

What do markets do well/poorly? What role(s) does the public sector play in a market economy?

Decentralized and centralized systems

There is more than one system for assigning people to jobs, land to uses, prices to goods and services, and wage rates or salaries and rents to people in order to distribute income.

In the United States, most of these allocations are determined in a *decentralized* way -by *private* individuals trading with other individuals- in a *market*. The activities and transactions of private citizens, individually or in groups, as owners, managers, employees, consumers, retirees, students, savers, borrowers, and investors; etc., are *private sector* activities.

Not-for-profit agencies or organizations, subject to public accountability that implement programs for all citizens are *public sector* activities. The elected government plus appointed agencies in a democratic society is the public sector.

A couple decades ago, in the former Soviet Union, the allocations of people to jobs, land to uses, prices and wages, and so on, were decided by government planners in a *centralized* way ('central planning'). There are few examples of centrally planned systems today. Nevertheless, even in countries with market systems, allocations are determined to some extent by the public sector (government).

No market economy is purely decentralized. All have active public sectors. All productive activity is either taxed, subsidized, or -- by exemption from taxation -- relatively favored. Why? What is it that markets alone fail to do properly? Why does government tax and subsidize? Why

lectures for ECON 376 by Prof. Kilkenny

are there any centrally provided goods or services at all? Why don't we rely on free markets for everything?

Efficiency and Equity

The market system works well in many aspects but not in all. To understand why that is so, we must first define what we mean by "works well." We say that a system that is efficient and fair or equitable works well.

A system is *efficient* if it provides us with the largest amounts of desirable things from the least amount of resources (labor, land, capital, goods, etc). Efficient systems minimize waste. Efficient systems don't produce maximum amounts of everything—they provide just the right amount of only the things we want. Efficient systems do not necessarily imply full employment—if we could have the same amount of stuff, wouldn't we rather work less than more? The ultimate goal of production, remember, is consumption. Also, production of stuff that people don't value, or can't afford to buy, is wasteful. Efficiency in production provides the most desirable mix of goods and services at least cost.

While there is only one good way to define *efficient*, there are two ways to define *fair*. One, (1) *competitive equity* basically means "to each according to the value of their effort." Two, (2) *utilitarian equity* means "to each according their needs." Competitive equity is achieved when, for example, those who master 93% or more of the material in their courses earn a 4.0 GPA. Those who master less material get lower grades, and so on. Utilitarian equity is

achieved when, for example, everybody gets a 3.0 GPA (or 4.0, or whatever) regardless of how much material they have mastered. Notice that a system that achieves competitive equity reveals more *information* about individuals to each other than a utilitarian system does. Thus, competitive equity is more consistent with a decentralized or market system of exchange in which individuals make decisions than utilitarian equity is.

Three types of efficiency

There are three outward signs that a system is efficient. One is that the value of things to consumers is the price consumers pay and this just covers the cost of production:

$$(1) \quad MU_x = P_x = MC_x \quad \text{for all } X_s$$

called *pricing efficiency*; where ‘x’ denotes any good or service, MU_x is the marginal utility (value) to consumers of x, P_x is the price of x, and MC_x is the marginal cost of producing x. When condition (1) holds, goods and services are being provided at the efficient and desirable *levels*.

We summarize and illustrate consumers’ value for goods using demand curves. Marginal costs of production are summarized and illustrated by supply curves. Figure 1 illustrates *pricing efficiency* Condition (1).

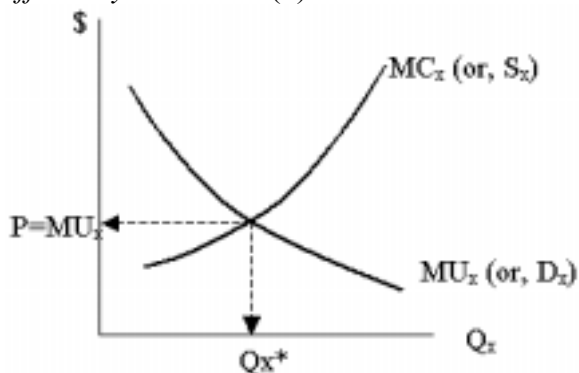


Figure 1. pricing efficiency

We can tell that there is “too much” good x when what consumers are willing to pay ($P=MU$) is lower than marginal cost (Figure 2).

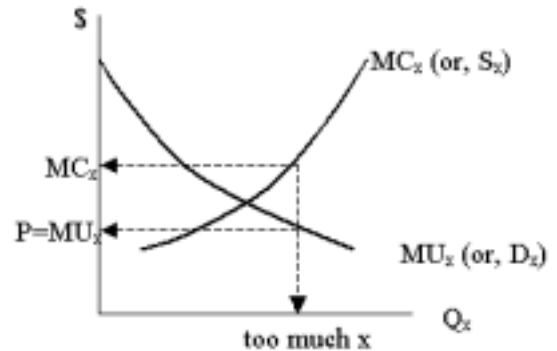


Figure 2. Inefficient pricing → too much

There is “too little” good x when value and price are higher than cost (Figure 3). To supply more would cost more, and this should be allowed to happen until Q_x^* at which $MU=price=cost$ (Figure 1).

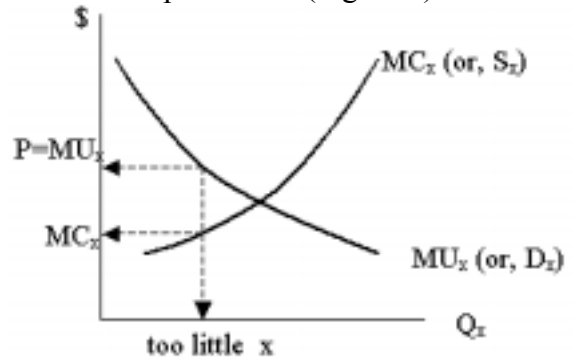


Figure 3. Inefficient pricing → too little.

Attempts to subsidize producers in these cases leads to too much being produced. Attempts to raise prices using regulations leads to too little being produced. The optimal level is obtained when producers and consumers are allowed to transact freely, without taxes, subsidies, or regulations.

The second outward sign of efficiency appears when the mix of goods and services is efficient:

$$(2) \frac{MU_{X1}}{MU_{X2}} = \frac{P_{X1}}{P_{X2}} = \frac{MC_{X1}}{MC_{X2}} \quad \text{for all } Xs$$

The first ratio is the relative value of good 1 compared to some other good 2. The second is relative prices. The third is relative costs. When condition (2) holds, the *optimal mix* of goods and services are being produced.

The relative value of one good compared to another is summarized and illustrated by the slope of consumers' indifference curve. The relative costs are illustrated by the slope of the production possibility frontier. Figure 4 shows *allocative efficiency* Condition (2):

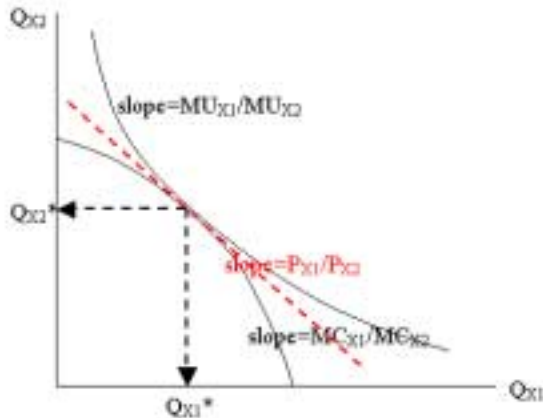


Figure 4. allocative efficiency

Finally, workers and owners should be remunerated for the value of what they supply. This is summarized by *distributional efficiency* condition (3):

$$(3) P_{X1}MP_f = W_f = P_{X2}MP_f \quad \text{for all } X \text{ and } f$$

where MP_f is the marginal productivity of the factor f , such as labor, in production of good or service $X1$, and W_f is the income distributed to that factor, for example, the wage.

Decentralized market systems allow individuals to transact with each other to determine how much to produce and consume, what mix to produce and consume, and how much factors of production earn. A relatively high price of something signals to individuals that they would earn more by reallocating their effort to supply more of that thing until $\text{value}=\text{price}=\text{cost}$, and equally productive labor earns the same amount everywhere.

All these efficient and equitable outcomes can be obtained without any government intervention at all – but only under certain conditions.

Five Conditions for Market Efficiency

The following five conditions are required or else the market mechanism will not be able to allocate resources so that $\text{value}=\text{price}=\text{cost}$ for goods, services, and factors of production:

- (1) costlessly mobile productive factors
- (2) no monopolies (or monopsonies)
- (3) no barriers to entry
- (4) no externalities
- (5) perfect information

Students of spatial economics should immediately recognize that these five conditions rarely, if ever, are met. Workers *cannot move without cost* from one job to another. Crossing physical space costs time and money – commuting or migrating. Crossing technical categories costs time and money – education and training.

Space imparts monopoly power, as we know. A seller at one location can raise prices and not lose customers to a seller in another location as long as they don't raise the delivered price above the cost of the other supplier plus transport costs. By the

same token, *space imparts monopsony power* to buyers.

Almost all productive activities require some sunk or fixed cost. A prospective businessperson must be able to cover average costs, not just marginal costs, or they will go out of business. *Fixed costs are a common barrier to entry.*

Externalities are positive or negative effects that are not paid for. We have considered more than a dozen types of externalities associated with space. These include localization and urbanization agglomeration economies, static and dynamic economies of labor pooling, learning-by-doing, knowledge spillovers, and innovation. We have also considered amenities, not directly paid for, that are profitable or costly to firms, and desirable or disliked by people. We showed that the value of these externalities are reflected in the prices of labor and land (compensating differentials in wages and rents). Clearly, externalities interfere with the equating of $\text{value}=\text{price}=\text{cost}$.

Finally, perfectly costless information is not possible—especially about remote places. And, while electronic communications have helped reduce the costs of transporting information around the world, knowledge still appears to be subject to steep spatial decay.

In sum, the five conditions that must hold for markets to function efficiently do not hold, especially across space. The failures vary in intensity from place to place, and market by market. These problems provide another reason why something other than a simple market mechanism may be needed to obtain efficient and equitable outcomes.

Market mechanisms cannot solve poverty

Market systems are very good at allocating resources efficiently and at achieving competitively equitable fair allocations under the five conditions (above).

But market systems are *completely useless* for mitigating the consequences of an unequal initial distribution of endowments. Market systems cannot achieve utilitarian equity. Market mechanisms cannot help people out of poverty. In a market system one must have something to get something else. If one has nothing, one dies.

In a market system, people are free to sell as much or as little of their time or labor for wages, their inherited or previously purchased assets for interest, rents, or capital gain (or not to sell their labor or capital at all). Then they can buy as much or as little stuff as they can afford, and spend the rest of their time in leisure. But people who have no assets, are infants or orphans, are retarded or disabled, or who live too far away from employers or markets—what can they sell? How can they obtain the food and clothing and things necessary for life? The basic market mechanism provides no solution to the problem of guaranteeing that all people have access to at least the minimum necessary to survive.

Three main responsibilities of the public sector

Since the market mechanism cannot solve poverty, the public sector assumes the task of assuring that all citizens have a minimum income. One of the three main tasks of government is thus *income redistribution*. Government collects revenue in the form of taxes then disperses *transfer payments*. Transfer payments include, for example, unemployment compensation, disability

payments, social security checks for retired people, welfare checks for indigent adults with children, and ‘freedom to farm’ payments to owners of registered program crop land.

A second task for the public sector is to *ensure competition* so that markets function efficiently. This includes providing infrastructure and education to reduce the costs of mobility (towards achieving condition (1)) the provision and enforcement of a legal code which establishes property rights, protects individual free choice, and prohibits coercion (conditions 2-3). Planning, coordinating, and regulating towards condition (4). And, requiring disclosure, enforcing honesty, and collecting and disseminating information (towards achieving condition 5).

Condition 4, ‘no externalities,’ is not something that can be achieved by regulation or government intervention in markets. Amenities and some goods and services generate externalities no matter what. When there are externalities, value exceeds or falls short of what people are will to pay (value $MU_x \neq P$; Figure 5).

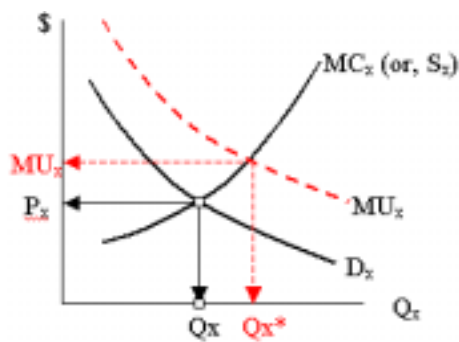


Figure 5. Market provides *too little* when good x provides positive externalities.

Or, resources are used up but no one pays for them (in this case, $P \neq \text{cost}$; Figure 6). The market mechanism will fail to provide

the optimal amounts and mix of goods and services associated with externalities.

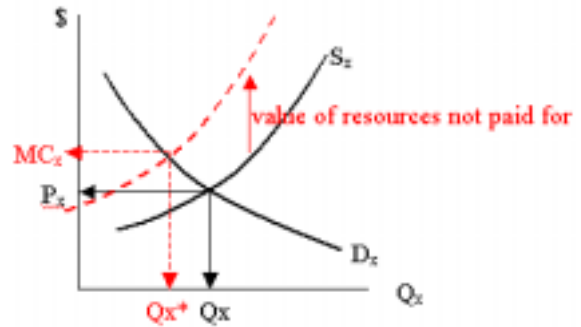


Figure 6. Market provides *too much* when X causes negative externalities.

Figures 5 and 6 suggest that subsidies could be used to signal more production of goods that generate positive externalities, and taxes could be used to reduce production of things that generate negative externalities. Indeed, governments often use subsidies and taxes or fines in these cases.

A third main task of the public sector is the *provision of public goods*. Economists have a very strict definition of the term “public good.” *Public goods* are characterized by *non-excludability* and/or *non-rivalness*. Just because something is provided by a government does not classify it as a public good.

Non-excludability and Non-rivalness

Non-excludability means it is prohibitively expensive to stop someone from being affected by the good even though they do not pay for it. Sunshine, for example, is non-excludable. Hog odor is non-excludable. The benefits of national defense, or public safety are non-excludable. The fact that something is non-excludable makes it very difficult for a private provider to charge beneficiaries for it. When a business can’t charge a price, it can’t cover costs, so the good or service won’t be supplied by businesses. Thus, the *public sector has an*

important role providing non-excludable goods and services that the market fails to provide.

Non-rivalness means that consumption by one does not diminish the supply available for others. National defense, for example, is non-rival in addition to being non-excludable. A hamburger, in contrast, is both rival and excludable. If one person eats it, there is none left for someone else. And one can't get a hamburger without paying for it. Roads are non-rival up to a point. When one car is using a road, there is still plenty of road for other cars to use. But after hundreds of cars are on the road at the same time, we have *congestion*. Public parks, playgrounds, museums, bus lines, etc., are other examples of somewhat non-rival or *congestable public goods*.

The problem with non-rivalness is the “free rider problem.” A consumer of a non-rival good doesn't see why they should pay for something that others will be able to benefit from too, once the thing is provided. For

example, once a bus is on its route another passenger can ride it without raising the costs to other riders. Since the marginal cost is zero, consumers of non-rival goods refuse to pay for them. Again, too little non-rival goods and services are provided by the private sector.

Figures 5 and 6 also show that the role of the government is *not to provide all* of these things, but to ensure that the socially optimal amounts are provided by a combination of private and public sector efforts. There are many examples of some private sector provision of non-excludable and non-rival goods and services (Table 1).

The rows of Table 1 refer to a set of goods and services. The columns list three of the many characteristics of each good or service. The more (yes) associated with a good or service, the stronger the need for public (government) provision. The last two columns give examples of the roles of the private and public sector.

TABLE 1. <i>good or service:</i>	<i>benefits/costs are:</i>			<i>private sector</i>	<i>public sector</i>
	<i>non-excludable</i>	<i>non-rival</i>	<i>spatial externalities</i>		
education	yes/no	yes	yes	private schools	public schools
roads	no	yes/no	yes	toll roads	freeways
welfare	no	no	yes	charity	TANF program
public safety	yes	no	yes	security firms	police, fire
parks and recreation	no	yes/no	yes	amusement parks	public parks
sanitation	yes/no	yes	yes	trash companies	sewage system
liquor, cigarettes	yes	no	yes	stores	“sin” taxes
information	yes	yes	yes	newspapers, TV	www.census.gov
hog lots	yes	yes	yes	lower home values	regulations, fines