III. Proposed Welfare Criteria

How do we decide whether a certain reallocation of resources, (e.g., a government project) will increase or decrease social welfare? Our whole course is directed towards answering this question.

As you should be starting to figure out, this question is both very important and very difficult to answer. The answer seems to require a lot of information.

What welfare economists have tried to do is to develop simple welfare criteria that the government can use to evaluate different projects. By simple, I mean a criteria that do not have all the informational requirements noted above, e.g., a criteria that can be used to determine whether a tax should be imposed on fish, or that whether social welfare will increase when a certain amount of pollution is abated.

Consider now some simple rules (criteria) that have been proposed as ways to determine if a reallocation of resources (project or policy) will increase social welfare.

III. A. The Pareto Criterion

A basic criterion used in comparing situations is the Pareto Criterion named for Vilfredo Pareto (1848-1923). By the Pareto Criterion, a reallocation of resources increases social welfare if it makes some members of society better off (↑ their utility) and doesn't make any members worse off (↓ their utility).

While most would agree that when the conditions for the Pareto Criterion are fulfilled, the reallocation will increase social welfare, the Pareto Criterion, unfortunately, cannot be used to evaluate most projects. Most projects make at least one person worse off. In these cases the Pareto Criterion gives us no guidance. (As you can see the Pareto Criterion is not a SWF.)
III. B. The Kaldor Criterion

This lack of guidance from the Pareto Criterion led Kaldor to develop a criterion known as the Kaldor Criterion. The Kaldor Criterion says a move from allocation A to allocation B improves social welfare if the amount the potential gainers would pay (give up in terms of commodities/money) for the move is greater than the amount the potential losers would pay to stop the move. For example, in the diagram, the Kaldor Criterion would say a move from situation I to II increases social welfare because individual A could compensate B and move society to point III at which point both are clearly better off than at I. 

Note: If the compensation actually took place, the Pareto Criterion could be used to evaluate the move. The Kaldor Criterion says II is preferred to I even if the compensation does not take place. Kaldor would say make the move if it is a potential Pareto improvement.

Kaldor thought his test got around the problem of making interpersonal comparisons of utility (i.e., the problem of specifying a SWF). We will soon conclude that he was wrong.

Scitowsky discovered a major problem with the Kaldor criterion. The Kaldor Criterion can say that a move from I to II will increase social welfare, but once at II the Kaldor Criterion might very well tell us a move from II to I will also increase social welfare. This is an important flaw of the Kaldor Criterion.
For example, using the figure above, if at I, the Kaldor Criterion says a move to II increases social welfare; if at II, the Kaldor Criterion says a move to I increase social welfare. The Kaldor Criterion does not yield an asymmetric ordering. (An ordering \( A > B \) is asymmetric only if \( A > B \Rightarrow B \) is not preferred to A.) Later, we'll see that Benefit–Cost analysis can have the same problem basically because the B–C rule is a special case of the Kaldor Criterion.

### III. C. The Scitowsky Criterion

To get around this reversibility problem (non asymmetry problem), Scitowsky suggested what is now known as the Scitowsky Criterion. The Scitowsky Criterion says a move from I to II increases social welfare if, when at I, II > I by the Kaldor Criterion but when at II, I is not preferred to II by the Kaldor Criterion.

Unfortunately, there are problems with the Scitowsky Criterion. The following ranking of states can result from the Scitowsky Criterion.

\[
\begin{align*}
I & > II \\
III & > I \\
IV & > III \\
\text{but} & \\
II & > IV
\end{align*}
\]

i.e., the ranking will not necessarily be transitive. Since the K criterion is a special case of the S criterion, intransitivities can also result with the Kaldor Criterion.
The following figure demonstrates the potential for intransitivities with the Scitowsky Criterion.

I > II by S Criterion

III > I by S Criterion

IV > III by S Criterion

So by transitivity should have IV > II, but II > IV by S Criterion.

III. D. A Critique of the Kaldor and Scitowsky Criteria

The Kaldor Criterion and Scitowsky Criterion were developed as simple tools policy makers could use to decide whether initiation of a government project will increase or decrease social welfare.

The motivation behind their development was to come up with criteria that didn't involve the comparison of different individual's utility (i.e., the specification of a SWF). The Kaldor and Scitowsky Criteria do, however, involve equity judgements. Each criterion takes the existing distribution of utility as fair (i.e., equitable) so they do make equity judgements about welfare. For example, in the diagram using the Kaldor Criterion,
There is a problem. How can both distributions be "fair"? Both the K & S criteria make equity judgements. They assume the status quo, whatever it currently is, is fair. They both were developed so we could get around the problem of specifying a SWF and making interpersonal utility comparisons. They do not accomplish this goal.

### III. E. Benefit/Cost Analysis

Now let's look at another welfare criterion that is commonly used to make policy decisions. B–C analysis basically says a project will increase social welfare if the PV of the benefits from the project is greater than the PV of the costs. This criterion will lead to the correct answers if the social benefits and costs are measured correctly. But how do B–C analysts measure the social benefits and costs? They generally use market prices. But, how are market prices determined? The existing vector of prices depends on both the allocation and distribution of resources. So, like the other rules, B–C analysis works on the implicit assumption that the existing distribution is fair. When one uses B–C analysis, one assumes that the existing distribution of income is fair. This is a very strong implicit assumption about equity.
Is B–C analysis just a type of Kaldor Test? **YES.** It is just a Kaldor test that measures benefits and costs in a certain way. Make the move if the gain to the gainers is greater than the loss to the losers. So B–C analysis is subject to all the problems to which the Kaldor Criterion is subject. For example, to B–C analysis might say developing the water project is welfare increasing, but after the project is built, B–C analysis might say welfare will increase if the project is dismantled. This can happen if the project is so large that it changes relative prices. For this and other reasons, B–C analysis usually just considers small projects in large worlds. For example, B–C analysis might suffer from a Kaldor-type breakdown if it was used to address the question of whether Colorado should develop its oil shale.

Even if there are no reversibility problems, B–C analysis still implicitly makes inconsistent interpersonal utility comparisons.

The Pareto, Kaldor, and Scitowsky Criteria were developed to reduce the informational requirements of making welfare judgements (i.e., to give us a criterion that doesn't require that we know the SWF). We have seen the effort is not a complete success: The Kaldor and Scitowsky Criteria make welfare judgements by assuming the status quo is fair — besides being a welfare judgement, this assumption also cannot always be true — and the Pareto Criterion is not applicable in very many situations.