Market Failure

Market failure theories underlie most economic arguments for government intervention in the economy. When markets operate in accordance with standard assumptions, no person can be made better off except by making someone else worse off as consequence. The range of government activity in such a world consequently is constrained. When markets fail to operate in accordance with the standard model, government policy may improve economic outcomes by ameliorating the market failure.

Efficient markets: The first and second welfare theorems

Market failure is defined in contrast to a theoretical ideally-operating economy. When individuals are free to trade in a competitive marketplace where there exist no externalities in production or consumption, the resulting distribution of resources in the economy is Pareto-efficient: no person can be made better off without making some other person worse off. At this equilibrium, the price system has coordinated the activities of all market participants such that all resources have moved to their most highly-valued uses. Work by Kenneth Arrow, Gerald Debreu and Francis Bator in the 1950s provided formal proof of the conditions under which the market equilibrium is Pareto-efficient: the first fundamental theorem of welfare economics.

The first welfare theorem refers only to the efficiency of the equilibrium; it says nothing about whether the resulting allocations are fair or just. However, many potential allocations satisfy Pareto-efficiency. The second welfare theorem shows that any efficient equilibrium can be reached through the operation of competitive markets with redistribution of individual endowments or wealth. Consequently, if the results of a market process are deemed to be inequitable, economists would argue that any correction should be implemented via changes in endowments rather than through interventions in the workings of the price system. For example, if certain individuals are unable to afford decent housing, the second welfare theorem would suggest that the appropriate corrective measure, if one is desired, is to increase those individuals' incomes (funded via a non-distortionary tax) rather than to provide targeted housing subsidies or impose price controls. Such policy would not work to correct any market failure; rather, it would work to select among efficient outcomes for reasons of equity.

When the conditions underlying the first welfare theorem fail to hold, we can expect market failure. Market failure consequently has a very precise meaning for economists despite its often loose usage elsewhere: it requires a failure of the first welfare theorem rather than dissatisfaction with market outcomes.

When markets fail, government intervention may improve outcomes; however, such improvement is not guaranteed. Market failure is defined relative to a norm of Pareto efficiency rather than in comparison to a potential policy intervention. For purposes of policy analysis, identification of market failure is not sufficient to require government intervention; rather, policy intervention should be based on sound comparative institutional analysis balancing the imperfections of markets and politics.

Ways markets fail: competition, externalities and public goods

When markets are not competitive, market failure may result. A monopolist has an incentive to restrict output and raise price, creating deadweight losses. Where monopolists can engage in price discrimination, such losses are reduced. Antitrust policy works to mitigate losses due to lack of competition; however, the costs of such policy need careful weighing against potential benefits.

Externalities can also generate market failure. When an activity generates external costs, we expect that the market outcome will involve "too much" of the externality-generating activity when compared to a Pareto-optimum; conversely, activities generating external benefits will be underprovided. Externalities that do not result in resource misallocation cause no market failure: the losing bidder at an auction imposes a pecuniary externality on the winning bidder by forcing payment of a higher price; however, the loss to the buyer is exactly matched by a gain to the seller.

A public good produces external benefits and has the particular characteristic of being both non-rival in consumption and non-excludable. Once the good is produced, it is impossible to prevent anyone from enjoying its benefits and any one person's enjoyment of those benefits does not diminish the like enjoyment of any other person. Radio transmissions are a public good: once the signal is sent, any number of receivers can listen simultaneously without harming other users, and no person within the transmission range can be excluded from listening. Because the good is non-excludable, economists typically predict the good will not be produced at all as no one will incur the costs of production where those costs cannot be recouped. Moreover, because the good is non-rivalrous, the marginal cost of any additional user consuming the good is zero; any price charged that prevents someone from using the good would consequently be inefficient even if payment could be extracted.

Ways markets fail: information asymmetry

Seminal work in the 1970s by Greenwald and Stiglitz demonstrated that when relevant information is dispersed asymmetrically across players in the economy, markets can fail to produce efficient outcomes. In moral hazard models, workers shirk, insurance consumers take too many risks, and borrowers default: individuals take individually rational but externality-generating action after having agreed to an employment, insurance, loan or other contract. In adverse selection models, information asymmetry causes market failure prior to the signing of contracts: employers offer high salaries to induce better quality workers to apply for the job, raising overall wages and inducing inefficient equilibrium unemployment; risk-lovers purchase insurance, driving up prices and forcing risk-averse individuals out of the market; and, high risk firms bid up the loan interest rate, keeping less risky firms out of the borrowing market. Parties may work to mitigate moral hazard or adverse selection problems, but solutions will remain inefficient relative to the first best where all agents have the same information. While examples here focus on employment, insurance and credit markets, Greenwald and Stiglitz show asymmetric information to be a pervasive cause of market failure.

Mitigating failure

When markets fail, there exist potential gains from trade that remain unrealised due to some imperfection in the market. Any firm able to find even a partial solution to the market failure can reap large profits by doing so. A strict application of public goods theory might suggest that radio does not exist, but firms quickly learned that the combination of advertising and public broadcast works well. In other cases, government action proves the best remedy to market failure. Comparative institutional analysis weighing the losses due to both market and governmental imperfections should precede policy intervention seeking to remedy market failure.

Ronald Coase demonstrated that where property rights are well-defined, parties can efficiently bargain to solve externality problems. If engaging in the externality-generating activity is efficient, the party engaging in the activity either can have the right to do so or can pay those adversely affected and buy from them the right to engage in the activity. If it is inefficient, the party will not be able to afford to compensate the offended parties if they have the right to stop the activity, or the transgressed parties will pay the individual to cease the activity if he or she otherwise has the right to do it. High transactions costs may prevent some such bargains: a person driving a polluting car would have a difficult time in finding all of the people who might be affected by the car's emissions. Government regulation or taxation of negative externalities are more likely to be the efficient solution where the number of parties to the transaction is high or where property rights cannot readily be assigned: many economists have suggested that a Pigovean tax on carbon emissions may be the most efficient solution to global warming.

Public goods problems can be solved privately if a private tied good can be found (as in the radio example above), if any party would derive private benefits from creating the public goods in excess of the costs of producing the good, or if technology can be developed to render the good excludable: scrambling television signals can exclude those who do not pay a subscription fee. The marginal cost of providing the signal to an additional user is zero so the subscription price is inefficiently high relative to a theoretical ideal, but where the alternative is that the good is not provided at all, the efficiency losses are comparatively small. Other public goods, like national defence, are more efficiently provided by government.

Similarly, when asymmetric information prevents buyers and sellers from interacting, profits can be earned by bridging the gap between the parties and facilitating trade. Akerlof's "Lemons" model of the used car market predicts that only poor quality used cars will sell where buyers cannot verify the quality of used cars; by contrast, a thick market in used cars exists where reputable agents test and certify vehicle quality. Credit reporting agencies sell lenders information on borrower default risk. Identifying appropriate legislative or regulatory solutions to market failures caused by asymmetric information proves difficult; the same informational problems that cause market failure also make it more difficult for government agents to improve outcomes.

References:

Akerlof, George. 1970. "The market for 'lemons': quality uncertainty and the market mechanism." *Quarterly Journal of Economics* 84 (August): 488-500

Arrow, Kenneth, and Gerald Debreu. 1954. "Existence of an equilibrium for a competitive economy." *Econometrica* 22 (July): 265-290.

Bator, Francis. 1958. "The anatomy of market failure." *Quarterly Journal of Economics* 72 (August): 351-79.

Coase, Ronald. 1960. "The problem of social cost." *Journal of Law and Economics* 3 (October): 1-44.

Greenwald, Bruce, and Joseph Stiglitz. 1986. "Externalities in economies with imperfect information and incomplete markets." *Quarterly Journal of Economics* 101 (May): 229-64.