

Housework War: A Game Theory Exploration of Gender Norms

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Abstract. It has been found that the unequal division of domestic labor is often considered fair. The finding is that the main causes of gender behavior in the family are the strength of gender norms and expectations, and accountability through social interactions. Housework seems to be a manifestation of the process of internalization and socialization of gender norms. Housework can also be understood as a way for individuals to replicate their gender identity. Through interactive gender behavior, they can behave normally in the social world and avoid the negative consequences of violating gender norms. With the awakening of female consciousness, more and more men will share the responsibility of family. This article uses game theory to examine the reasons behind the long-standing unequal division of household.

Keywords: division of domestic labor; game theory.

1. Introduction

Sharing housework is difficult, especially in a family. In modern society, gender remains the critical factor in allocating housekeeping duties. Although the time that women spend on housework has decreased in recent years, women are still doing more housework in most households [1]. This paper aims to argue the reasons behind the long-standing unequal division of household by applying game theory to model situations in which a couple make decisions and moves due to different preferences and commitments to the housework chores. Unlike the prisoners' dilemma game in which players do not have an intimate relationship and tend to focus on individual payoffs and disregard whether their moves influence the other player, individuals living in close social environments have a closer understanding of each another, which may influence the way they play. This paper evaluates the authenticity of the games modelled and analyzes the corresponding results and reasons behind such scenarios.

2. Modelling Games

2.1 The first scenario

We suppose that a couple in a marriage needs to consider whether to do the housework. As a wife who married last year, I gradually found that husband and wife have different views on household chores. To be more realistic, we assume that the wife's primary goal is to get the household done, and her secondary goal is to do as little work as possible. The husband's primary goal is to do as little work as possible, and his next goal might be to get the chores done. Therefore, we can represent this situation with the following matrix:

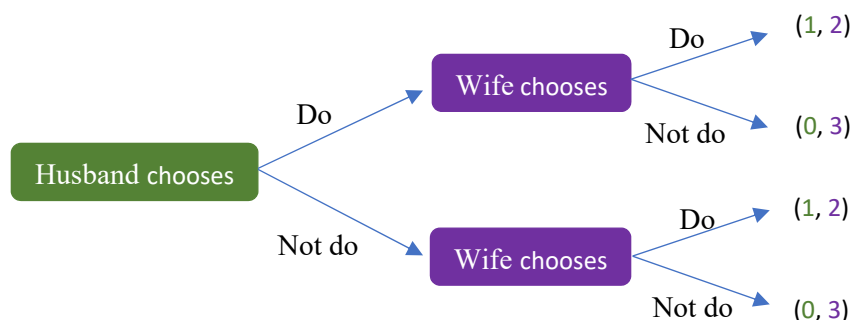


Fig.1 Extensive form of the first scenario

Table .1 The payoff matrix of the first scenario

		Wife	
		Do the work	Not do the work
Husband	Do the work	1, 2	0, 3
	Not do the work	3, 1	2, 0

Both the husband and wife have two strategies: do the housework or not do the housework. The matrix, therefore, has four results, giving their preferences on moves. We assume the possible payoff goes from 0 to 3 (only means that the higher number shows a better outcome). In this case, for the husband, we can notice that “to do” is always strictly dominated by “not to do”. So, the husband always gets a better outcome by choosing “not to do” regardless of what his wife chooses. There is no dominant strategy for the wife, and her best choice depends on what her husband chooses. As a result, the Nash equilibrium of this game is (husband not do, wife does) with a payoff of (3, 1). Nevertheless, what if the wife knows the preferences and choices of her husband? This game becomes a sequential game with the following diagram:

By backward induction, we can see that the subgame perfect equilibrium is still (husband not do, wife does). In conclusion, the wife always ends up doing more housework chores than her husband.

2.2 A scenario in my family

In my family, the situation at first was quite similar to the previous one, but gradually I felt unequal and dissatisfied; thus, the game changed. Marriage requires both partners to work together; therefore, an additional goal is added: wife and husband prefer to share the housework (either both doing or neither doing). If the cooperation fails, they both want the other one to do the housework. Meanwhile, the wife still wants the work to be done, and the husband still wants to do as little as possible. Then this game can be presented as the following matrix:

Table 2. The payoff matrix of the scenario in my family

		Wife	
		Do the work	Not do the work
Husband	Do the work	2, 3	0, 1
	Not do the work	1, 0	3, 2

There is no dominant strategy for either husband or wife, which means that their best outcomes depend on the other’s choices. As a result, there are three Nash equilibria:

The two pure equilibria are “both do the housework” and “neither does the housework”. For instance, if they are at “both do”, the wife gets her best outcome and cannot do better by changing her strategy. The husband gets his suboptimal outcome, but changing strategy (not do the work) will not give him a better outcome. In the mixed equilibrium, the husband do/not do the work with equal probability; the wife does the word one-fourths of the time, and not does the work three-fourths of the time.

We can see that mixed strategies can help this game in which husband and wife randomly choose between different strategies to optimize their outcome. However, in a realistic world, this game continues repeatedly, and both players are likely to play a pure strategy each round. Besides, most of time in my family, the game is more likely to be a sequential game rather than simultaneous game.

This means one player chooses their action before the other chooses his/hers [2]. Both wife and husband would change their strategy once they found other ways to get better payoffs.

Who could win in this household war? At the most intuitive level, the more patient player is more likely to win. Whoever makes the first move (more like starting position) will lose because he gives his rivalry the best result. Thus, in dissatisfying situations, each player will try to outlast the other player until one of them cannot bear it anymore. For instance, if the wife is doing the housework herself with a payoff of (0, 1). Since her husband is dissatisfied with the payoff of (1, 0), he might move, starting to do the housework with his wife; thus, the move gives him his best outcome. On the other hand, if the wife moves into this situation, she will stop doing the housework and thus ends up with her best outcome.

However, in a real-world marriage, both partners want the relationship and the marriage to last. Communication and cooperation are likely to happen in this situation. Alternatively, the husband or wife might have more power in this relationship, and one of them can make a credible threat that he will never move, thereby forcing the other to move and at least get her suboptimal outcome. For instance, in my family, when I find pregnant, I start to do as little as possible. The person who can most credibly commit not to do the housework can force the other to do it.

3. The real society

In the above two games, we make several significant assumptions:

Assumption 1 :The wife cares more about whether the housework gets done than the husband.

Assumption 2:The husband cares more about whether he does as little as possible than the wife.

Assumption 3:They prefer to share the housework gradually.

Are these assumptions realistic in society? Moreover, the above games with these assumptions lead to a result that wives tend to do more housework than their husbands. Is this result accurately related to real society?

3.1 The research status

Research over the past twenty years found that women spend more hours in household labor than men . Scientists made a series of time diary studies from 1965 to 1995 in the United States. According to their research, in 1965, married women invested an average of 33.94 hours weekly in housework, while married men invested just 4.74 hours weekly. In 1995, married women spent an average of 19.44 hours weekly in chores, while married men spent 18.77 hours. The significant differences are primarily because of employment and education attainment. Women's employment and education have been found to be negatively associated with chores labor time. For instance, in 1965, 37.7% of women participated in the labor force, increasing to 58.5% in 1995[3]. However, research finds that the employment of married men has little effect on the amount of time spent in housework, but men's paid work hours are negatively associated with hours in household labor [4]. The long-standing unequal division of household labor still exists today. A survey finds that gender gaps in the division of household responsibilities persist during the pandemic. In this survey, about 59% of married women say they spend more time in the household than their husband, while only 6% say their spouse spends more. Among men, around 46% say housework chores are shared equally, while 20% say men do more and 34% say their wife does more[5].

3.2 Factors affecting the distribution of household labor

The assumptions we made before are related to factors affecting gender inequality in housework.

3.2.1 Economic resources

Economic resources play a vital role in the distribution of housework between couples. As we can see from Bianchi et al. (2000)'s studies, as more women entered the workforce, they spent less time on housework. This explains the third assumption: in my family, we tend to share the housework since we bring similar economic resources. However, women's resources influence their own

decisions but have fewer influences on their husband's decisions. Study and historical data both find that even when women and men bring similar economic resources to bear, women still do more housework chores [6]. Thus, despite the economic resources, the gender gap in housework labor persists.

3.2.2 Gender differences

Women and men have different views about messiness and its importance. Scientists find that women generally have higher cleanliness standard and a stronger preference for cleanliness than men (Thébaud, Kornrich & Ruppner, 2019). According to sociological theories of gender socialization, individual men and women often socialize toward different identities, characteristics, and preferences (Thébaud, Kornrich & Ruppner, 2019). This socialization often starts from childhood and is reinforced through adolescence. Children learn divisions of housework, clean methods and cleanliness standards from their parents. Gradually, children are initializing notions of norms and expectations for their gender. The initialization of gender expectations leads to different perceptions of mess and different attitudes about the importance and necessity of cleaning. This relates to the first assumption that the wife has a primary goal of getting housework done.

3.2.3 Social-interactional accounts

Women are more likely to be held by public accountable for housework. Gender is an attribute of social interaction, which means interactions in the society need to be responsible for shared cultural expectations of gender behavior and self-expression; thus, people often "act" or "represent" their gender by other people's expectations (Thébaud, Kornrich & Ruppner, 2019). This is why the power of gender norms is strong even there is no rewards or punishments.

Besides, social relationships like neighbors, colleagues even friends and relatives exert pressure and make implicit judgments based on widely shared gender beliefs. Women may do much housework to avoid being judged negatively, while men may avoid doing too much housework to avoid being labelled as unmanly. Ridgeway also indicates that gender cultural beliefs, with descriptive and prescriptive components, are prominent in the family. Even if a family member disagrees with such beliefs, it is unlikely to make different judgments against ordinary moral judgements. The stereotypes about women mean that women are generally subject to greater moral criticism inside and outside the family [7]. The social-interactional accounts can explain the first and second assumptions that why women care more about getting work done and why men care more about whether he does as little as possible.

3.2.4 Evision on the games

In the first game, interactional accounts for gender inequality in housework explain why wife and husband have different goals on housework. Such differences lead to the result that women do the housework alone. As women began to go into the workforce, men began to do housework, and the allocation shifted to the second game. The sense of sharing and distributing arises between the wife and husband, but the husband still does less housework because of gender socialization. In the second game, the couple might start at (husband not do, wife does) with a payoff of (1, 0), which means the wife does the housework alone. This is similar to the situation in the United States in the 1960s. Women gradually decreased their time spent on the housework, but the number of time women spent on housework decreased more than the amount men spent on housework increased. In the game, the wife shifted to "undo", leading to "both do not do housework". This situation continues today, and women tend to "move first" and give up those chores that their husbands cannot handle because of the promotion of women's status in recent decades and the weakening of stereotypes and gender beliefs.

3.2.5 The emergency

During this pandemic, many men who telecommute from home are getting their first taste of the day-to-day demands and efforts of running a family and caring for kids, and learning to balance work and family. In the United States, the pandemic has led to the closure of many schools and daycare

centers, exacerbating the stresses and strains on caring for kids and housework, especially for working mothers. The traditional division of family responsibilities is likely to change dramatically. It is not hard to imagine men doing more housework and child care during a pandemic, an enlightening experience for many. More and more men sharing housework more fully over more extended periods can bring about significant changes in gender norms at home and work. During the pandemic, men working remotely are more likely to appreciate women's work-family experience, understand the value of flexible work arrangements, and model more equitable work-family gender roles for their children. The silver lining to the men's experience may be their ability to engage in gender equality and partnership in a way we have never seen before. Smith & Johnson recognize that the benefits of equal family partnerships may be the catalyst for finally creating an equal workplace for women[8].

4. Conclusion

This paper employs game theory to observe and analyze the gender gap in housework labor. The first game shows that women do the housework alone, which can relate to the 1960s in the United States. The major causes of gendered behavior in the household are the power of gendered norms and expectation, and accountability via social interactions. Individuals are socialized from very young, so women and men have different identities and preferences. Housework can seem as a manifestation of the internalization of social gender norms and the socialization process of social gender norms. Household labor can also be understood as a way for individuals to reproduce gender identity. Through interactive gender behavior, they can normally perform in the social world and avoid the negative consequences of violating gender norms. The second game shows a trend that challenges the traditional division of family responsibilities. With the awakening of female consciousness, more and more men will share the responsibilities of running a home. Eventually, the growing equity in the division of domestic labor acts as a catalyst for women to create equal workplaces and can be regarded as a microcosm of gender equality.

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