

**FRANK**

First about issues of cost benefit analysis, if we're doing it, and then come back to the issues that Lee outlined about what's wrong with cost benefit analysis. Because whether or not you believe something is wrong with it, many decisions are made with it.

**ACKERMAN:**

So, well first of all, I'm impressed at what everyone has done here and particularly people doing this level of presentation and level of impersonation of participants in the debate is very impressive.

You seem to have grasped most of the things that I would end up talking about in cost benefit analysis in an initial discussion of it, so let me try to move on to some of the more difficult or advanced issues that I think are touched on indirectly.

The first speaker mentioned the willingness to pay or willingness to accept. This is a distinction that sounds almost the same. They turn out to be extremely different in practice. And economists who have written about methods have pretty much come to a consensus on willingness to pay.

I'm not sure that it's necessarily for that great reason. One of the things it said is that people feel strongly about the environment, they might have ridiculously high willingness to accept values that they wouldn't accept damage unless you offered them an absurdly large amount of money.

But I mean, that might be data rather than a problem in the analysis. Nonetheless, the practice has settled on willingness to pay. I think there's a question about what do the numbers mean if the costs and benefits are not comparably monetized.

I think lurking behind the whole discussion is the assumption that the cost benefit results are meaningful because they are comparably complete. And that if they are not comparably complete, if for instance, the accounting of cost is much more complete than the accounting of benefits, then you have at best, a lower bound rather than a point estimate of the exact right estimate. So, you know, that's also essentially never recognized sometimes. There's a throwaway qualification about what the unquantified benefits might mean.

The question about how economic benefits of job creation are handled is a separate puzzle. This depends on the macroeconomic theories that one subscribes to. Cost benefit analysis is sometimes, but not necessarily embedded in a theory that assumes free markets reach a state of employment more or less all the time.

Computer generally equilibrium models, which essentially conceal this assumption behind waves of mathematics, but assume that labor markets clear. Well, guess what? If labor markets clear, you don't create net jobs by putting people to work.

There are essentially no policy makers in the country who actually act as if they believe this. I mean, are we creating local jobs is a central question for every policymaker. So in that sense, the calculation is correct relative to what people assume. But not necessarily correct relative to the theories.

The who should, the question of is it worth doing this. You know, does cost benefit analysis on its own terms show that it's worth remediating versus what does it show about development are, as I think people noted, are two separate questions.

And what it showed, you know, is it worth remediating is a question that takes cost benefit analysis. What should be developed there strikes me as probably a more straightforward financial calculation about development. Unless it has environmental impacts we haven't talked about.

Also the question of who should, who should pay versus who benefits, are again, separate questions. Cost benefit analysis identifies, again in its own terms, is it worth it for society to do it, not who should pay. Should the people who benefit the most from development pay for it, is a policy question about distribution of benefits.

If you were building low income housing, you would never suggest that the people who benefited most from low income housing should pay the cost. That's not the point of low income housing. The discounting question I think applies in particular to health costs, one of the other debates--

Which my co-author, Lisa Heinzerling particularly has highlighted, is that if you have diseases that have a long latency period, as you might well in Superfund pollution. Things that will show up 20, 30, 40 years after exposure, do you discount them from the time when the disease appears or from the time when the risk, the exposure occurs? At a high discount rate, this could make a very large difference. The government practice has drifted toward the more conservative approach of discounting from when the disease appears. But the discourse of risk which is involved, seems to point to discounting from the time when the exposure happened, which makes them look much larger.

**LEE:** Just expand on that, because people I think were a little fuzzy about discounting in the first place.

**AUDIENCE:** I have your slides if you want one of those particular slides brought up, your discounting slides.

**FRANK  
ACKERMAN:** Well, let me try just saying it once. So discounting applies to cases where the costs and benefits happen at different years. No one is indifferent between whether costs or benefits happen now or 10 years from now.

And so trying to express everything as an equivalent present value, the farther in the future it is, generally the less it seems like it's worth today. So if costs and benefits happen at very different times, as they do in many environmental problems, the rate at which we discount the future. Right?

We can all agree that getting paid far in the future is worth less than getting paid the same amount today. But how much less is it worth? What's the discount rate? Brings up, that will affect essentially, the trade-off between, the price ratio between the future and the present.

And so the more, the higher the discount rate, the more unfavorable that is. So one of the issues with the kind of toxic health hazards that arise in this scenario in particular, is that you can be exposed to them today and you know, cancer is famous for, many cancers have a very long latency period before there's any detectable disease.

But they come from exposures, childhood exposures, exposures decades earlier. People have the, people who immigrate internationally have the cancer patterns of the country they lived in before they were 20 generally.

So even cancers occur late in life. So in that case, if you're discounting the future at a big value, you're exposed today, you show signs of cancer 30 years from now. Should we treat that as a harm that was done to you today when you were exposed?

Or a harm that was done to you 30 years from now when you had cancer? At a high enough discount rate, those would be very different.

**AUDIENCE:** For discounting, does that only happen when you, when the costs and benefits are only looked at for present day people? Like if you include future people in your accounting, you no longer have discounting?

**FRANK ACKERMAN:** No. Then you really have discounting. Because there's no way for future people to be at the table and make decisions. So I mean the decisions are being made by today's people. You don't know what the future wants. You don't know what the future's willingness to pay will be.

So we're making decisions about what we think those things are worth. And the farther in the future they are, the more we discount them at a positive rate.

**AUDIENCE:** I don't know if we have time to clarify this. I'm wondering why, I think we can make a reasonable assumption that for air pollution, how much it matters to us. The people in the future also don't want air pollution. They relate to air pollution at least similarly to us, right? There wouldn't be discounting in that case?

**FRANK ACKERMAN:** Well, I mean, people who have thought a lot about this, and again, Mark Sagoff, who Lee mentioned, is a philosopher who's looked at some of this, who essentially concluded we're going to create the future. If we preserve wild nature and act like we value it, we'll probably have descendants who value that.

If we create a world that's all paved and has strip malls and excellent video games, we'll probably create descendants who value that. So it's like, there's a circularity in that what we do today will actually create the future's preferences.

So there is no way actually to do something from a hypothesis about what the future prefers, because not only do they not exist yet, but we will create them.

**LEE:** We have two minutes [INAUDIBLE].

**FRANK ACKERMAN:** Oh, my God. So what do you do with this refusal of cost benefit analysis for such excellent reasons as Lee outlines? You know, I think again, separating in this story, separating the cleanup from the development, there might be a stronger case for the cleanup and a weaker one for development--

The more you're thinking about these non-monetized values. I think that I've come to the conclusion that despite the validity of all those critiques and the importance of saying them every time you get a chance, that if--

You have more than six minutes to talk about one of these things that you have to then go on and say using the prevailing values, what would you get. Try to avoid endorsing them as a sign of, you know, yes, we think this is the greatest idea ever, but saying--

I've ended up saying using values that have become conventional, here's what you would conclude. So in this case, \$35 million damage is not very large if you think it's going to kill a few people. Because values of life in the \$6 to \$8 million range have become conventional.

If we had more time, I could tell you how absurd the basis for the \$6 to \$8 million per life is, and the paradoxes that come from that. But given that that has become semi standard in the policy discourse, a policy that saves a few lives predicatively is clearly worth \$35 million to society in conventional cost benefit terms.

So that things that kind of hold your nose and go with the lesser evil, which American politics is so full of, occurs here too.

**LEE:** Would that last sentence, in a sense, be adequate to just say to the governor, I think you don't need to spend money on an elaborate analysis, even using the prevailing values of \$6 to \$7 million per person.

We undoubtedly would save six or seven lives. Maybe 60 or 70, maybe 600 or 700 in the course of this. So we don't even need to any further analysis.

**FRANK  
ACKERMAN:** I think that's right. If it's clear that it saves a lot of lives, and air pollution often kills people. So the things that reduce air pollution are particularly successful in this. There are a handful of these values that have become standard.

There's been an argument that you shouldn't allow other values, there's been a very partisan discourse about which values are allowed. But the handful of values which have been allowed, create strong arguments for some policies.

Superfund one's actually are trickier to demonstrate the number of deaths than air pollution. Air pollution so clearly kills people that it just doesn't have a chance in these cost benefit settings.

**LEE:** We will stop out of respect for the fact that you have to study more economics. Frank, thank you so much.

[APPLAUSE]