Explain what a bargaining situation is and give an example of such a situation. (6 marks)
Explain what a bargaining situation is and give one example of such a situation. (6 marks)

A bargaining situation is a situation in which two or more players have a common interest to co-operate (can engage in mutually beneficial trade), but have conflicting interests over exactly how to co-operate (terms of trade).

An example of a bargaining situation is a simple market transaction:
An individual, called Aruna, owns a house that she is willing to sell at a minimum price of £50,000; that is, she 'values' her house at £50,000.
Another individual, called Mohan, is willing to pay up to £70,000 for Aruna's house; that is, he values her house at £70,000.
If trade occurs – that is, if Aruna sells the house to Mohan – at a price that lies between £50,000 and £70,000, then both Aruna (the 'seller') and Mohan (the 'buyer') would become better off.

This means that in this situation these two individuals have a common interest to trade. At the same time, however, they have conflicting (or divergent) interests over the price at which to trade: Aruna, the seller, would like to trade at a high price, while Mohan, the buyer, would like to trade at a low price.

What is the Outside Option Principle? Explain why it takes the form that it does. (6 marks)
What is the Outside Option Principle? (6 marks)

The Outside Option Principle states that a player's outside option will increase her bargaining power if and only if the outside option is sufficiently attractive; if it is not attractive enough, then it will have no effect on the bargaining outcome. The bargaining outcome is not affected by non credible outside options.

If dA and dB are players' outside options, or Best Alternatives To Negotiated Agreements (BATNAs) then according to the OOP, they reach an agreement with player A's agreed share:

$$x_A^* = \begin{cases} \pi/2 & \text{if} \quad d_A < \pi/2 \quad \& \quad d_B < \pi/2 \\ d_A & \text{if} \quad d_A > \pi/2 \quad \& \quad d_B < \pi/2 \\ \pi - d_B & \text{if} \quad d_A < \pi/2 \quad \& \quad d_B > \pi/2 \end{cases}$$

$$x_B^* = \begin{cases} \pi/2 & \text{if} \quad d_A < \pi/2 \quad \& \quad d_B < \pi/2 \\ d_B & \text{if} \quad d_B > \pi/2 \quad \& \quad d_A > \pi/2 \\ \pi - d_A & \text{if} \quad d_B < \pi/2 \quad \& \quad d_A > \pi/2 \end{cases}$$

The total surplus is divided when neither players' outside options are greater than their current payoffs.
If one player's outside offer is greater than the current share of the pie, the other player will match it and keep the rest.
Likewise, if the other player's outside options are greater than their currency payoffs, I have to match their outside option.

Contrary to what is often suggested, OOPS tells us that having an outside option (such as an outside job offer) will not necessarily increase your bargaining power; it will not necessarily enable an employee to extract a higher wage from her current employer. In order to do so, the outside job offer must yield a wage that is higher than what your current employer is paying. It is no good approaching your employer and saying, 'I have just been made an attractive job offer that will pay me £65,000 per year, so please raise my wage, or else I quit'. The employer will reply by saying, 'but your current wage is £65,001, and thus, I refuse to increase your wage by even one penny.'
This response is based on the plausible presumption that the employee's threat to quit unless her wage is raised is empty (not credible); it is not in her interest to carry out the threat (ex-post).

A basic, important message that is built in OOPS is that a negotiator should not let herself be influenced by threats (or promises) that are empty, in the sense that such threats and promises would not be carried out when, and if, time came to do so. Only credible threats and credible promises matter

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Describe the Nash Bargaining Solution and apply it to a bargaining situation of your choice. (7 marks)
Describe the Nash Bargaining Solution in the context of a bargaining problem of your choice. (9 marks)

The Nash Bargaining Solution, developed by Nash (1953) assumes the Cassie Theorem applies, and that two parties reach an agreement to strike a deal (so it ignores the efficiency question) and focusses on how the surplus will be distributed.

The Symmetric Nash Bargaining Solution is as follows, where x'a and x'b are the agreed respective shares of the two parties.

$$x_A^* = d_A + \frac{1}{2}\left[\pi - d_A - d_B\right]$$

$$x_B^* = d_B + \frac{1}{2}\left[\infty - d_A - d_B\right]$$

The players agree to give each other a share of the cake (which gives them utility equal to the utility they obtain from not reaching an agreement), and then they split equally the remaining surplus π - dA - dB (in the case of symmetric Nash Bargaining solution where theta = 0.5).

Symmetric Nash Bargaining Solution is a specific form of the Asymmetric Nash Bargaining solution, where theta = 0.5

It assumes **(Individual Rationality)** that outside options for both players are not sufficiently high to be credible (otherwise they would get their outside options). Therefore, it deals with inside options.
According to the NBS, there is an increasing monotonic relationship between inside options and share of the cake.

We can apply the Nash Bargaining Solution to a case of wage bargaining

A wage negotiation between an employee, E and the firm, F occurs.
The value that the employee provides to the firm is £70k, so V=70k
The firm's has no outside option, because no one else can do the job, so Da = 0

$$x_A^* = d_A + \frac{1}{2}\left[\pi - d_A - d_B\right]$$

$$x_B^* = d_B + \frac{1}{2}\left[\infty - d_A - d_B\right]$$

Applying the NBS we can see that the firm and employee split the difference = £35k

According to the NBS, if the employee received an outside offer, Da>0, in the next renegotiation the employee receives w*= Da + 0.5(π-Da-Db) even if dw < w' and is not credible. This is unrealistic and therefore NBS should be applied only in the context of inside options.

2/3
Using an example or otherwise, explain the difference between inside options and outside options in long-term relationships. (9 marks)
Explain the difference between inside options and outside options in long-term relationships such as marriage. (7 marks)

In a long-term relationship such as a marriage, the division of marital surplus depends on the relative size of each spouses' inside and outside options.
Since they have conflicting interests over the exact partition of the surplus, they will need to compromise and negotiate an agreement. The strength of their bargaining positions depends on the relative size of their inside and outside options.

Combining the outside option principle and Nash bargaining solution, the utility to the female is:

Negotiated utility function to married women is:

$$\hat{x}_F = \begin{cases} x_F^* & \text{if} \quad D_F \in \hat{x}_F^* \quad \text{and} \quad D_M \in \hat{x}_M^* \\ D_F & \text{if} \quad D_F > \hat{x}_F^* \quad \text{and} \quad D_M \in \hat{x}_M^* \\ \pi - D_M & \text{if} \quad D_M > \hat{x}_M^* \quad \text{and} \quad D_F \in \hat{x}_F^* \end{cases}$$

Suppose we are in the first regime, where the outside option of each individual is sufficiently small (perhaps because they are unattractive). The OOP states the outside option will have no impact on bargaining power. The inside options will have the decisive impact. If their inside options are of equal size, then the couple would split the marital surplus equally.

$$x_A^* = d_A + \frac{1}{2}\left[\pi - d_A - d_B\right]$$

$$x_B^* = d_B + \frac{1}{2}\left[\infty - d_A - d_B\right]$$

Marriage can be thought of as a repeated game.
Their inside options are their payoffs from temporary disagreement: remaining married but with generally uncooperative behaviour (such as constant fights and arguments, refusing to undertake various domestic duties, making poor decisions about investments and matters, and making life difficult for each other).

Supposing that the husband's inside option is lower than the husband's inside option (because she suffers less than her husband when they engage in fights and uncooperative behaviour). As the husband's inside option is relatively smaller, he is more eager to strike a deal, which means the wife has more bargaining power and can negotiate a bigger share of the surplus for herself.
The agreement is more favourable to her (she may have to do only a few domestic chores and can, perhaps, spend Sunday afternoons visiting her parents while her husband takes care of the kids.)

Their outside options are the payoffs that they obtain from divorce, which might, for example, be their payoffs from being single, or from finding an alternative partner.
If the husband has a large outside option we are in the third regime (DM > x*M), which means each spouse's inside option becomes irrelevant.
The husband's threat to seek divorce is now credible, and will easily determine the division of the surplus. The wife must match his outside option, so the man gets DM and she keeps the rest π-DF.

A key principle is as follows. When both players' outside options are suf- ficiently unattractive, then a player's bargaining power is higher the more attractive is his or her inside option, and, the less attractive is the other player's inside option. But, when one player's outside option is sufficiently attractive, both players' inside options have no impact on the bargaining outcome; the player with the attractive outside option gets the more favourable deal. And, if both players' outside options are sufficiently attractive, then it is mutually beneficial for the players to exercise them. Indeed, if divorce is sufficiently attractive to both individuals (relative to the size of the marital surplus), then the couple are likely to get divorced.

Using the theory of intra-household bargaining, discuss the policies that can help improve the welfare of women. (20 marks)
Using the theory of bargaining or otherwise, discuss which factors and/or policies can improve the welfare of married women. (20 marks)

The Governments, especially in many poor countries, are concerned with the relatively poor deals that many married women tend to get from their marriages; their share of the marital surplus is quite small. Therefore, society has looked at what it can do to increase x*F and tackle gender inequality. Cheryl Doss (2013) looks at policy instruments to address gender inequality.

Using OOP and Nash Bargaining Solution, we can see what regime you're in matters:

$$\hat{x}_F = \begin{cases} x_F^* & \text{if} \quad D_F \in \hat{x}_F^* \quad \text{and} \quad D_M \in \hat{x}_M^* \\ D_F & \text{if} \quad D_F > \hat{x}_F^* \quad \text{and} \quad D_M \in \hat{x}_M^* \\ \pi - D_M & \text{if} \quad D_M > \hat{x}_M^* \quad \text{and} \quad D_F \in \hat{x}_F^* \end{cases}$$

where D_i = outside options (divorce)

and where x_i^* comes from negotiation =

$$x_F^* = d_F + \frac{1}{2}\left[\pi - d_F - d_M\right]$$

where the inside option payoff = (endogenised)

$$d_F = t_F w_F + \lambda_F\, g(t_F, t_M)$$

Key parameters: $t_F, w_F, \lambda_F, \lambda_M$

One strategy has been through policy.
In poorer parts of the world, when a household is constrained in terms of resources to allocate to their children's education, there is a bias towards the male child. Therefore, Governments could offer scholarships for women only (positive discrimination).

Indeed, better educated women tend to get better deals from their marriages.
Education policy affects inside and outside options

The inside option improves because the females' labour market productivity rises.
In top regime (x*A), increasing wages of women will :Because she gets a better job) will increases woman's income and thus dF (inside), which allows the woman to negotiate a better deal inside the marriage.

Education raises the possibility of obtaining gainful employment (and hence, it raises one's outside option). Although a married woman may choose not to seek such employment, her potential threat to be able to obtain it would now be credible. The outside option DF increases - she'll get a better paying job outside of marriage

We can use comparative statics to look at net effect (of increasing the inside option and outside option) at the margin:

$$\left(\frac{\partial \hat{x}_F}{\partial M} = \frac{\partial \hat{x}_F}{\partial D_F} + \frac{\partial \hat{x}_F}{\partial w_F}\right)$$

If you are in regime 1, the marginal change will benefit the woman through the inside option (dF increases x*F and decreases x*M) which increases her share of the pie & is a good thing
In regime 2, woman's outside option increases further. DF, which benefits her more
In regime 3, where the man's outside option is large, effect of increasing woman's wage wF will be to increases the gross surplus. So woman's share π - DF increases, but not by increasing bargaining power, but by increasing total size of pie (more surplus to divide)
There is also the possibility to shift regimes ↑ to 2, so she'll still be better off, but by a different magnitude

Education may also increase a married woman's bargaining power by enhancing her confidence to be able to haggle (and make proposals) over the partition of the marital surplus; uneducated women, in contrast, are more likely to accept almost any proposal made by their husbands (and thus, they are likely to obtain relatively poor deals).

Another strategy has been through social policy (manipulating hF and hM) - preference for household goods
This is about people's attitudes towards marriage/ kids
In many parts of the world men put a relatively lower weighting on household public goods (hM < hF) which disadvantages the woman in negotiations over intra-household distribution of marital surplus

Folbre β argues that hM and hF are determined by 'social norms' and are therefore difficult to directly influence through policy.
Folbre ζ proposes an interesting possibility that the process of caring for children creates altruistic preferences, a type of addiction with positive consequences for children (and probably for society) but negative economic consequences for mothers (higher hF)

Therefore, a policy which aims to increase the amount of time the father spends at home during early stages of infancy may increase his bond with the child and increase his preference for household public goods (hM).

Increasing/ making mandatory paternal leave will achieve this (lower t^M)
This achieves higher hM.
Which has the direct effect of increasing dM (which reduces x*F).

However, it has powerful indirect effects on reducing endogenous variables t^M
The man spends less time in the labour market (which counteracts the increase in dM)
So the woman can spend more, increasing t^F, which increases her inside option
The net effect of hM going up is that dF goes up and dM goes down

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In some parts of India, you have to give a dowry payment when the daughter gets married, so households allocate income away from the revenue of the female child - which perpetuates the inequality in intra-household income distribution (to do with hF and hM - culturally determined). How does policy change these preference parameters?

Many governments have focussed on a providing a strong social safety net for married women with children as an exit alternative to their marriages, with the idea that low-income women with young children will have more marital bargaining power under a strong safety net system than under a weak one. However, bargaining theory suggests that this type of policy will not be credible unless the outside option DF is greater than the woman's current share of the marital surplus x*F - and if so, there may be other repercussions.

Divorce is looked down upon culturally in many parts of the world. In these countries, when divorce occurs, men typically get the better deal than the woman.
DF may be small and DM is large, so we are in regime 3.

Bargaining theory gives us a counterintuitive result:
Social policies that work by making divorce easier may actually harm women. They also raise DM. Because x*F = DM in many cases, the females may be unaffected, but because DM is already large already, this policy may increase DM even further. Making divorce easier may risk making women worse off. Therefore, it is beneficial, in the sense that the marital surplus may become smaller than the sum of [illegible]

Since improving the outside options too much raises the risk of divorce
an alternative strategy is to make divorce somewhat more painful, and, at the same time, significantly improve the quality and quantity of state-provided child care.
This may help reduce the divorce rate and, at the same time, enhance the woman's bargaining power within marriage.

The non-intuitive result is that making divorce more painful may actually reduce DM and DF, and since DM>DF will have a beneficial effect on the woman, since it may shift regimes from 3rd (>DM) to first (x*F).

Pollack (2003): What is the long-run effect of empowering women (i.e., the effect on new marriages)? Because prospective spouses cannot make binding agreements in the marriage market regarding allocation within marriage, empowering women will affect the willingness of women and men to enter marriage: more women and fewer men will want to marry.