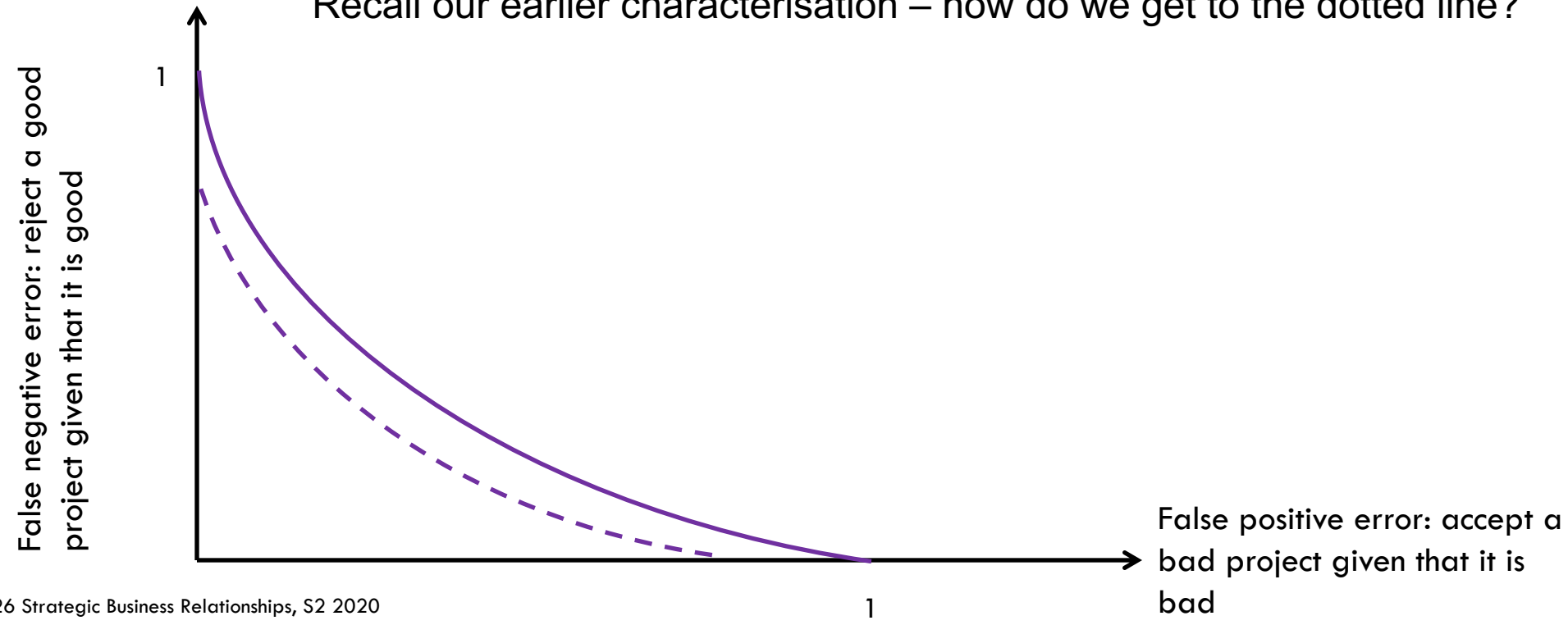
LECTURE 7.6

MAKING BETTER DECISIONS

MAKING BETTER DECISIONS

Recall our earlier characterisation – how do we get to the dotted line?



MAKING BETTER DECISIONS

Doing so is costly and requires investing in some ‘technology’ such as better evaluators.

Consider the example discussed in Lazear (pp. 134-36)

- Planes can take the ‘quick route’ through a storm but at the risk of an accident.
- Alternatively, they can take the long way around the storm.
- Assume that a crash is associated with a large loss of $1bn.

We previously suggested that a hierarchical structure works best here because of the large downside risk. But here the situation is a little different.

WHY?

Hint: think about the pilots our interests and how they align with that of the airline.

MAKING BETTER DECISIONS

Consider the expected cost of going through the storm: the cost of the crash (probability weighted) and the fuel.

$$\textit{Expected cost} = (10^{-5})(-\$1bn) + \$17,000$$

$$= \$10,000 + \$17,000$$

$$= \$27,000$$

Consider the expected cost of going around the storm:

$$\textit{Expected cost} = (10^{-9})(-\$1bn) + \$20,000 = \$20,001$$

Here it is all good and a hierarchical arrangement (where the pilot radios in for instructions) is not needed. A flat structure works fine.

MAKING BETTER DECISIONS

Here the probability of a false positive is zero. An unprofitable choice is not taken when it would have resulted in a crash.

But a false negative occurs with probability close to 1. The shorter route is always rejected even when it would not have led to a crash.

Now suppose that the firm can buy some technology that helps determine if it is safe to avoid a storm. Assume that the technology forecasts that the route through the storm be taken 9999/10000. Hence the probability of crash when the a 'fly through the storm recommendation' is equal to 1 in 100 million. But if the advice to avoid the storm is rejected, then the probability of a crash is 1 in 10.

			Probability crashing when going	
			Through	Around
Probability recommendation	Go through	0.9999	10^{-8}	10^{-9}
	Avoid	10^{-4}	10^{-1}	10^{-9}

MAKING BETTER DECISIONS

The technology allows better decisions to be made.

With a positive recommendation (fly through the storm) the expected cost of the trip through the storm is:

$$Expected\ cost = (10^{-8})(-\$1bn) + \$17,000 = \$17,010.$$

It is still the case that the expected cost of going around the storm:

$$Expected\ cost = (10^{-9})(-\$1bn) + \$20,000 = \$20,001$$

MAKING BETTER DECISIONS

Two questions to consider:

- Should the technology be purchased? This will depend on its cost.
- If purchased what type of authority structure should be put in place? No longer necessarily the case that the a flat structure is ideal. The pilot may not make the same assessment as the technology.

MAKING BETTER DECISIONS

The lesson:

- The interplay between information, decision making structures and incentives is critical.
- With central information available, a hierarchical structure is more likely to make sense.
- When not decentralisation is better.
- But decentralisation works when the interests of the decision maker (the agent) and the principal are aligned.