Table 3.2 The Promisor's Dilemma after private contracting: where the defector is liable in damages for lost profits

		Player Two	
		Cooperate	*Defect*
Player One	*Cooperate*	3, 3	2, 1
	Defect	1, 2	0, 0

are always better off when they cooperate, and their private incentives are fully aligned with their joint interests. As such, neither will defect.

The Prisoner's Dilemma game illustrates how profitable joint opportunities may be lost when contracts are not enforced. When the buyer pays the price and the seller refuses to deliver, or when the seller delivers and the buyer refuses to pay, the party in breach gets the opportunist's payoff and the innocent party gets the sucker's payoff. Future parties will anticipate this and refuse to enter into agreements. The result is a settled pattern of defection and mistrust in which bargaining gains are abandoned, unless the parties can bind themselves through enforceable bargains.

Beneficial reliance

When the parties refuse to rely on each other's promises, the bargaining loss can usefully be explained through the economist's indifference curves. An indifference mapping also highlights the deficiencies in the reliance and benefits explanations of contracting.

When presented with a choice between different goods (represented along axes of a diagram), a consumer will find himself indifferent between various bundles of goods. He might find that five apples and three oranges are just as good as four apples and four oranges. Or ten apples and no oranges. The line that connects all the points of indifference between one combination of goods and other combinations is called an indifference curve.

For our purposes, let us assume that the two goods are consumption today and consumption tomorrow of money. The indifference mapping will indicate the consumer's preferences as between present and future consumption.

In Figure 3.1, the consumer is given $100 which he must spread over two time periods. The straight line between consumption of $100 in the two periods is called the *budget line* and represents every possible combination of present vs. deferred consumption, given the consumer's fixed amount of money. The frugal ant takes a position at one extreme, saving in the present and spending the entire amount in the second period; while the grasshopper lives solely for today and spends the entire amount in the present period.

contracting: where the defector is

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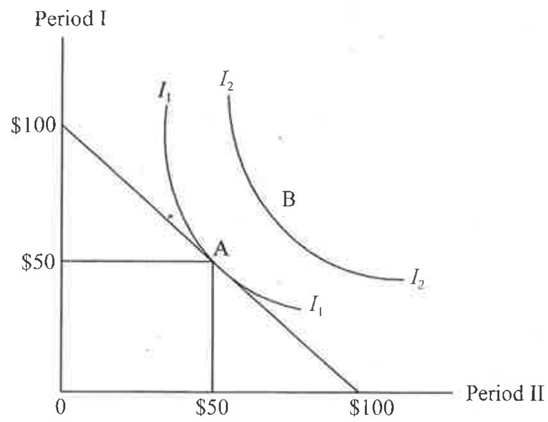

Figure 3.1 The saving decision

At the point of origin the consumer has no goods of either kind. We assume that he always wants more goods and that he will always prefer to be on the highest indifference curve (the one furthest from the point of origin). Given the choice between curves I_1 and I_2 he would, therefore, prefer to be on the latter. As this lies above the budget line, however, it is not a feasible outcome. He simply doesn't have the money. Instead, curve I_1, which is tangent to the budget line at the point of intersection, represents the highest feasible indifference curve available to the consumer with a $100 budget and, as it happens, this assumes equal consumption in the two periods, $50 now and $50 later.[5]

Charles Goetz and Robert Scott have employed an indifference curve model to explain how trust benefits bargainers (see Figure 3.2).[6] Suppose that our subject – call him David – begins with an endowment of $100 and reaches his highest feasible indifference curve at point $A_{50,\ 50}$, where he consumes $50 now and $50 later. David's Uncle Ebenezer tells David he wants to give him another $100. If Ebenezer makes the gift in the first period, we assume (arbitrarily) that David will move to point $B_{100,\ 100}$, again dividing consumption equally in the two periods. However, Ebenezer does not have the $100 in period 1, and can only promise to give David the money in period 2. If Ebenezer promises to make the gift and subsequently performs, and if David relies on the promise by consuming his entire $100 in period 1 and the gift of $100 in period 2, then David will be as well off as he would have been had Ebenezer made the gift in period 1.

Now suppose that Ebenezer promises and David relies in period 1, but that Ebenezer fails to perform in period 2. David will now be at point $C_{0,\ 100}$ and worse off than if he had not relied. Had he refused to trust his uncle, he would be on indifference curve I_{100}; instead, he is now on

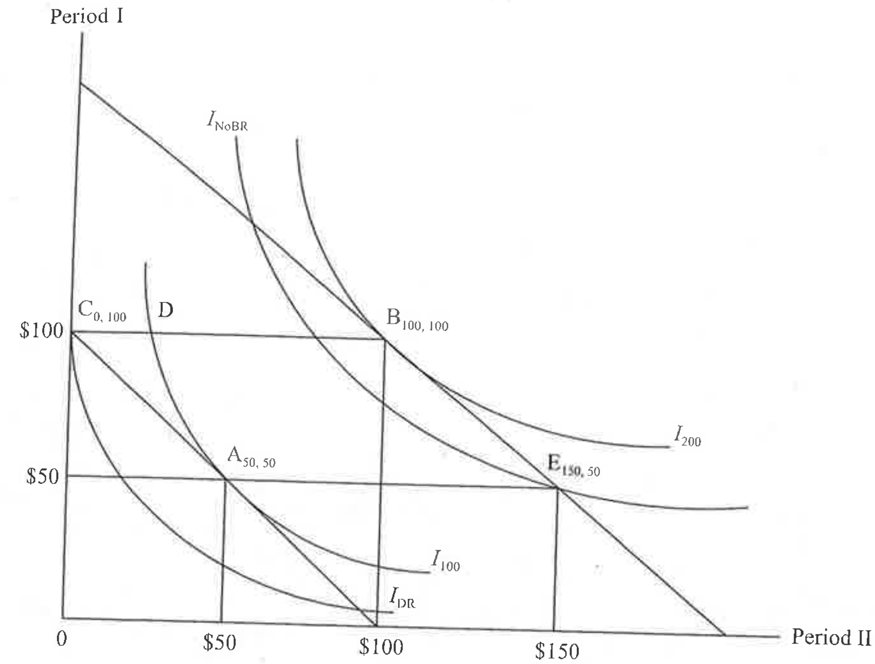

Figure 3.2 Detrimental and beneficial reliance

indifference curve I_{DR}; and the difference represents his detrimental reliance loss. To compensate David for the loss, Ebenezer would have to give David reliance damages of \$CD (which as I have drawn it looks to be about \$25) to bring him back to indifference curve I_{100} and leave him as well off as if the promise had never been made.

Once bitten, twice shy. The next time Ebenezer makes a promise David does not rely. In period 1 David consumes \$50, just as he would have had the promise not been made. If Ebenezer fails to perform, David will consume \$50 in period 2 and no harm will have been done from a reliance perspective. But now suppose that Ebenezer does perform in period 2, and that David finds himself at point $E_{150,\ 50}$. He is better off than he would have been had Uncle Ebenezer not performed, but not as well off as he would have been had he relied and Ebenezer performed. He would then have been on indifference curve I_{200}; but now is only on indifference curve I_{NoBR}.

The difference between indifference curves I_{200} and I_{NoBR} represents how a promisee may be made better off by relying when promises are performed. He can adjust his behavior in expectation of performance, and Goetz and Scott call this *beneficial reliance*. The Goetz–Scott analysis usefully highlights the deficiencies of the reliance and benefits theories we saw in the last chapter. Reliance theorists incorrectly assume that the only kind of reliance is detrimental (and if they had the courage of their convictions they would ban contracting entirely). What they forget is beneficial reliance, where promisees adjust their behavior in expectation of performance and promisors do, in fact, perform. Similarly, benefits theorists look only to the benefit received by the promisor and ignore the benefit the promisee derives from credible promises. Reliance and benefits theorists both miss the crucial contribution of promises and contract law, as reassurance devices that promote promisee reliance.

Moral philosophers who are unaccustomed to looking at problems from the economist's *ex ante* perspective, and who tend to ignore the incentive effects of legal rules, typically examine the question of promissory obligations from an *ex post* perspective, where the promise has been made and the promisee has relied to his detriment. Since they do not see the *ex ante* side of things they miss the element of beneficial reliance, which is the whole point of the institution. Sadly, the same mistake is made by academic lawyers such as Patrick Atiyah who are unfamiliar with the economic analysis of law.

But why stop at beneficial reliance? The ability of promisees to adjust their behavior seems an instrumental good, desirable only so far as it promotes a higher good. We prize beneficial reliance not because we like reliance, but because it permits the parties to exploit joint projects that make them better off. It fosters the creation of wealth and results in a more prosperous society. This might not come down to a simple utilitarianism, but the overlap is sufficiently close that most scholars in the law-and-economics tradition subscribe to utilitarian moral theories, to the extent that they stray beyond a purely positive view of their discipline.

Credible commitments

The institutions of promising and contract law promote beneficial reliance by imposing a cost on the faithless promisor. A breach of promise is a moral wrong, and the promisor suffers a reputational loss. The moral obligation of promising may thus be employed to make a statement of intention more credible. "You say you will come to dinner – but do you *promise*?" Unless backed by the force of law, however, a promise might not suffice, for talk is cheap and often unreliable. A bare promise, said Thomas Hobbes, is "but words, and breath," with "no force to oblige, contain, constrain, or protect any man."[7] To invite promisee reliance, the promisor might therefore have to show a willingness to incur contractual sanctions for breach.

Without contractual sanctions, markets might collapse in what George Akerlof has described as a "market for lemons."[8] Suppose that there are only two commodities: good used cars and defective used cars ("lemons"), with an equal number of both kinds. The seller can tell which car is which, but not the buyer. Could he distinguish them, the buyer would be sidestepped the problem of measuring total utility on an objective scale. While their leaders, men such as William Jevons, Alfred Marshall and F.Y. Edgeworth, agreed with Bentham that utility could in principle be measured, they showed how demand theory could dispense with the need to do so by focusing upon marginal and not total utility.

In a Benthamite world, total utility is the number of utils for each quantity of goods consumed. Marginal utility is the first derivative of total utility, or the difference in total utility as one moves from one unit of consumption to another. If two scoops of vanilla gives one a total of 20 utils, and three scoops 25, the marginal utility of the third scoop is 5 utils. One might therefore think that, in shifting the focus to marginal utility, the problem of measuring utility remains. However, Jevons showed otherwise, by proposing that the ratio of exchange between the parties is the reciprocal of their marginal utilities.[1] That is, the ratio of the marginal utility of oranges to apples for the two of us tells us how many of one fruit we will trade for the other. If I *really* prefer oranges to apples, and you are largely indifferent between them, then I'll give you a lot of apples in exchange for a few oranges. Jevons' model assumes the existence of total utility (even as in calculus the derivative assumes an integral). However, the neoclassicists found they could get along without actually attempting to measure utility.

The neoclassical theory of exchange was enormously strengthened by the indifference curve analysis pioneered by F.Y. Edgeworth. Through the simple preference mapping we saw in Figure 3.2, Edgeworth explained how value-increasing exchange could be modeled with an *ordinal* ranking (first, second, third . . .) that does not assign a measurable *cardinal* value (one, two, three . . .) to personal utility. A move to a higher indifference curve represents a gain in utility, but the diagram does not permit us to quantify the difference. With Jevons' model, Edgeworth's indifference curves resulted in an ordinalist revolution that dispensed with measurable, cardinal utility.

Edgeworth also showed how an infinity of bargaining outcomes are possible in his "Edgeworth Box Function" of Figure 8.1. Jevons had postulated that exchange would take place when the parties' indifference curves are tangent (or touching). But what Jevons had failed to realize was that this might happen at more than one point.

Figure 8.1 resembles the mapping of indifference curves in Figure 3.2, with the difference that Figure 8.1 portrays the preferences of two consumers. For party A the point of origin is at the lower left hand corner of the box, representing a zero endowment of the two commodities x_1 and x_2. Party A's most desired state is the upper right corner, where he has all of the two commodities and party B has none of them. For party B the point of origin is the upper right hand corner, and the most desired state is the lower left hand corner. For simplicity we assume that there are only two commodities and that anything not owned by party

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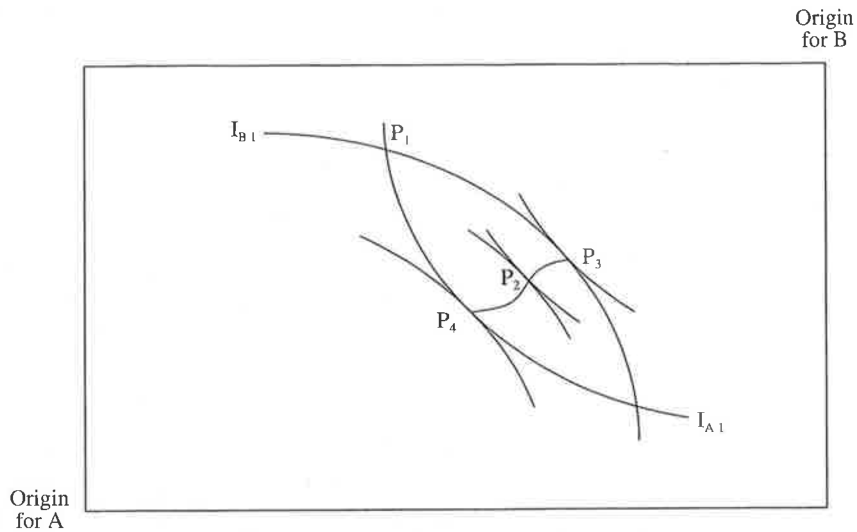

Figure 8.1 Edgeworth Box Function

A is owned by party B. The Edgeworth Box may thus be seen as two indifference curve diagrams, with one flipped over and placed on top of the other.

Assume that the parties begin at point P_1, where A is on indifference curve I_{A1} and B is on indifference curve I_{B1}. This is not a stable equilibrium since the parties can make themselves better off by trades that bring them within the "bargaining lens" formed by the overlap of the two curves. Relative to P_1, any exchange within the lens makes one party better off without making the other worse off and represents a Pareto-superior transformation. As the parties begin to bargain, with both moving to higher indifference curves, the size of the lens will shrink until they reach the point of *Pareto-optimality* where the two indifference curves are tangent and no further Pareto-superior transformations remain to be made.

Figure 8.1 portrays three possible outcomes, where the parties bargain to a Pareto-optimal point that satisfies the Jevons requirement of tangency. At point P_2 the parties split the contractual surplus. However, points P_3 (where all the gains accrue to A) and P_4 (where all the gains accrue to B) are also possible results, since they lie within the bargaining lens and are points of tangency. Since one person is made better off and no one is made worse off, the move from P_1 to either P_3 or P_4 represents a Pareto improvement, just like the move from P_1 to P_2. As I have drawn the curves, the parties might end up at any point of tangency between P_3 and P_4, depending upon the mixture of alertness, sympathy, guile, intelligence and acumen that goes in to form bargaining ability. Economists define the locus of points of tangency, running from P_4 through P_2 to P_3, as the *Contract Curve*, which I have arbitrarily drawn in.

By the 1930s, the ordinalist revolution was complete, and cardinal utility was relegated to the dustbin of economics. What had made cardinal utility so unpalatable was the idea of interpersonal comparisons of utility. It is hard enough to measure one's own happiness in a felicific calculus. However, that task would seem to pale before the difficulty of comparing the utility gains of two different bargainers. I might have a rough sense of how much better off I would be with an additional unit of x_1, but how can I measure how much worse off you would be were I to gain and you to lose a unit of x_1?

Ironically, cardinal utility made a remarkable theoretical recovery through the work of game theorists such as John von Neumann and Oscar Morgenstern in the 1940s and John Nash in the 1950s.[2] For game theorists, the Contract Curve within the bargaining lens represents the core or *presolution* to the bargaining game. This is the set of feasible, Pareto-optimal and individually rational outcomes to the bargain, where an outcome is feasible when it represents an outcome available through cooperation, Pareto-optimal when it is feasible and further cooperative gains are impossible for any coalition of players, and individually rational when no player is better off on his own than he is as a member of a bargaining coalition. Where game theorists departed from the ordinalists was in proffering not only a presolution but also a *solution* to the bargaining game: a unique outcome within the bargaining lens along the Contract Curve which satisfies certain axiomatic standards.

The game theorist's bargaining solution assumes a cardinal rather than a merely ordinal measure of utility. With cardinality, we can assign a measure of utility for each party at every point on the Contract Curve. This need not entail a measure of total utility for each tradeoff of goods. Instead, we might normalize the game by assigning a value of zero to the disagreement point where the bargaining surplus disappears, and a value of 100 to the solution that assigns all of the surplus to only one party.[3] In doing so, we can disregard overall measures of happiness and focus on how the bargain affects utility levels of the two parties.

We can think of the move from presolution to solution by imagining how business parties might negotiate a contract. They begin, let us say, by bargaining over the terms of the contract that assign the risk of loss to one party or the other. If the risks are assigned to the wrong party, he might have to incur wasteful harm prevention costs, with the result that further negotiations and a reassignment of risks might produce a more efficient agreement. When the parties have arrived at the optimal set of terms they have reached a presolution to the bargaining game. What remains to be negotiated is the price, which might be any figure between the highest price the buyer will pay and the lowest price the seller will accept. Each

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price will offer the parties a different division of the bargaining gains, and each is a solution to the bargaining problem.

Figure 8.2 maps the bargaining game of Figure 8.1 onto cardinal utility space. In Figure 8.1 the two axes represented different quantities of goods (e.g. apples and oranges), and the indifference curves reflected ordinal differences in utility from possession of these goods; in Figure 8.2 the two axes measure different values of cardinal utility associated with possession of different quantities of these goods. The point of origin is point P_1 from Figure 8.1, and the concave curve from P_3 to P_4 represents Figure 8.1's Contract Curve as seen in utility space. Once again, the Contract Curve represents the presolution, and what bargaining theorists seek to do is arrive at a particular point on the Contract Curve as the solution to the game.

The best-known solution to the bargaining game is the *Nash solution*, which maximizes the parties' utility gains. This is a two-step operation: first, normalize the utility levels of the parties as we saw above (e.g. 0 to 100), from the worst to the best payoff on the Contract Curve; and second, multiply the utility levels of the parties at various points on the Contract Curve to find the point with the highest joint product. For example, a solution that gives both parties 50 would have a joint product of 2,500 and would be superior to a solution which gives 25 to one party and 75 to the other (for a joint product of 1,875). I assume that P_2 satisfies this test, which would make it the game's unique solution on Nash standards. But there are other tests, which on abstract principles seem no less plausible. For example, David Gauthier has argued for the universal appeal of a principle of minimax relative concession.[4] In Gauthier's model each bargainer begins by claiming the entire bargaining surplus and then

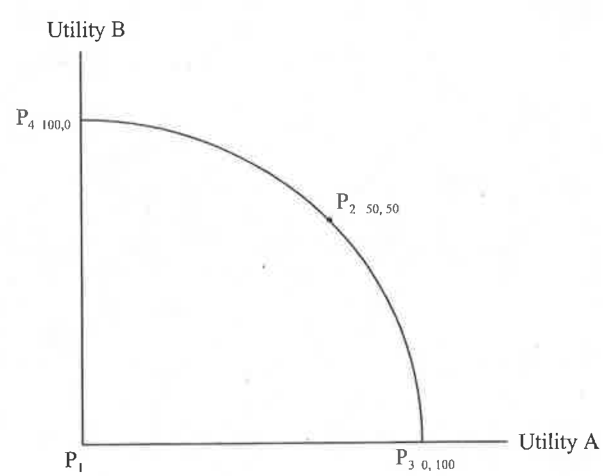

Figure 8.2 The Nash solution