LECTURE 6.7

INFORMATION PROBLEMS

POST-CONTRACTUAL INFORMATION PROBLEMS

Principal-agent relationships:

- A principal engages an agent to perform a service on the principal's behalf (or a task that the principal cares about).

There are many agency relationships within a firm:

- Shareholders appoint a Boards of Directors.
- Boards delegate decision making authority to senior executives.
- Tasks are assigned to successively lower level of employees.

Agency problems arise because the interests of the principal-agent are not perfectly aligned. Moreover, asymmetric information means that these contracting problems cannot be resolved costlessly. Monitoring costs will be incurred.

Residual loss is the loss in gains from trade that result from the conflicts of interest in the agency relationship.

POST-CONTRACTUAL INFORMATION PROBLEMS

Moral hazard: After a contract is written, the agent may take (hidden) actions to benefit herself. That is, the agent acts in their own interests and inconsistently with the interests of the principal.

- It is costly to monitor the actions of an agent
- It is difficult to include all contingencies in a contract

Insurance is a classic example: after insuring, the insured takes more risks.

POST-CONTRACTUAL INFORMATION PROBLEMS

Consider a building firm that wishes to use a legal firm to provide advice. Let *L* be the number of hours of advice given each week. The marginal benefit of advice to the builder is:

$$MB = 200 - 2L$$

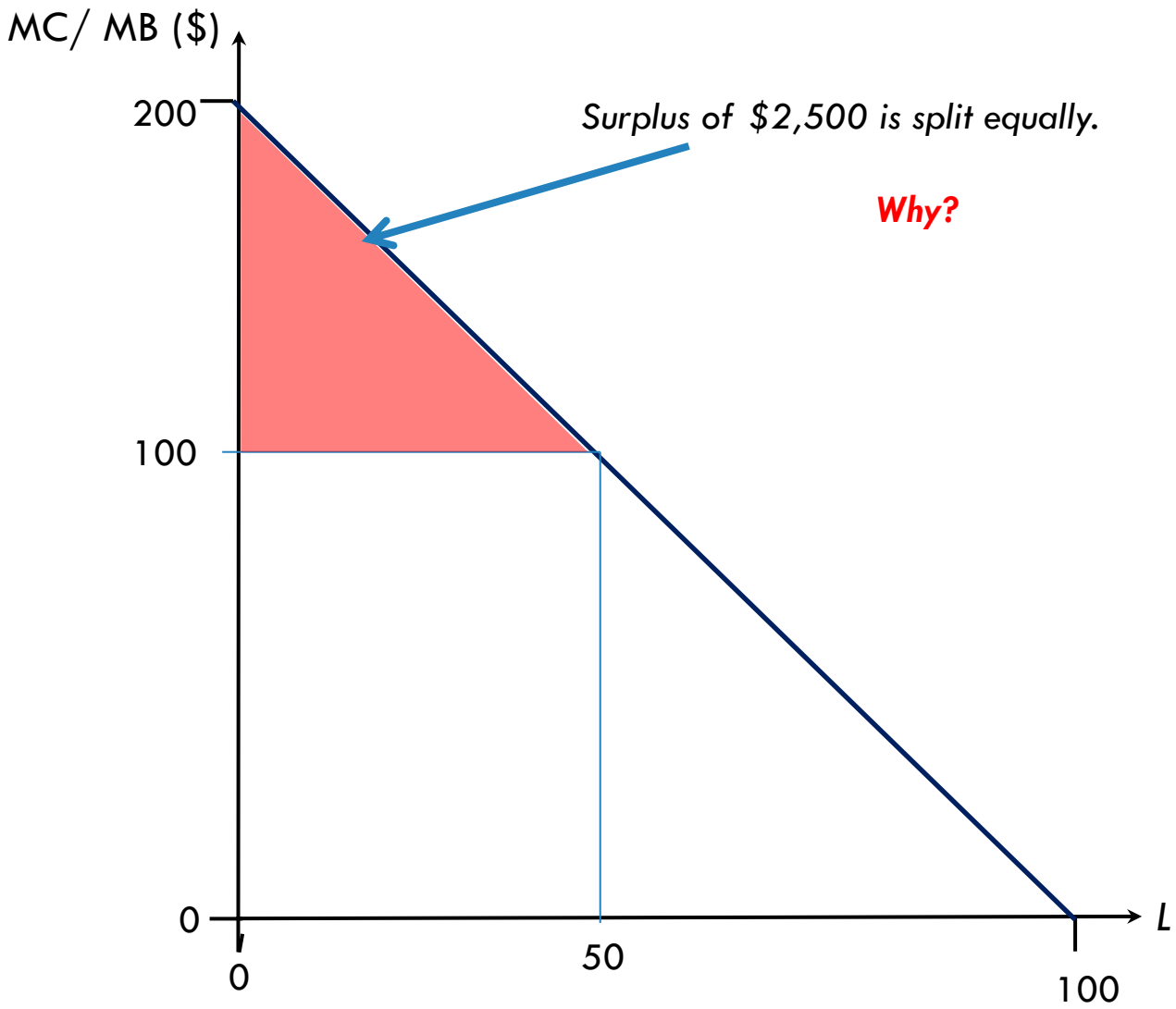
The law firm has constant marginal costs:

$$MC = 100$$

The optimal hours of legal service equates the marginal benefit and marginal cost:

$$MB = MC = 100 \rightarrow \quad L^* = 50$$

For example, a contract that specifies for 50 hours per week at $6250 gives both firms a surplus of $1250.


MC/ MB ($)
200
100
0
0
50
100
L
Surplus of $2,500 is split equally.
Why?

POST-CONTRACTUAL INFORMATION PROBLEMS

What if it is costly to verify the amount of work actually done? If the parties cannot agree on a contract, all surplus will be lost

Suppose instead that the firm can **monitor** the work of the law firm at a cost. The law firm incurs similar **bonding** costs to document its work. Will this resolve the problem of overbilling?

POST-CONTRACTUAL INFORMATION PROBLEMS

Suppose that the builder can pay $400 in monitoring and the law firm $400 in documenting its legal work.

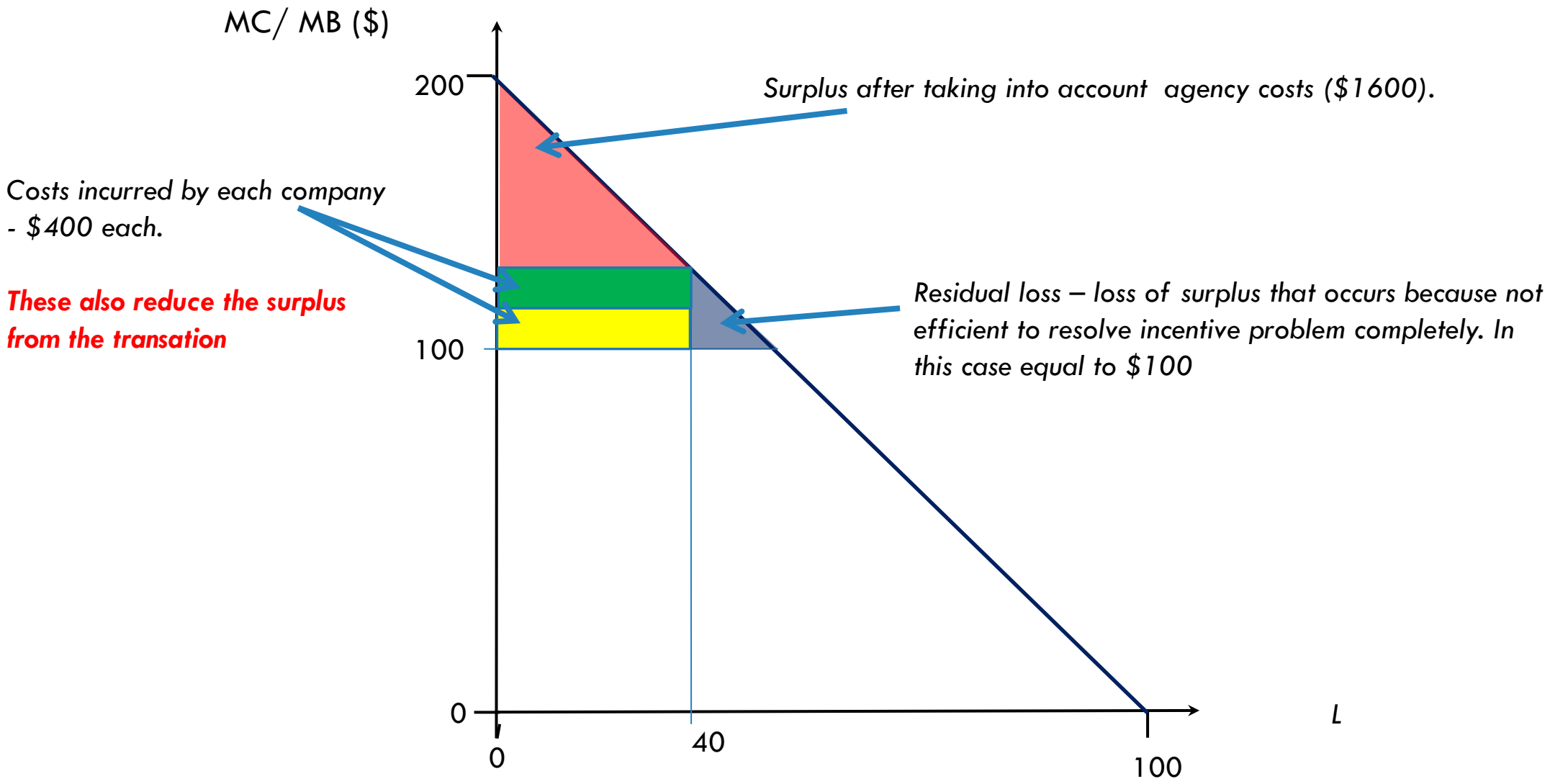
Further suppose that the monitoring can only ensure that at least 40 hours of work is done. As a result, the builder is unwilling to pay for more, so the law firm only provides 40 hours.

Under this framework there is a loss of $100 in surplus through the lower provision of hours, plus $800 in costs between the two forms. That leaves $1600 of surplus.

In splitting this remaining surplus equally, the builder and law firm could settle on a new contract for $5200 per week.

$$\pi_L = 5200 - 40 \times 100 - 400 = \$800$$

$$\pi_B = 6400 - 5200 - 400 = \$800$$


MC/ MB ($)
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40
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L
Surplus after taking into account agency costs ($1600).
Costs incurred by each company - $400 each.
These also reduce the surplus from the transation
Residual loss – loss of surplus that occurs because not efficient to resolve incentive problem completely. In this case equal to $100

PRE-CONTRACTUAL INFORMATION PROBLEMS

Bargaining failures: Sometimes because of information asymmetries mutually advantageous trades are simply never made. Think about bargaining between agents where surplus exists but is not generated.

- Example: Suppose a person is willing to accept a job for as little as $2,500 a month and an employer is willing to pay $3,000. As neither side knows the other's reservation price, the potential employee might ask for $3,500 as a first bid. The employer then discontinues negotiations as they believe they can't get the employee for less than $3,000.

Adverse selection: The agent has private information about her "type" or the hidden details of a contract

- the agent will only contract with the principal in circumstances that benefit her
- e.g. health insurance: healthy people are both cheaper to insure and less likely to apply
- e.g. the market for used cars: if I want to sell my car, it may be because it is unreliable

Various ways to overcome adverse selection, but none are perfect. Moreover, they can often be costly.

IMPLICIT CONTRACTS AND REPUTATIONAL CONCERNS

Many contracts that constitute the firm are implicit.

- Implicit contracts are promises and understandings that are not formalised within legal documents.
- Examples include promises of a promotion for a job well done, or an understandings that quality will be maintained.

Implicit contracts are difficult to enforce in court (by definition). They rely on the incentives of individuals to honour their terms

Reputational concerns Can act as a powerful force to motivate contract compliance. Each party's reputation must be valuable enough to ensure the contract is adhered to.

We have already encountered reputational concerns in the case of Anna and Bert. Recall:

IMPLICIT CONTRACTS AND REPUTATIONAL CONCERNS

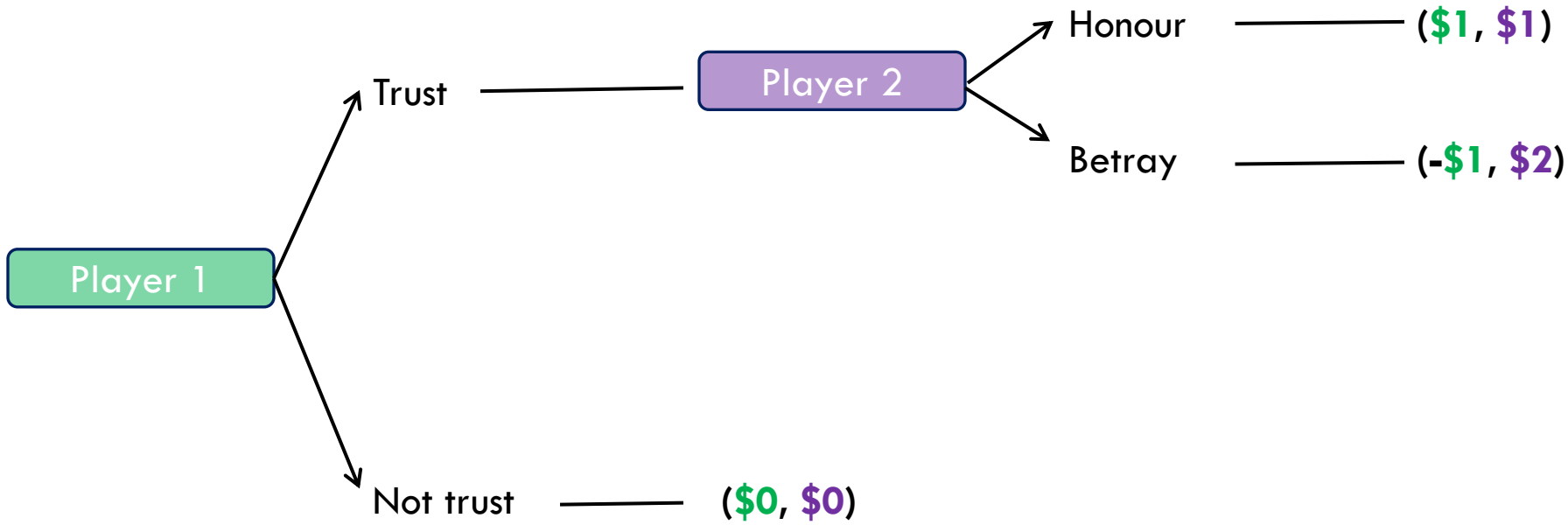
Consider two employees assigned to a team, Anna and Bert. Anna and Bert can work or shirk.

Payoffs reflecting the utility from exerting effort, along with the disutility of effort.

		Bert	
		Shirk	Work
Anna	Shirk	$1000, $1000	$3000, $0
	Work	$0, $3000	$2000, $2000

IMPLICIT CONTRACTS AND REPUTATIONAL CONCERNS

Consider a simple ‘trust game’ in which one party decides whether to trust the other party when they promise that they will be rewarded if they work hard. Could also be used as a model of a bonus based on subjective performance evaluation.



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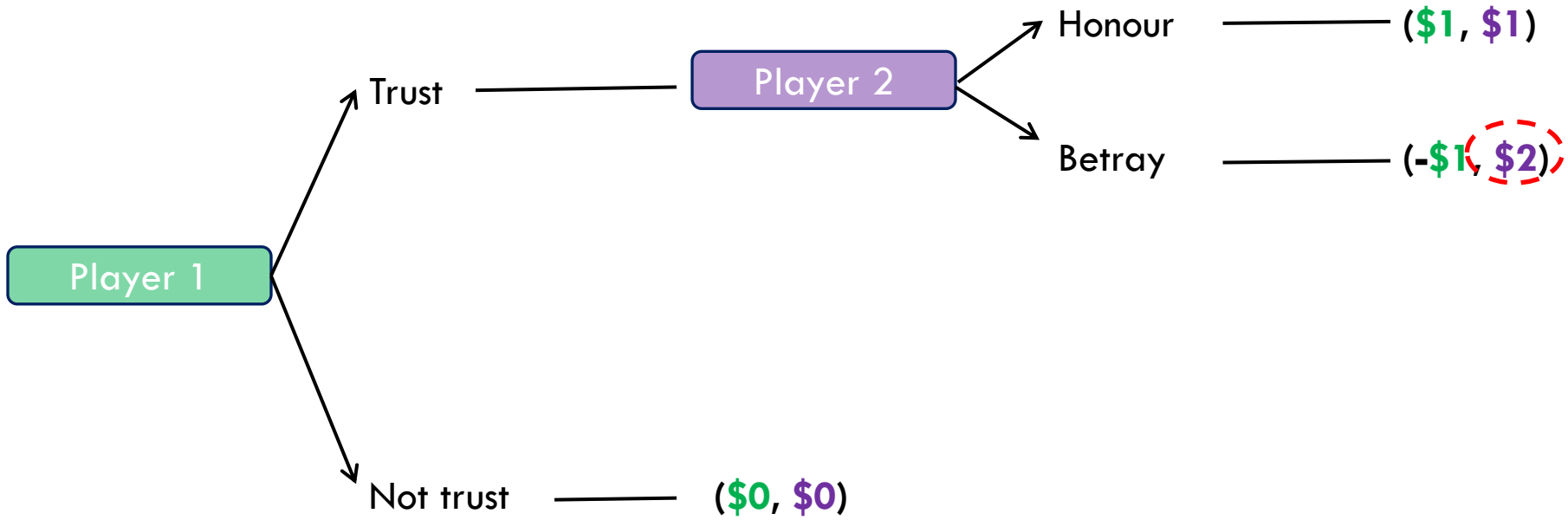

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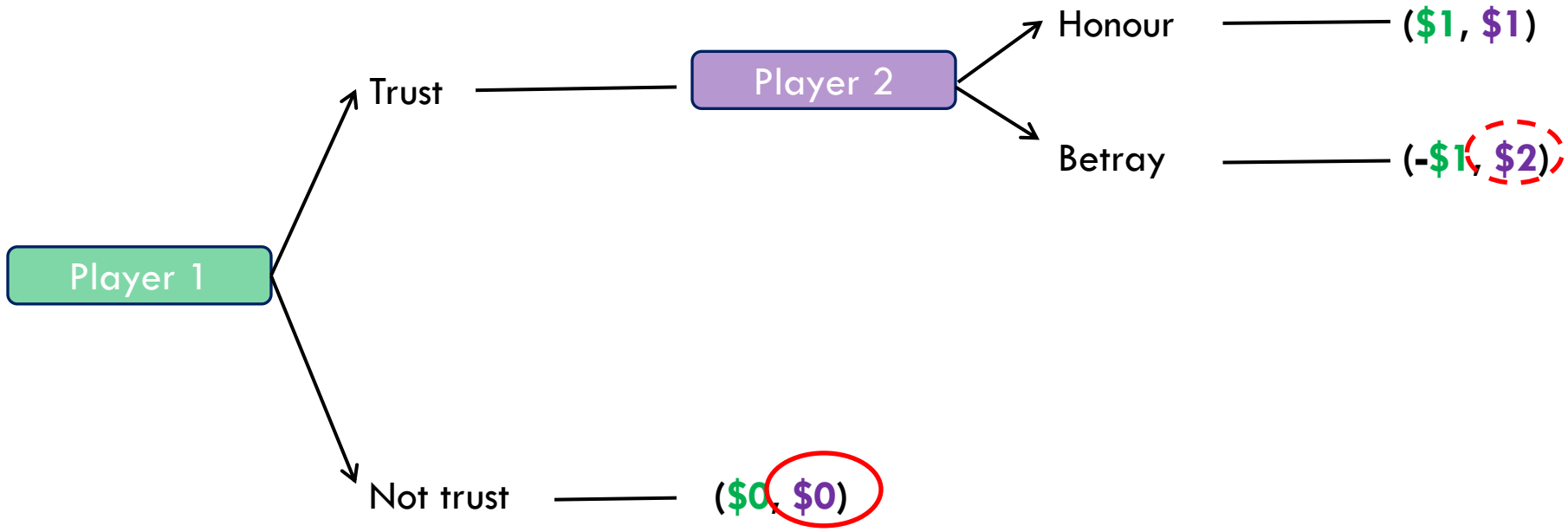

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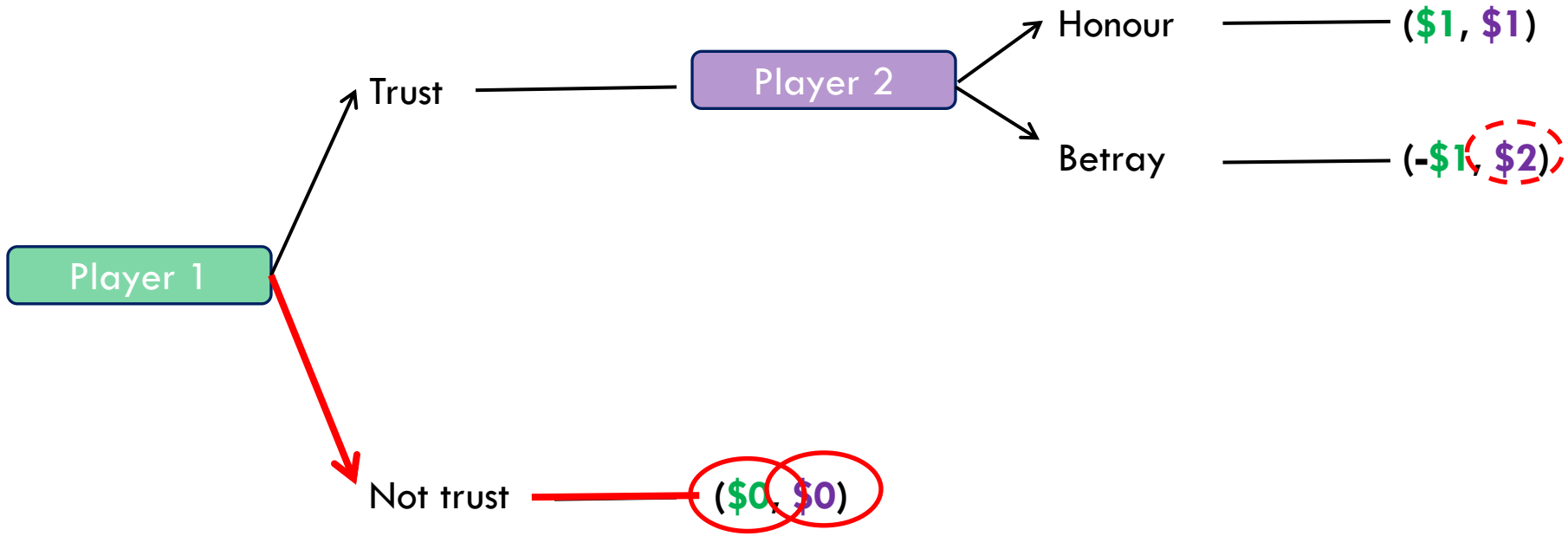

IMPLICIT CONTRACTS AND REPUTATIONAL CONCERNS

What happens if we play the game repeatedly?

- Suppose each player has a discount factor of δ.
- Is there an equilibrium (SPNE) in which Player 1 plays Trust?

Assume players play a 'trigger strategy':

- Player 1: play 'Trust' in first period. Thereafter if all moves in all previous periods have been 'Trust and Honour', play 'Trust'. Otherwise play 'Not Trust'.
- Player 2: If Player 1 plays 'Trust' this period, play 'Honour' if all moves in all previous periods have been 'Trust and Honour', otherwise play 'Betray'.

What happens?

- Trigger strategies are a Nash Equilibrium of the infinitely repeated game as long as player 2 is patient enough (or the discount rate is sufficiently close to one).

IMPLICIT CONTRACTS AND REPUTATIONAL CONCERNS

Think about the payoffs for Player 2 as follows..

- C =1 is the payoff from cooperation (Honour)
- D =2 is the payoff from defection (Betray).
- P =0 is the payoff from punishment (i.e. an endless stream at lower payoff)

IMPLICIT CONTRACTS AND REPUTATIONAL CONCERNS

Player 2 prefers to cooperate if:

$$VC = C(1 + \delta + \delta^2 + \cdots) \geq VD = D + P(\delta + \delta^2 + \cdots)$$

$$C/(1 - \delta) \geq D + \delta P/(1 - \delta)$$

$$\delta \geq \frac{D - C}{D - P} = \frac{2 - 1}{2 - 0} = \frac{1}{2}$$

IMPLICIT CONTRACTS AND REPUTATIONAL CONCERNS

Implications

- If Player 2 is sufficiently patient then it is optimal to cooperate.
- Cooperation is more likely if that value of the relationship (*C*-*P*) is greater. A cooperative outcome is more likely if the parties do better together than apart.