• National defense is considered a proper function for govt.

• What characteristics make it an appropriate govt responsibility?

• Are there other goods with these characteristics, and should the government provide them as well?

Public Goods Defined
What is the difference between pizza and national defense?

A pure public good is defined as follows:

• Once provided, the additional resource cost of another person consuming the good is zero, i.e., consumption is non-rival.

• It is expensive or difficult to exclude anyone from consuming the good once provided, i.e., it is nonexclusive.

Thus national defense is a public good, and pizza is a private good (rival and excludable in consumption).
**Remarks:**

1. Everyone consumes the same quantity (the total) of pure public goods, although they may not place the same value (MRS) on that quantity.

2. With private goods, consumers consume different quantities, but place the same value (MRS) under perfect competition.

3. Many public goods are impure public goods, i.e., they are rival or excludable to some extent.
   - congested streets
   - beach with excludable access


5. There are publicly provided private goods: eg housing and medical services.

6. Public goods can be provided by the public sector yet produced by the private sector.
1 Efficient Provision of Public Goods

1.1 Private Goods

Begin with private good case. How do we determine the total quantity of fig leaves demanded by Adam and Eve in a private market?

- horizontal summation of individual demands
- equilibrium occurs when supply and demand are equal
- at equilibrium, $MRS_{fa} = MRS_{fa} = \frac{P_f}{P_a} = \frac{MC_f}{MC_a} = MRT_{fa}$, which satisfies our condition for private good Pareto efficiency: $MRS_{fa} = MRS_{fa} = MRT_{fa}$
1.2 Public Good Case

Example: Adam and Eve seek efficient level of fireworks.

- Currently have 19 rockets, which can be increased for $5/rocket
- suppose Adam is willing to pay $6 for an additional rocket \( MRS^A_{ra} = 6 \), Eve is willing to pay $4 \( MRS^E_{ra} = 4 \).
- Is it efficient to increase the rockets by one?
- yes, if the marginal benefit is at least as big as marginal cost.
- since they share the benefits of the additional rocket, the marginal benefit is the sum of their individual benefits, 4+6=10.
- Since the marginal benefit (10) exceeds the marginal cost (5), the increase is a Pareto improvement.
- Rule for public good efficiency: \( MRS^A_{ra} + MRS^E_{ra} = MRT_{ra} \)
- Implementation issue: free rider problem
  —Eg., Adam claims that he isn’t willing to pay anything for the 20th rocket.

1.3 Graphical solution

Vertically sum the individual demand curves.
2 Privatization Debate: public or private production/provision?

Eg: public police force vs private security (according to the *The Economist*, 1997, there are three times as many private as public police in the US)

What criteria can we use to select private vs public inputs into the production of public services:

- relative wage and materials costs  
  but must control for quality—incomplete contracts
- administrative costs
- diversity of tastes  
  high diversity better served through private provision
- distributional issues  
  commodity egalitarianism: the idea that some commodities should be made available to everyone.
Application: airport security
post Sept 11, 2001—debate over airport security options:

1. federal employees

2. public funding, private firms (eg., Israel)
   system in place Sept. 11 was funded by airlines
   could result in different levels of security at different airports

Result:
TSA established, screeners are federal employees