On the idea that rational actors facing the repeated prisoners dilemma game will pick the pareto-efficient collusion strategy if they sufficiently believe the other party will play the game again given the payoffs. This uncertainty over if/when a user will dishonour resolves the paradox of backward induction and sets up "the circumstances where credible threats and promises to secure a particular strategy, such as cooperation in the prisoners' dilemma, can be made.[2]

Table 1: The Generalized Prisoners Dilemma

		Player Y A	Player Y B
Player X	A	(a, a)	(b, c)
	B	(c, b)	(d, d)

Where c > a > d > b.

If the probability that the game will be played more than one time is P, and more than n times is p_n, than the expected payoff of cooperating with his counter party is

$$EPO_{coop} = a + aP + aP_2 + aP_3 + ...aP_n = \sum_{n=0}^{\infty} aP_n = \frac{a}{1-P}$$

and the expected payoff of defecting against his counter party is

$$EPO_{defect} = c + dP + dP_2 + dP_3 + ...dP_n = c + \sum_{n=0}^{\infty} dP_n = c + \frac{dP}{1-P}$$

than we can define a critical probability threshold where

$$EPO_{coop} > EPO_{defect}$$

resulting in

$$P > \frac{a-c}{d-c}$$

In other terms, If a player believes the probability that his counter party will use the game at least once more after him is greater than $\frac{a-c}{d-c}$, than cooperate is not only the pareto-efficient outcome, but also the nash dominant. When P becomes so great as is practical to assume your counter party will play forever, than we can substitute P for F where

$$F = \frac{1}{1+r}$$

$$F > \frac{a-c}{d-c}$$