in the model, which is specified entirely in real terms.</p> <p>In particular, consumption demand does not depend on the price level. A proportional change in all prices has no effect on real income and so has no effect on consumption demand.</p> <p style="text-align: center;">17</p>	