Interchange

Jock D. Ritchie and M. A. Adelman

Mr. Ritchie:

I would just like to make two very brief criticisms which are the kind one should not have to make, I think, to a professor of economics, certainly not at MIT. Morry, I think you've got your two discount rates wrong. I think you've confused current and today's dollars. In real money terms the discount rate is very rarely much above 3 percent; it's usually nearer to 2 percent and in inflationary times one finds oneself in the awkward position of having to pay a bank to hold one's money. Real discount rates for people's real money are often minus numbers. So your ingenious calculation from a $16 price in the year 2000 back to a $1.50 price now, I think, is misleading. On the other hand I think in arguing that Saudi Arabia can have common sense with respect to the year 2000, you have *underestimated* the discount rate for politicians' vision of the future. Very few politicians can see 20 years ahead. Most of them can't see more than four years ahead. Now that's a very high discount rate of future vision. I think if one puts those two factors back into Morry's analysis, which otherwise is one which one has to accept, I think you can come to very different conclusions.

Mr. Adelman:

I'll deal with the second problem first. If indeed the horizon of Saudi politicians is really that short, it makes my own conclusion a great deal stronger. I assumed that they can afford to wait for 25 or 50 years. Jock says they can't afford to wait more than four or five years. That is a much more powerful reason to get the oil out of the ground a great deal faster. So I suppose I have to thank him on that score because I suspect there is a good deal of truth in what he says. Now on the first criticism, which is a good deal more complex, he is quite right that the *risk-free* interest rate in real terms, and real terms is what I was talking about, is very likely in the neighborhood of 3 percent. But I would defend 10 percent as being a proper rate of discount for a highly risky sort of expectation or enterprise. Now risk is an odd subject. There are different ways of allowing for it. For example, I said $16, assuming the use of 1975 technology in the year 2000. Suppose I'd said, "In a world other than our own, in a world which will spend money on research over the intervening time and not waste

massive funds on development, which is, of course, what we are probably going to do, the price set by the cost of producing alternatives would be a great deal less than $16." Now had I, say, used $8, it would have been double counting to say $8 discounted by a high-risk rate. What I did was to say $16 and say that all kinds of things *could* happen, some of which are assuredly going to happen. That is why I said a nominal rate would be not 10 percent but 15 or, if Jock wants to push me, I'll make it 17. But for a highly risky venture, 17 percent is hardly excessive, so I think that 10 percent in real terms makes plenty of sense. But now suppose, horrid thought, that I am altogether wrong about this and that it should not be 10 percent real, but only 5 percent real. Then you get a premium, not of $1.25, but of $3.50, some of you probably carry pocket calculators around, can do that, make it then $3.50. Still we are talking about a world which is several miles and many dollars away from the world we live in. So if the price then were $4 — this is still a long way from the $11.50 we have now and the $12 or $15 we are going to have before too long — scarcity won't explain the price and the market with which somehow we have to cope.

Mr. Morris:

Well, we have a schedule permitting about 10 minutes of questions from the floor addressed to either of our speakers. Who would like to lead off?

Mr. Syron:

I have a question about Mr. Ritchie's forecast of increase in total energy supplied by gas that is demanded in your scenarios. It seems rather optimistic.

Mr. Ritchie:

Don't confuse the worldwide situation with the U.S. system. The world does not yet have a Federal Power Commission and therefore it does not have a total disincentive to produce combined with a ridiculous incentive to consume. Substantial amounts of natural gas are being found in many areas of the world — in fact, embarrassingly large amounts in the Middle East, from where it is at the moment barely economic to transport it anywhere else. That is just beginning to become economical. My scenario includes a substantial increase in international trade in liquified natural gas. That's the answer to that question.