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The Economics of Illusion and Environmental Justice

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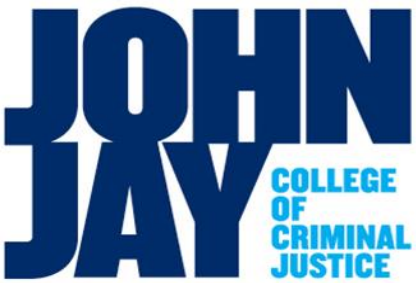

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By Joan Hoffman and Jessica Gordon Nembhard 8/25/2014

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Economic Roots of Environmental Injustices

To reduce the environmental injustice in the world we must stop telling ourselves economic lies. An important cause of environmental injustice is that our economies have at least three severe cases of counting failures. The first is that future generations are going to inherit depleted and polluted forests, soil, water and atmosphere because when we count our economic production, our Gross domestic product (GDP), we do not adjust it for the degradation of our natural resources although they provide services critical and valuable for economic production. Nature's services include soil nourishing food, trees holding the soil, and plants filtering water. We track the wearing out of buildings and machines, our physical capital, but not the erosion and wearing out of our natural capital. Also, the incentive system for our profit-based business sector, with its huge global corporations, is set up for continued expansion, leading to ever-expanding economic growth, rather than sustainable growth, which would take into consideration the balancing of our needs, the beneficiaries, and the damage caused by the growth. The illusion that more growth is always better is fostered by the way we count and discuss our GDP or economic production (Stiglitz et al, 2009).

A second counting failure that contributes to environmental injustice is that our economic organizations, large and small, are not designed to keep track of or be liable for the environmental costs they impose on others outside the realm of their responsibility(their external costs) (Goodstein 2011). Profit based market firms, like the global corporation Shell which produces oil and serious pollution in Nigeria, provide an excellent example because their power is so vast (CCR 2014). Releasing waste into the environment reduces the costs of these firms. Harmed individuals and communities have too few resources to fight such pollution on their own. In such cases, government regulation is needed to impose the tracking, outlawing, taxation and fining of such waste. Furthermore, governments often have to be pressured to do the right thing because governments even subsidize polluting activities, as does the US for example, which provides tax breaks for oil companies. (Kosnick and Lewis, 2007,Adeyeye et al 2008). Unfortunately, none of the ways s in which we engage in economic production, as individual and families running households, communities, non profits or governments, have natural incentive to account for waste outside their realm of responsibility. The cost of both our legal and illegal economic activities can be reduced by discarding waste into the environment without processing. This lightens the financial load for a while, Eventually we all are affected by the wastes of others. Examples include the cfc's and other gases creating a hole in the ozone layer, or carbon from fossil fuels heating up the atmosphere(McGrath, M. March 2014; USEPAa August 2014).

A third counting failure is that we don't track the environmental costs of the products we use over the life cycle of their production from extraction of their raw materials to their disposal (USEPA b August 2014). For instance, when we buy fleece jackets we learn the money price but not the environmental cost due to oil used in their production and transport and from the very tiny pieces of their plastic fibers released during their washing which end up in the ocean, absorb toxins, and are eaten by fish, some of which we then eat (Sohn E. 11/27/2012). TV and cell phones prices do not reveal unhealthy, dangerous working conditions and depleted landscapes in far corners of the world that result from their production and disposal. (Schuetze, C.F, 4.29/2013)

Barriers to Solutions

There are at least four categories of economic barriers to improving environmental justice in the world rooted in our counting failures. They include the nature of things, the switching problem the inequality of income and power problem and the tools put to use by economists to assess choices in environmental projects. Each of these will be discussed before indicating economic paths to improving environmental justice.

The Nature Of Things

There are four ways in which the nature of economic life and our human nature challenge our efforts to have a more sustainable and just economy. All are examples of market failures which means that we can't solve our environmental problems by relying on business or profit incentives. One issue is our hard-to-govern commons.

While small grazing commons, such as shared grazing lands with observable and therefore enforceable community property rights have been successfully maintained for centuries (Ostrom 1990), other commons, such as our vast skies and oceans, appear like free resources which do not require community responsibilities of their users. The resulting overuse has caused environmental harms, such as fish depletion and global warming (UNFAO 5/19/2014) . We need more accountability!

Efforts to clean up the ocean and other common resources and to provide goods and services that improve our environment, such as waste water treatment plants encounter another level of challenge: Clean air once it exists can be enjoyed by everyone without cost, and no one can be excluded. (Economists label this a "public good"). This creates a free rider problem. Some of us will be hoping that others will pay for the needed good or service. We can't obtain as much clean air and water as we need for a profit, through donations, or even government services. A ski resort will use fossil fuels even though global warming would hurt its business. We do not donate as much as we could to organizations working on reducing global warming even though we worry about its effects around the world. Governments also do less to combat global warming than they could. China and the US continue to allow coal-burning to save money and to resist the Kyoto accords although climate change will hurt their economies in many ways, including the flooding of their coastlines as a result of rising oceans. (Tiezzi, S. 11/26/2013) If we want public goods like clean air and water, we shall have to cooperate in taking extra measures towards our goals.

A third challenge in the nature of things is called asymmetric information, or not having valuable information pertinent to our decisions. Sometimes this is due to the very incentive systems that drive some of our economic activities. Market firms withhold information to avoid taking responsibility for their pollution. Governments do this as well. But we also confront enormous ignorance about our natural environment and its extremely complex interdependencies. We can cut down trees only to find that they were holding the soil, while also protecting us against global warming. Obtaining environmental information relevant for our undertakings is a critical goal.

The fourth challenge is human nature itself. Economic theory often claims that people are rational decisionmakers, making decisions that benefit them (see discussion Scorse). Of course, rational economic decision making doesn't help us solve our environmental problems when we act as free riders, considering our own narrow benefit, or lack adequate environmental information. Furthermore, we are not always economically rational. Research has shown that human beings will postpone economically gainful actions, such as substituting a cheaper good or service for a more expensive one through inertia. Not changing cable companies for television watching and not choosing green power are examples familiar to many, (This may not be so irrational, as switching takes time and mental energy). People will also resist making investments, including environmental ones,that will save them money if there are what they consider high upfront costs, while the savings are small and build up over a long time period. This is called a positive time preference or present bias. Not buying energy efficient light bulbs is an example (See discussion Scorse). To be effective, policies must take these behaviors into account.

The Difficulty of Switching or Path Dependency

Fortunately the human race enjoys a challenge, because at least three difficulties present barriers to switching to greener methods of production to improve the environment for future generations and more people around the world. The first challenge in making the transition is the way we think about the relationship between the economy and the environment, or our basic economic paradigm. Under the old mechanical paradigm, the environment is seen as a resource for the economy, available to be used as needed. The newer paradigm of ecological economics views the economic as a part of and dependent on the environment, an environment which we do not entirely understand (Shacker, M. 2013) . Also, the old paradigm assumes that a technological fix is always available and that we can always find a substitute, while the new paradigm considers nature a necessary complement to our production, for which substitutes may well not exits (Daly, H. and Cobb, 1994) . For instance, if we pollute our atmosphere so much that ultraviolet radiation enters through the ozone holes and burns us, and it becomes too hot for humans to survive in their habitat, one cannot think of a satisfactory substitute. The ecological economic paradigm is gaining acceptance; efforts to produce in more ecologically sustainable ways are growing.

However, there is a second barrier, with three elements, collectively called path dependency. The impediments to switching to solar power in the US provide examples. The first problematic element is the higher price of solar power compared to fossil fuel, at least in the short run.. The reason for the lower price of fossil fuels is that they have been used for so long and are used by so many people that the many components of the system are produced

with the economies of large scale production that result in low average costs, making it possible to offer consumers low prices. Even if solar power can produce lower prices in the long run, like other small-scale start-up industries with relatively few customers, it must charge higher prices than fossil fuels in order to cover overhead costs. This typical start-up problem is well recognized, and subsidies from the government are a common aid to get new desired industries with important social benefits going. However, the second problematic element for solar power is that, again, fossil fuels firms have been around longer and have more political economic clout. One result is that fossil fuel, which should reasonably be taxed according to its contribution to putting carbon in the air, in fact has more and more durable subsidies than solar power (Kosnick 2007, Adineke et al 2008). The third problematic element is that, even if prices come down for solar power, consumers will have resistance to paying for an electric burner that can use the solar power when they have a perfectly good oil or gas burner. The costs of changing these complementary products associated with any old technology, provide the old technology with an extra layer of protection, even when the new technology would eventually be better.

The third barrier is the high cost of new machines and equipment for poor nations and poor people. Because machines normally have high costs of production, relatively few producers can afford to enter the field, which results in monopolistic industry concentration with little price competition and therefore high prices. Poor nations often have labor intensive industries such as agriculture, food products, or clothing with low entry costs, many producers, lots of price competition and low prices. Poor people often work in such competitive industries at low levels of skill, which means that they are easily replaced and employers can keep wages low. As a result, poor nations and poor people will have problems affording the equipment of a new green economy whether it is solar panels and plants for the country or a new clean car or other equipment for workers.

A Critical Eye For Economic Tools Used In Environmental Justice Analysis

Of course quantitative tools are used to assist in the discussion of how we should alter our economies to produce more environmentally just results for future generations and people around the world. While these tools are useful for identifying issues, they should be used with open eyes, a degree of skepticism and great care. In order to use them wisely, it is especially important that the assumptions made in using these tools are made known. Cost benefit analysis will be discussed as an example.

Cost benefit analysis , which analyses the flow of costs and benefits of a project over the life time of a project, is a tool frequently used to help determine if an environmental investment, such as in solar power, should be made. A market firm would of course use the tool only with concern for its own profits, but a government or community would be charged with accounting for hard-to-measure factors like the positive impact on the environment and community health, as well as taking into account the costs of the technology. There are at least two ways to critically evaluate such analyses. One is to examine underlying assumptions in estimating benefits and costs. For instance, health effects might be based on studies of men and not the impacts on women and children. The technology considered might be a high-cost, out-of-date choice. (Scorse 2008). The study might consider the cost of one rather than cumulative events, as has happened with fracking studies, in which the effect of only one well was considered when there would be many more with serious cumulative effects. (CMK 2013).

The second way is to question monetary valuations used in project decision making. Often such studies estimate the value of nature's services, such as trees, grass and soil-cleansing water. The costs of building a water treatment plant could be used to estimate the value of these services. This was done by New York City in its upstate watershed, producing an original estimate of $6billion (Hoffman 2010) However, monetary valuations often cannot be made or are not appropriate for assessing the impact of projects. What if no market exists for a species which would be adversely affected and which is vital to the ecosystem (Kennedy 2004)? What if the project would lead to the destruction of a sacred burial ground, destroy the ecological basis of a culture, or damage an eco-system whose operation we do not understand, due to lack of information (Alier 2010). Monetary estimates are not adequate to address these important and critical issues.

Unequal Power and Income Problem: Concentration of Power

Unequal economic and political power, and the concentration of power in the hands of a small group of elites help to explain environmental degradation and injustices. These inequalities leave racial minorities and women with disproportionate representation among the poor. There are at least four different strands to the complex ways in

which these inequalities combine to create and perpetuate environmental injustice: low income and environmental choice, low incomes and community, low income and marginalization and powerlessness to make changes, high income privilege and power over decision making.

First, as Banzhaf (2009) argues, due to the inequality in distribution of income, the poor cannot afford to live in clean areas. Poverty delegates many families to neighborhoods that are vulnerable to everything from food scarcity and crime to flooding, mudslides and toxins. Much research shows that poor people and people of color are more likely than other groups to live in polluted neighborhoods and that race is the most important variable in predicting the location of toxic waste facilities – more than poverty, land values or homeownership (Banzhaf 2009, Jones 2008, Bullard 2006). For example, the discriminatory policies and practices allow polluting facilities, toxic wastes, and other environmental hazards, risks and devastations to be concentrated in Black communities and to differentially affect or disadvantage individuals, groups or communities based on race. Three in five African and Latino/a Americans live in communities with abandoned toxic waste sites. Lead poisoning is the number one environmental health threat to children of color – Black children are five times more likely than white to have lead poisoning and 22% live in lead-poisoned housing (6% whites). Such patterns are likely to be repeated in different countries around the world. And, as previously discussed, poor countries are less able to afford the expensive clean technologies the world is generating.

Second, world inequality has been increasing in the 21st century and poverty resulting from inequality has been increasing, affecting both environmental and social standards in poor communities. "The lack of income creates problems, including poor housing, lack of food, health problems, and inability to address needs of one's children" (World Hunger 2014). In the US the number of people living at or below the poverty line has been increasing since 2007 and is the largest since poverty statistics began to be published 52 years ago (46.5 million people in poverty in 2012) (DeNavas-Walt 2013, p. 13; DeNavas-Walt 2011, p. 14) (*footnote 1*) . This poverty often accumulates in communities due to real estate price patterns, and poor communities cannot afford amenities that would abate or reduce environmental degradation; and have lower tax revenues in their community for protection. This is a global pattern and is exacerbated in economies dominated by informal markets in which no tax revenues are collected.

Third, poverty, discrimination and powerlessness. Unequal economic and political power results from unequal distributions of income and wealth. Race, ethnicity, gender and disability increase or worsen economic and political inequality. Poor and marginalized groups have few resources and less political power. Therefore, they are not only unable to afford housing in clean neighborhoods, they are usually less successful at lobbying government agencies to block polluting facilities in their neighborhoods and/or at pressuring agencies to monitor compliance when there are environmental regulations.

Fourth: privileges of power. The structure of our economic system gives the richest members of society the decision making power over profits that are made throughout the economy (see World Hunger 2014). A certain amount of unemployment is permanent and helps to keep wages down. About half of the US federal government discretionary expenditures are spent on military and security expenses, and much less is spent to assist poor people. Corporations and the rich have money and power to lobby legislators to get the policies and tax breaks and subsidies that they want (World Hunger 2014). This creates power imbalances and unequal resource distribution and access to resources. Wealth buys individual (and family) privileges, access, influence and decision-making power; and gives communities resources and tax revenues that can counteract or abate environmental degradation. Moreover, the powerful are often able to provide benefits to whites while shifting the costs to people of color (the powerless). Scorse (2008, 40) suggests that environmentally favorable shifts in patterns of production and consumption may begin to happen, but they are unlikely to effectively address situations where particular groups or resources are under immediate environmental strain and bear a disproportionate toxic burden.

Solutions

We need to create accountability for use and distribution of such resources through monitoring and charging for use and overuse. Environmentalists have recommended such things as green defaults on choices of power sources and environmental standards for products, as has been done for lightbulbs (paying a higher price for a good or service). Given our global warming problems, the government should not be subsidizing fossil fuels, but since we are operating in the old thought paradigm and fossil fuel industry influence is entrenched, the political economic

challenge is to alter those subsidy patterns. In fact, fossil fuels, or carbon should be **taxed**, if we want to reflect the costs of the environmental harms of the use of this resource in the resource's price.

Solutions require transparency of and more sharing of information; reduction (if not elimination) of economic and political inequalities and more decision making by the people most affected, and cost sharing across the economy; more research and development in environmental science about alternatives, green technologies, and the use of technology to redress and avoid future environmental degradation; and restorative practices that empower communities. Also, there needs to be an end to the lies.

Better Information and transparency (Life cycle information labeling; Green accounting, General Progress Indicator)

Corporate information about inputs, processes, costs, wastes and externalities used to be proprietary information. The production process in private corporations was considered a "black box"- whatever happened behind the factory doors was not the public's business. Slowly this notion has been changing and we demand more and more transparency in the business world, in our economy and government; and insist on the right to know. Scorse (2008, 47-50) discusses the right-to-know program in which corporations must report their toxic emissions and practice ecolabeling, which would provide information about the environmental impacts of the products for sale.. Life cycle information labeling is needed so that we understand the full history of the products we use (where each element started and came from, what processes were involved, what costs to society and to the environment, etc.);such labeling would go a long way in helping the public to understand the costs of environmental degradation, to make informed choices, and to demand the responsible parties to be accountable to the public. Green accounting (adding the social and environmental costs etc.), and using social-responsibility and human-development measures, such as those used by the General Progress Indicator project is critical for increasing our level of information and our ability to genuinely understand the environmental costs and consequences of our economic and other activity.

In addition to increased information and better research, critical thinking needs to be applied to how we approach questions and decisions about environmental information and policies. We need to require that the assumptions behind any study or policy be transparent, and allow us to examine those assumptions. We need to question any cost-benefit analysis and be clear about the assumptions behind it: what costs are included and analyzed, why not other costs, who benefits and why, what role do power relations and unequal resources play, etc.

Helpful government policies (Green defaults; standards; Taxation and subsidy switches)

Scorse (2008): We need "policies that address root causes. If we can calculate the damage from these external costs we can partially correct for this market failure by levying an equivalent tax on the offending industries. Not only do environmental taxes generate the revenue needed to compensate those who are harmed by the pollution and/or mitigate the negative impacts, they also raise the price of the good or service in question, thereby decreasing the quantity demanded. This is exactly the result that environmentalists should favor: a shift away from environmentally harmful goods once their prices reflect the true costs imposed on society" (39). Polluters could/should be taxed more for the damage they do and the costs calculated by green accounting should be paid for by the source of the problem in the forms of taxes and fines. Once the proper accounting is done, fair charges can be calculated.

In addition, Banzhaf (2009) suggests that providing legal aid, facilitating conflict resolution, and otherwise helping poor residents in environmental disputes "can help the legal bargaining process to function better and enable the poor to participate in it fully." Projects should involve local participation to increase the likelihood that "new amenities fit the preferences of incumbent residents."

Furthermore, if we shift the paradigm to focus more on "do no harm" and restoration, we can enact minimum ecological standards that are much more protective, and green default options that require us to deliberately op out of the green alternative rather than waiting for us to op in (see Scorse 2008, 51-52).

Restoration – green jobs, community ownership, restoration of the commons

The reducing if not eliminating of income and wealth inequality is an imperative to restoring ecological balance. Wealth and income equality will not only ensure that low-income and marginalized groups have more resources

with which to pay for a cleaner environment, but will also go a long way to establishing ecological democracy and a truly egalitarian society. Banzhaf (2009) suggests that solutions must include strengthening the position of the poor within the market system and redistributing income to the poor. In addition, our economic models, accounting tools, and business practices have their roots in the 18th and 19th centuries, when nature was abundant and energy was relatively cheap (Jones 2008, 16). It is time to be pro-active about real income redistribution and power redistribution in order for the current processes and policies to be reframed and reformed in order to address both environmental inequality and environmental justice. Community-based economic development, community ownership and cooperative ownership are strategies that democratize capital ownership, redistribute income and wealth, and create more local control over decision making and the economy (Gordon Nembhard 2004).. In this way the people who have to live with or near the toxins have more say in both how the businesses operate and what policies are made – in addition to earning income and wealth from their ownership. Also, because environmental flows do not recognize human political and other boundaries, real environmental protection collaboration among all groups in society for many reasons, including the gathering of information that is not uniformly available across groups (e.g. fishing organizations, vs hunters vs local governments, vs community health experts) and ensuring that solutions consider all groups (Hoffman, 2010).

Focusing on what Jones (2008) calls a "green-collar economy" – "one that will create good, productive jobs while restoring the health of our planet's living systems," especially one where the employees own the company, is also a way to address both environmental restoration and economic inequality. A green collar job is "a family-supporting, career-track job that directly contributes to preserving or enhancing environmental quality" (Jones 2008, 17). These create good jobs that transform the places we live and work in, and how we get around (Jones, 18) "Opportunities abound to make things better for everyone. … Green-collar jobs could help us conserve resources, create new sources of energy, and give the nation the power to grow the economy again. What's more, we have the chance to build this new energy economy in ways that reflect our deepest values of inclusions, diversity, and equal opportunity for everyone"(Jones, 17).

Putting people to work to fix the economy and restore the environment solves the unemployment problem, and giving them ownership of their own businesses jointly increases economic access, ownership and wealth (see Gordon Nembhard 2004) – all necessary to restoring the common good.

Footnote:
1. The 2012 poverty rate for Hispanics (Latino/as) was 25.6%; for African Americans, 27.2%; for Asians, 11.7%; and for non-Hispanic whites, 9.7% (DeNavas-Walt 2013, p. 21-3). The differences in median family income are wide: in 2012 white median family income was $71,500; Latino/as, $40,800; and Blacks, $40,500 (racial ratio of 57:1). The wealth gaps are even worse and the largest since the government started publishing wealth data 25 years ago: the median wealth of white households is 20 times that of Black households and 18 times that of Hispanic/Latino/a households (Taylor 2011). In 2009 while white median wealth holdings amounted to $113,149, median Latino/a wealth was only $6,325, and Black, $5,677 (Taylor 2011).
Women's wealth inequality is even more startling. According to Chang (2010), single Black women and Latinas have a median wealth of $100 and $120 respectively; the median for single white women is $41,500. While white women in the prime working years of ages 36-49 have a media wealth of $42,600, the media wealth for women of color is only $5. Nearly half of all single Black and Hispanic women have zero or negative wealth (debts exceed assets) (Chang 2010).

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(USEPA) United States Environmental Protection Agency b .Life Cycle Assessment (LCA). http://www.epa.gov/nrmrl/std/lca/lca.html. downloaded August 24, 2014.
World Hunger. 2014. "Hunger in America: 2014 United States Hunger and Poverty Facts." http://www.worldhunger.org/articles/Learn/us_hunger_facts.htm.

GLOSSARY: Definitions have been taken from two sources depending on the conciseness of the definitions. Those in regular script afre from http://www.economist.com/economics-a-to-z/m The links within the definitions will take you to the Economist web site. Note that the Economist is a very pro-private enterprise news organization. *The definitions in Italics are from the Wisconsin Council on Economic Education* *http://www.economicswisconsin.org/guide/glossary.htm*

ASYMMETRIC INFORMATION

When somebody knows more than somebody else. Such asymmetric information can make it difficult for the two people to do business together, which is why economists, especially those practising game theory, are interested in it. Transactions involving asymmetric (or private) information are everywhere. A government selling broadcasting licences does not know what buyers are prepared to pay for them; a lender does not know how likely a borrower is to repay; a used-car seller knows more about the quality of the car being sold than do potential buyers. This kind of asymmetry can distort people's incentives and result in significant inefficiencies.

CAPITAL

Goods made by people and used to produce other goods and services. Examples include buildings, equipment, and machinery.

COMPETITION

The more competition there is, the more likely are FIRMS to be efficient and PRICES to be low. Economists have identified several different sorts of competition. PERFECT COMPETITION is the most competitive market imaginable in which everybody is a price taker. Firms earn only normal profits, the bare minimum PROFIT necessary to keep them in business. If firms earn more than this (excess profits) other firms will enter the market and drive the price level down until there are only normal profits to be made.
Most markets exhibit some form of imperfect or MONOPOLISTIC COMPETITION. There are fewer firms than in a perfectly competitive market and each can to some degree create BARRIERS TO ENTRY. Thus firms can earn some excess profits without a new entrant being able to compete to bring prices down.
The least competitive market is a MONOPOLY, dominated by a single firm that can earn substantial excess profits by controlling either the amount of OUTPUT in the market or the price (but not both). In this sense it is a price setter. When there are few firms in a market (OLIGOPOLY) they have the opportunity to behave as a monopolist through some form of collusion (see CARTEL). A market dominated by a single firm does not necessarily have monopoly power if it is a CONTESTABLE MARKET. In such a market, a single firm can dominate only if it produces as efficiently as possible and does not earn excess profits. If it becomes inefficient or earns excess profits, another more efficient or less profitable firm will enter the market and dominate it instead.

COMPLEMENTARY GOODS

When you buy a computer, you will also need to buy software. Computer hardware and software are therefore complementary goods: two products, for which an increase (or fall) in DEMAND for one leads to an increase (fall) in demand for the other. Complements are the opposite of SUBSTITUTE GOODS. For instance, Microsoft Windows-based personal computers and Apple Macs are substitutes.

COST-BENEFIT ANALYSIS

A method of reaching economic decisions by comparing the costs of doing something with its benefits. It sounds simple and common-sensical, but, in practice, it can easily become complicated and is much abused. With careful

selection of the assumptions used in cost-benefit analysis it can be made to support, or oppose, almost anything. This is particularly so when the decision being con templated involves some cost or benefit for which there is no market PRICE or which, because of an EXTERNALITY, is not fully reflected in the market price. Typical examples would be a project to build a hydroelectric dam in an area of outstanding natural beauty or a law to require factories to limit emissions of gases that may cause ill-health. (See SHADOW PRICE.)

ECONOMIES OF SCALE

Bigger is better. In many industries, as output increases, the AVERAGE cost of each unit produced falls. One reason is that overheads and other FIXED COSTS can be spread over more units of OUTPUT. However, getting bigger can also increase average costs (diseconomies of scale) because it is more difficult to manage a big operation, for instance.

EXTERNALITY or External costs or benefits

An economic side-effect. Externalities are costs or benefits arising from an economic activity that affect somebody other than the people engaged in the economic activity and are not reflected fully in PRICES. For instance, smoke pumped out by a factory may impose clean-up costs on nearby residents; bees kept to produce honey may pollinate plants belonging to a nearby farmer, thus boosting his crop

GDP

Gross domestic product, a measure of economic activity in a country. It is calculated by adding the total value of a country's annual output of goods and services. GDP = private consumption + investment + public spending + the change in inventories + (exports - imports). It is usually valued at market prices; by subtracting indirect tax and adding any government subsidy, however, GDP can be calculated at factor cost. This measure more accurately reveals the income paid to factors of production. Adding income earned by domestic residents from their investments abroad, and subtracting income paid from the country to investors abroad, gives the country's gross national product (GNP

FREE RIDING

Getting the benefit of a good or service without paying for it, not necessarily illegally. This may be possible because certain types of goods and services are actually hard to charge for--a firework display, for instance. Another way to look at this may be that the good or service has a positive externality. However, there can sometimes be a free-rider problem, if the number of people willing to pay for the good or service is not enough to cover the cost of providing it. In this case, the good or service might not be produced, even though it would be beneficial for the economy as a whole to have it. public goods are often at risk of free riding; in their case, the problem can be overcome by financing the good by imposing a tax on the entire population.

MARKET FAILURE

When a market left to itself does not allocate resources efficiently. Interventionist politicians usually allege market failure to justify their interventions. Economists have identified four main sorts or causes of market failure.
The abuse of MARKET POWER, which can occur whenever a single buyer or seller can exert significant influence over PRICES or OUTPUT (see MONOPOLY and MONOPSONY).

EXTERNALITIES - when the market does not take into account the impact of an economic activity on outsiders. For example, the market may ignore the costs imposed on outsiders by a firm polluting the environment.

PUBLIC GOODS, such as national defence. How much defence would be provided if it were left to the market?

Where there is incomplete or ASYMMETRIC INFORMATION or uncertainty.

Abuse of market power is best tackled through ANTITRUST policy. Externalities can be reduced through REGULATION, a tax or subsidy, or by using property rights to force the market to take into account the WELFARE of all who are affected by an economic activity. The SUPPLY of public goods can be ensured by compelling everybody to pay for them through the tax system.

MONOPOLY

When the production of a good or service with no close substitutes is carried out by a single firm with the MARKET POWER to decide the PRICE of its OUTPUT. Contrast with PERFECT COMPETITION, in which no single firm can affect the price of what it produces. Typically, a monopoly will produce less, at a higher price, than would be the case for the entire market under perfect competition. It decides its price by calculating the quantity of output at which its MARGINAL revenue would equal its marginal cost, and then sets whatever price would enable it to sell exactly that quantity.

In practice, few monopolies are absolute, and their power to set prices or limit SUPPLY is constrained by some actual or potential near-competitors (see MONOPOLISTIC COMPETITION). An extreme case of this occurs when a single firm dominates a market but has no pricing power because it is in a CONTESTABLE MARKET; that is if it does not operate efficiently, a more efficient rival firm will take its entire market away. ANTITRUST policy can curb monopoly power by encouraging COMPETITION or, when there is a NATURAL MONOPOLY and thus competition would be inefficient, through REGULATION of prices. Furthermore, the mere possibility of antitrust action may encourage a monopoly to self-regulate its behaviour, simply to avoid the trouble an investigation would bring.

PATH DEPENDENCE

History matters. Where you have been in the past determines where you are now and where you can go in future. Indeed, even small, apparently trivial, differences in the path you have taken can have huge consequences for where you are and can go. In ECONOMICS, path dependence refers to the way in which apparently insignificant events and choices can have huge consequences for the development of a market or an economy.

Economists disagree over how widespread path dependence is, and whether it is a form of MARKET FAILURE. One focus of this debate is the QWERTY keyboard. Some argue that the QWERTY design was deliberately made slow to use so as to overcome a jamming-at-speed problem in early typewriters. Much faster alternative layouts of keys have failed to prosper, even though the anti-jamming rationale for QWERTY has been defunct for years. Others say that the QWERTY system is as efficient a layout of keys as any other and that its success is a triumph of MARKET FORCES. Having invested in learning to make and use the QWERTY keyboard, it makes no economic sense to switch to an alternative that is no better than QWERTY.

PROPERTY RIGHTS

Essential to any market economy. To trade, it is essential to know that the person selling a good or service owns it and that ownership will pass to the buyer. The stronger and clearer property rights are, the more likely it is that trade will take place and that PRICES will be efficient. If there are no property rights over something there can be severe consequences (note from Hoffman and Nembhard: one can also think of community or public property rights; this is an approach used in some environmental discussions)

PUBLIC GOODS

Things that can be consumed by everybody in a society, or nobody at all. They have three characteristics. They are:

non-rival - one person consuming them does not stop another person consuming them;
non-excludable - if one person can consume them, it is impossible to stop another person consuming them;
non-rejectable - people cannot choose not to consume them even if they want to.

Examples include clean air, a national defence system and the judiciary. The combination of non-rivalry and non-excludability means that it can be hard to get people to pay to consume them, so they might not be provided at all if left to MARKET FORCES. Thus public goods are regarded as an example of MARKET FAILURE, and in most countries they are provided at least in part by GOVERNMENT and paid for through compulsory TAXATION. (See also global public goods.)

SUBSIDY

MONEY paid, usually by GOVERNMENT, to keep PRICES below what they would be in a free market, or to keep alive businesses that would otherwise go bust, or to make activities happen that otherwise would not take place

SUBSTITUTE GOODS

Goods for which an increase (or fall) in DEMAND for one leads to a fall (or increase) in demand for the other – Coca-Cola and Pepsi, perhaps

RATIONAL ECONOMIC ACTOR: "ECONOMIC MAN"

At the heart of economic theory is *homo economicus*, the economist's model of human behaviour. In traditional CLASSICAL ECONOMICS and in NEO-CLASSICAL ECONOMICS it was assumed that people acted in their own self-interest. Adam SMITH argued that society was made better off by everybody pursuing their selfish interests through the workings of the INVISIBLE HAND. However, in recent years, mainstream economists have tried to include a broader range of human motivations in their models. There have been attempts to model ALTRUISM and CHARITY. BEHAVIOURAL ECONOMICS has drawn on psychological insights into human behaviour to explain economic phenomena

SUSTAINABLE GROWTH

A term much used by environmentalists, meaning economic GROWTH that can continue in the long term without non-renewable resources being used up or pollution becoming intolerable. Mainstream economists use the term, too, to describe a rate of growth that an economy can sustain indefinitely without causing a rise in INFLATION.

TRAGEDY OF THE COMMONS

A 19th-century amateur mathematician, William Forster Lloyd, modelled the fate of a common pasture shared among rational, UTILITY-maximising herdsmen. He showed that as the POPULATION increased the pasture would inevitably be destroyed. This tragedy may be the fate of all sorts of common resources, because no individual, firm or group has meaningful PROPERTY RIGHTS that would make them think twice about using so much of it that it is destroyed.

Once a resource is being used at a rate near its sustainable capacity, any additional use will reduce its value to its current users. Thus they will increase their usage to maintain the value of the resource to them, resulting in a further deterioration in its value, and so on, until no value remains. Contemporary examples include overfishing and the polluting of the atmosphere. (See PUBLIC GOODS and EXTERNALITY.)