

Efficiency is like “good” sex: more is better, except when its not

Edward Morey, February 16, 2010



[Vilfredo Pareto](#) (1848-1923) – did he have good sex?<sup>1</sup>

I won't be defining good sex; I will be defining efficiency

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<sup>1</sup> Pareto, a father of welfare economics, eventually became disillusioned with economics and gave it up.

Assume we all agree on who is and who is not a member of society.

According to economists, an allocation of resources is efficient if it is impossible to change the allocation so as to make one or more members of society better off without making any other members worse off.

So, if an allocation of resources is inefficient, there is the potential for a *free lunch*: it is possible to reallocate resources in a way that makes some better off and no one worse off. When an allocation is efficient, there is no longer this potential.

Efficiency sounds like a good thing – who wouldn't want a free lunch?

There can be an infinite number of allocations that are efficient. Draw a utility frontier for two individuals.

Allocations are either efficient or inefficient, and most, in the real world, are inefficient.

My experience is that most undergraduate economics majors can recite the above definition, but have only a vague notion of what it means.

An important question is how one might decide whether one inefficient allocation is more efficient than another inefficient allocation. I am not sure all economists would agree on how to do this, some might say efficiency is like pregnancy: one is or one is not ..., and there “ain’t no in-between.”

Consider two allocations of resources: allocation A with lots of steaks and flat-screen TVs and allocation B with less of that stuff but with more parks and cleaner air.

Shifting from B to A would make some individuals better off and some worse off. Now consider how much those who would be better off would pay, in the common unit of exchange, to shift from B to A, and then consider how much the losers would be willing to pay to stop the shift. If the gain to the gainers, in terms of the units of exchange, is greater than the loss to the losers, one might define allocation A as more efficient than allocation B.<sup>2</sup> We will use this as a simple definition of *efficiency increasing*.

Not that changes that make some better off without making any others worse are efficiency increasing. Economists like these kinds of changes (think they are “good” and “right”).<sup>3</sup>

This is why economists typically like market transactions. If I buy a head of organic broccoli for \$6.50 at Whole Foods, according to economists, I am better off (I would not have voluntarily made myself worse off) and Whole Foods is better off (otherwise they would not have voluntarily sold it for \$6.50). And, no one else is worse off, so the new allocation is more efficient than the old allocation. In addition, the exchange is a Pareto Improvement. Things are not so simple if I buy instead cigarettes, bullets or gas: in those cases, individuals other than the traders might be negatively affected.<sup>4</sup>

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<sup>2</sup> This definition of efficiency increasing is not without its problems. For example, by this definition if one starts at B one might conclude that A is more efficient than B, but if one starts at A conclude that B is more efficient than A.

<sup>3</sup> Note that a change that makes some better off without making any others worse off is sufficient for the change to be efficiency increasing, but it is not necessary.

<sup>4</sup> Other could also be affected by my broccoli purchase depending how the broccoli was grown and whether I will eat it with my mouth open.

# What economists assume/believe shapes their views on efficiency and social welfare (the welfare of society)?

Economists are always assuming things: I am not sure what they believe.

For example, in my research papers I typically write stuff like “Assume individuals have well-behaved preferences.” That does not mean I believe people have well-behaved preferences. I am not sure what people do or don’t have in their minds.

Most economists often assume (believe?):

- People have preferences: they can rank bundles of stuff: as in, everything else constant, I prefer bundles that contain bottles of fine wine and cartons of hazelnut gelato over those with Bud Light and liver-flavored sorbet. Maybe I prefer a world with more schools and fewer wildernesses to one with fewer schools and more wildernesses. More generally, economists assume an individual has a ranking over states of the world.
- Preferences have some permanence.
- People know their preferences
- One’s preferences do not depend on one’s constraints (income, prices, etc.), nor the mechanism (markets or central planning, or ???) one’s society uses to determine who gets what.
- Social welfare (the overall welfare of society) should depend on the preferences of its members. For example, if a change/reallocation provides some members of society with a more preferred bundle and no member with a less preferred bundle, the change increases social welfare, and this is good. Economists refers to this specific type of change as a *Pareto Improvements* (named for the Italian for a while economist Vilfredo Pareto (1848-1923))
- This last assumption/belief implies that the best allocation of society’s resources must be an efficient allocation. If the allocation were inefficient it is still possible to increase social welfare. Remember that that many different allocations can be efficient.
- Economists assume that the allocation that is best from society’s perspective (maximizes social welfare) is the fairest allocation amongst all of the efficient allocations. Don’t ask an economist how to determine what is and is not fair. The best answer you are likely to get is “That is not up to me?”

- **Contrary to popular belief**, most economists do not believe that all efficiency increasing changes increase social welfare. Some are welfare increasing and some are not. For example, if my willingness to pay to ax murder you is greater than your willingness to pay to stop me – I am rich and you are poor – my whacking you is efficiency increasing (assume your friends and relatives don't care), but most economics would not conclude from this benefit-cost calculation that my act increases social welfare.
- Even more amazing, economists believe that efficiency decreasing changes might increase social welfare. For example, banning ax murdering might be inefficient but still increase social welfare. Demonstrate with a UPF.
- And finally, most economists implicitly, or explicitly, assume that only the preferences of humans count.<sup>5</sup>

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<sup>5</sup> There is nothing in the logic of economics that precludes non-human animals from having preferences and moral standing. One might reasonably argue that the calculus of economics requires that society's members have preferences, so animals and plants without preferences should be excluded. (Individuals who argue that living things should be excluded if they lack preferences, should also exclude brain-dead humans.) Do some plants have preferences? Which animals do not have preferences? Excluding non-human animals with preferences, or the French, from society is simply an ethical judgment.

Not that if non-humans have no moral standing, our perceptions of their preferences can count in the indirect sense that humans we might care about their welfare. Economists would all agree that a human can get utility from a live non-human animal, also from a dead one on the plate.

These assumptions leave economists with little to say about what is good and bad policy (what actions will and won't increase social welfare).

We can say that policies that lead to Pareto Improvements (help some, hurt no one) are good.<sup>6</sup>

We can also say that efficiency increasing policies are **potentially** good, because an efficiency increasing change can be converted into a Pareto Improvement if the gainers compensate the losers for their losses. We call efficiency increasing changes that make some members of society worse off *Potential Pareto Improvements*.<sup>7</sup>

The problem is that few proposed policies are Pareto Improvements; most policies and laws hurt somebody. So, in most cases, economists have little to say.

When asked, economists shuffle their feet and mumble stuff like "Efficiency is good but one must also consider the fairness of the policy and that policies that are efficiency increasing but highly unfair might decrease social welfare."

As an example consider a policy to build a ski area in northern India. Further imagine that the development with its snowmaking would decrease water for subsistence agriculture. The development might be worth millions to the super-rich Indians who now are forced to ski Aspen and Zermatt, and the poor farmers might only pay a few thousand to stop the project (all they have). Many economists would not argue the project increases social welfare, even though it is a PPI.<sup>8</sup>

Economists are left with the role of determining the implications of different policies, typically estimating who will win and who will lose, and estimating the dollar gain to the winners and the dollar losses to the losers.

Much of my research involves estimating these gain and losses.

Who gains and who losses is potentially valuable information of the individual or group (elected official, King, leader) who determines whether the policy will be enacted.

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<sup>6</sup> If non-human animals are not members of society, then actions that make people better off at the expense of animals are Pareto Improvements. I get a benefit from catching a fish but the pain to the fish does not count as a cost because the fish has, by assumption, no moral standing.

<sup>7</sup> Potential Pareto Improvements are also called [Kaldor-Hicks Improvements](#).

<sup>8</sup> That said, the policy would be welfare increasing if the rich skiers compensated the poor farmers for their losses, so, in the end, everyone is better off.

Is there a way out of the economists' dilemma of having made assumptions that make economists unable to say whether most economic policies are good or bad?

Economists have come up with two ways to make themselves more policy relevant:

One: Assume each individual gets a numerically-measurable amount of happiness/utility from each bundle (allocation of stuff) and that these numerical amounts, positives and negatives, are comparable (can be added) across individuals. E.g. assume anything that passes a B-C test is welfare increasing, or some weighted version of this.

And two: Punt - assume some small number of different *social welfare functions* (what are those? – defined soon) and then, for a given policy, determine whether it is good or bad, for each of these social welfare functions. This can be done without ever saying which social welfare function is the correct one. The economist is left to make statements like, “The policy is good if the social welfare function is I, but bad if it is II.”

Option one was embraced by many, now dead, economists and Utilitarians, but has been shunned by most modern economists.<sup>9</sup>

This might be changing and it will be discussed in our section on *Happiness and Welfare Economics* (see the essay [Happiness is a warm gun](#)).

Put simply, if economists conclude that individuals have cardinal utility (four units of happiness are twice as good as two units), it is comparable across individuals, and figure out how to measure it, they will determine a policy is good (bad) if the policy increases (decreases) net utility. That is, economists return to being Utilitarians in the “felicity calculus” sense of the term.<sup>10</sup>

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<sup>9</sup>For example, back when, at least a 100 years ago, economists assumed individuals had cardinal utility; now most of us assume only ordinal utility (the ability to rank bundles).

<sup>10</sup> Here, I use the phrase cardinal preferences to denote what I have more formally defined as *strongly-cardinal preference* (Morey, E.R., "Confuser Surplus", *American Economic Review*, Vol. 74 (No. 1), March 1984). There, I make a distinction between *strongly* and *weakly* cardinal preferences.

What, pray tell, is a social-welfare function?

Put simply, a social welfare function is a *rule* that society uses for determining whether one allocation is better or worse than another – whether it increases social welfare.

It is called a “function” because it can be viewed as a mathematical function that attaches a number to each possible state of the world, higher numbers corresponding to higher social welfare.

Now, if there were such a rule, there would be no need for economists to determine good from bad: the rule would answer the question what is good and bad policy.

There would also be no need for legislative bodies, except at the beginning to write the rule. Loosely speaking, the U.S. constitution is an incomplete social-welfare function.

The U.S. Constitution is the mechanism (set of rules) that our founding fathers developed to decide what is good and bad policy. As set out in the Constitution, the Congress and the President make policies and the Supreme Court makes sure these policies don’t violate the Constitution/rules.

Note that the rule in our Constitution is not a benefit-cost rule. It is a process rule: we like the new allocation (policy) better than the old one if we followed the correct decision process, without violating a list of basic rights.

Consider a benefit-cost type social-welfare function: a re-allocation (move to another state) is social welfare increasing if it is a PPI.<sup>11</sup>

In more detail, a social-welfare function is a mathematical function that ranks allocations (assigns a number to each allocation such that the higher numbers are attached to more preferred bundles). An allocation can be thought of as a *state of the world*. For example, in a society of three people (Fred, Penny and George), and three goods (number of runs skied (S), bottles of scotch drank (B) and air quality (A))

$$SW=SW(S_f, B_f, S_p, B_p, S_g, B_g, A)$$

where  $B_p$  is the number of bottles of scotch drank by Penny. Note that while Fred, Penny and George can consume different amounts of skiing and scotch, they are restricted to consume the same air quality. A particular set of numbers for  $S_f, B_f, S_p, B_p, S_g, B_g$ , and  $A$  are referred to as a state of the world.<sup>12</sup>

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<sup>11</sup> This rule actually would not be a SWF because it could result in the following inconsistency: if at A a move to B is social welfare increasing and if at B a move to A is social welfare increasing. That is, this “rule” will not always generate a consistent ranking of states.

<sup>12</sup> The example is simple. One should include in the function all of the other things that affect us such as who is having sex with whom, the weather, whether there is or is not free speech, and our foreign policy. For example,  $SW=SW(S_f, B_f, S_p, B_p, S_g, B_g, A, FS, F_{fp}, F_{fg}, F_{pg}, SX_{fg})$  where  $FS=1$  if there is free speech and zero otherwise,  $F_{fp}$  is the degree of friendship between Fred and Penny,  $F_{fg}$  is the degree of

So, a policy maker could ask an economist to judge a project in terms of X different SWFs and report back. Anyone can make up a mathematical function that assign numbers to states of the world, and different functions will appeal to different people.

Alternatively assume the government or policy maker chooses a SWF. Given that society has only a limited amount of resources, economists would help to figure out which allocations/states maximizes social welfare given the constraints of the society – this task requires only determining which allocations are and are not feasible.

Once the optimal allocation is determined the authorities could just tell everyone what to do, and give everyone their component of the social-welfare maximizing bundle --no need for a market or other allocative mechanism.

Remember that economics do not like markets for what they are, but rather for what they accomplish. We, in principle do not care which process was used to allocated resources and distribute goods and services. We care about the outcome/consequences of the process.

One could possibly use a market to allocate to achieve the social-welfare maximizing bundle, but why? It would be difficult; the government would have to tweak the initial distribution of wealth so that the equilibrium market allocation would turn out to be the welfare-maximizing allocation.

Most economists believe that a society's social welfare functions should be a function of the preferences of it's members such that Pareto Improvements increase social welfare and changes that make some worse off and none better off decrease social welfare.<sup>13</sup>

Other than that, there is no consensus amongst economists as to what additional properties the function/rule should have.

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friendship between Fred and George,  $F_{pg}$  is the degree of friendship between Penny and George, and  $SX_{fg}$  is the number of times a week Fred and George have sex.

<sup>13</sup> Recollect that a social welfare function is not required to be a function of the preferences of the members of society. Consider, for example, the following two possible social welfare functions for the U.S.: social welfare is a function of only the number of U.S. citizens (having more people increases social welfare), or the ranking of allocations in the U.S. is chosen by Carla Bruni, the latest wife of the French President (Carla is not a U.S. citizen).

Kenneth Arrow won the Nobel Prize in Economics for determining that it was impossible to have a social welfare function with five properties he proposed, even though taken individually most people would find each property desirable. His result is called the Arrow Impossibility Theorem.

Many other economists have written papers showing that what seems like reasonable rules will lead to implications of good and bad that many would disagree with, or lead to intransitive rankings (A is preferred to B, B to C, and C to A)<sup>14</sup>

Put simply, this research shows that it would be difficult to come up with an operational social welfare function that would have wide appeal.

For example, majority voting can lead to tyranny of the majority, benefit-cost analysis might advocate ax murdering, and a law against torture might stop a government from stopping a terrorist attack that kills thousands.

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<sup>14</sup> The U.S. Constitution can lead to intransitive rankings.

## In closing

First, a question: What would economists, and others, have to say about efficiency and social welfare if either people do not have preferences, or people have them but do not know what they are.

Evidence from psychology and economics suggests that people might not have preferences in the economist's sense of the word. If either people do not have preferences, or have them but don't know them, how would one decide if a policy increases social welfare, or, for that matter, even what social welfare is?

We will look at the research on whether individuals have or know their own preferences when we discuss the pursuit of happiness.