

## Economic Value of Parental Time

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여성주의 경제학자와 사회학자들은 부모의 아동양육시간이 여성과 아동의 경제적 복지에 미치는 중요한 함의에 대해 강조해왔다. 사회가 가족이 아동을 양육하는데 더 큰 지원을 제공해야 한다는 부모의 목소리가 커지고 있지만, 정작 어느 정도의 시간 자원이 아동을 양육하는데 투입 되는지에 관해 연구된 바가 거의 없다. 기존의 연구들은 전체 생산 경제에서의 무급 노동의 경제적 가치의 비중을 초점을 두었다. 본 연구는 2004년 한국생활시간조사를 사용해 아동 양육에 투입된 부모의 시간을 추정하고 그 시간의 금전적 가치를 추정하는 것이 목적이다. 부모가 아동 양육을 위해 투입한 시간의 경제적 가치는 시장 노동을 통해 벌어들인 소득에 비교해 볼 때 상당한 비중을 차지하고 있다. 아동이 소비하는 재화와 서비스를 생산하는 데 있어 무급 노동의 역할은 시장 노동에 참여하지 않고 있는 사람들에게 특히 중요하다. 아동을 양육하는 모의 노력은 대개 무급 노동의 형태를 띠고 있는데, 부모의 시장노동만큼이나 아동 복지를 향상시키는데 기여하고 있다. 전체 경제 차원에서의 무급 노동의 비중과 그 경제적 가치에 대한 연구 성과들과 별개로, 부모의 아동 양육 시간의 비중과 경제적 가치의 추정은 전체 경제 가운데 인적 자본 부문에 대한 무급 노동의 경제적 역할에 대해 중요한 정보를 제공한다.

**핵심단어:** 시간, 경제적 가치, 양육의 시간비용, 생활시간조사

### I. Introduction

Feminist economists and sociologists have highlighted the important implications of parental time, particularly mothers' time, for the economic welfare of both children and women (Folbre, 2008). But monetary costs have drawn more attention than temporal costs in South Korea, because an unrelenting expansion of private after-school education in recent decades has contributed to the perception that children are becoming more expensive to raise. The decline of the total fertility rate to a below-replacement level, 1.19,

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the lowest in the world in 2008, has generated social anxiety and governmental concern, leading to increased social support for child rearing (Na and Moon, 2004). As parents demand that society take greater responsibility for supporting families who are raising children, little is known about the quantity of actual time resources that are devoted to children. This information would help us understand to what extent society should help pay for raising them.

This paper uses the Korean Time Use Survey (KTUS) 2004, a nationally representative sample of time diaries, to estimate the actual amount of time devoted to children and to calculate a lower-bound estimate of the monetary value of that time. There have been a few systematic and thorough efforts to estimate the economic contribution of non-market work to the broader economy and to supplement a national accounting system in Korea (Moon, 2001; Kim, 2003; Kwon, 2005). But a gap remains in our understanding of the quantity of time resources devoted to the human capital sector, or specifically to investment in children. Developments in theoretical and conceptual frameworks for measuring and valuing parental time for Western countries, along with the availability of the nationally representative time-use diaries that are best suited to measuring time investment, lay an insightful foundation for estimating the time costs associated with raising children (Klevmarken and Stafford, 1999; Apps and Rees, 2002; Folbre, 2004; Ironmonger, 2004; Folbre et al., May 2005; Folbre, 2006).

This study attempts to offer a picture of the temporal organization and monetary value of child-rearing time. I establish a separate accounting of time costs by maternal employment according to different family structures and to children's ages and numbers, and assess the relative contribution of parental unpaid work against individual income earned from paid work. In the next section, I will review previous research on the costs of raising children in South Korea. Section III discusses methodological issues of defining and measuring care work for this study. Section IV describes the KTUS 2004 and analysis plans. Section V presents findings. And Section VI discusses the findings and suggests avenues for future research.

## II. Previous Research on Measuring and Valuing Time Devoted to Children

In South Korea, the costs of raising children have received attention from policy makers endorsing anti-natalist values since the 1960s, primarily because fertility reduction and human capital investment are considered key factors in achieving economic success. South Korea implemented family-planning policies, including the encouragement of contraception and tax incentives for small family sizes, in order to transform quantity into quality of population (Kim et al., 2002)<sup>1</sup>). Despite the focus on the accumulation of human capital as a key requisite for economic development and poverty reduction, there is no evidence that the Korean government has dramatically expanded its share of expenditure on human-capital-related services. Governmental expenditure on education as a percentage of GDP has been relatively low in South Korea, compared with other developing countries (World Bank, 1993). Among OECD countries, Korea, along with the United States, shows the highest proportions of private expenditure at the tertiary level relative to GDP (OECD, 2009: 222).

It was, however, because of the macroeconomic hardships faced by South Korea since the financial crisis of 1997 that social awareness of the costs of raising children appears to have been heightened: parents began to demand that the Korean government take action to relieve them of educational costs. Their concerns lie primarily with backbreaking private after-school educational costs, which they spend much more money on than on formal education (Moon et al., 1996; Kim et al., 1999; Park and Yeo, 2000). The governmental support also stemmed from concerns about the nation's low fertility and ageing population.

Public policies provide even less assistance for parents of young children, leaving the burden to fall entirely on individual families, particularly mothers. In 2000, South Korea was ranked lowest among OECD countries, at 7%, in

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1) The average number of years of schooling for the population aged 15 and older more than doubled, from 4.2 years in 1960 to 9.9 years in 1990, exceeding the average of the OECD countries as a whole.

terms of the proportion of children under 3 placed in formal child-care arrangements, following Greece, Italy, and Spain at less than 6% (OECD, 2001). Dramatic changes in the provision of child care for young children have been occurring since the mid-1990s, when the Korean government invested public funds to expand child-care facilities for low-income families and employed mothers (Na et al., 2004). In the meantime, families are praised for providing priceless homemade meals and direct and intimate care to children with little regard for the fact that mothers bear the burden of such efforts. This burden has intensified as more mothers have joined the labor force. As women experience competing demands on their time, the recognition of the time spent on housework and child care as unremunerated but “valuable” economic activity has emerged.

Some efforts were devoted to making this unpaid work visible. Largely as the result of an international effort to improve the measurement of unpaid non-market work, the Korean government decided to administer a time-use survey in 1999, as it recognized the importance of such a survey in providing essential information on unpaid work (Shon, 1999). The first attempt to generate a national accounting system supplemented by non-market work measures was made using the KTUS 1999 (Moon, 2001; Kim, 2003; Kwon, 2005). These studies mainly adopt conceptual methodologies developed for Western countries: the time devoted to activities related to unpaid work is conceptualized as productive work under the assumption that it produces transferable benefits that a third party would otherwise have to pay for (Goldschmidt-Clermont and Pagnossin-Aligisakis, 1995).

Moon (2001) estimates the relative contribution of household production to the entire economy by using the input approach, which values the amount of time devoted to non-market work as an input for “productive activities”. But her estimated value of non-market work is calculated for all men and women over 20 years of age in South Korea in 1999. The values range from about 28% of GDP using the replacement-cost assumption to 48% of GDP using the opportunity-cost assumption.

Kim (2003) focuses on full-time housewives alone who performed non-market work—domestic work, child care, and voluntary activities—as he treats homemaking

as an occupation. Although his work is also based on the input approach, his estimates are distinguished from the previous results in that he uses detailed micro data on wage rates in order to reflect age-specific productivity differentials for different age groups of housewives. His four different kinds of assumptions led to estimates of non-market work performed by full-time housewives ranging from the highest value of 16.3% of GDP using wage rates for specialists<sup>2)</sup> to the lowest value of 12.5% of GDP using wage rates for domestic helpers<sup>3)</sup>. The estimate produced using the opportunity-cost method lies between the two extremes, at 14.8%<sup>4)</sup>. The estimates were proposed as the value of full-time housewives' contribution to the household economy that would otherwise have gone unappreciated: they are useful for insurance compensation purposes in case of injuries or the division of wealth upon divorce. Kwon (2005) also adopts methods similar to those of Kim (2003) and concludes that the total share of women's unpaid work out of the total GDP, combining both paid and unpaid work, ranges from 21.8 to 27.7%, whereas the men's share only ranges from 4.9 to 5.4%.

As insightful as they may be in valuing non-market work as a whole, these studies yield no direct, accurate estimates of the time costs associated with raising children in families, thereby providing no direct implications for capturing the invisible resources devoted to creating and maintaining human capital. First, Kim (2003) does not provide estimates of non-market work done by employed mothers, who spend a fair amount of time raising children. Empirical studies of U.S. families confirm that mothers reduce the time they spend caring for children when they are employed, but less than proportionally (Timmer et al., 1985; Bianchi and Robinson, 1997). The omission of employed mothers' non-market time, therefore, may lead to a serious underestimation of total maternal time devoted to children. Second, the amount of non-market work may have been underestimated, primarily because the studies ignored non-market work as secondary activities that take place simultaneously with

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2) It is assumed that housework done by housewives can be replaced with market substitutes for home managers and child-care providers.

3) It is assumed that all housework done by housewives can be replaced with what domestic helpers would do, including cooking, cleaning, and doing laundry.

4) Individual function replacement-cost method estimates 13.8%.

primary activities. In particular, many studies have called attention to the need to include child care as a secondary activity in analyzing parental time devoted to children (Gauthier, 2004). Third, in valuing non-market work, these studies devote insufficient attention to the special characteristics of care work, especially person-specific skills. For instance, Kim's (2003) and Kwon's (2005) application of age-specific replacement wages to disaggregated age groups produces results that lack credibility: they assume that young mothers in their 20s and 30s perform caring work of less value than those who are in their 50s and 60s, simply because the wage rate for paid care workers has a negative association with age due to shorter labor-force experience. It seems unrealistic to me that care performed by young mothers for their own children carries far less value than care performed by women in their 50s and 60s when the person-specific nature of the caring work is considered. This becomes more problematic when mothers are mostly in their 20s and 30s and are spending a greater share of their time on child care.

In this study, I focus on the time devoted by parents living with children, rather than either the entire population or non-employed married women regardless of parental status, according to different household structures and maternal employment statuses: two-parent versus one-parent households, and employed versus non-employed mothers. I also present how housework and child-care time can vary according to children's age and number.

### III. Measuring and Valuing Time Costs of Raising Children

Defining and measuring the actual amount of time devoted to children is as complicated as conceptualizing what we view as care work. Traditional economic theories dismiss any parental time devoted to children as "non-work" simply because it produces process benefit, or pleasures and psychic rewards. Feminist economists have long argued that parental time, most of which is expended by mothers, is "productive" since it generates economic, tangible or intangible, outcomes that meet children's needs for survival and development.

This notion came to be widely accepted and adopted by economic and sociologic scholars who study parental efforts to raise children.

The third-party criterion is often used as an operational conceptual schema in defining “work” that yields necessary services, which can be parallel to paid work with market income that allows us to purchase market goods for raising children including clothes, prepared food, and even child-care services. According to the third-party criterion, parental time for children is considered work when the time spent produces goods and services whose consumption yields benefits to the children by a third person to do the parental work in place of the parents themselves. According to this criterion, many parental activities that permit parents to feel pleased and rewarded are still work, because children benefit from them and because parents could have hired other people to do them (Folbre, 2008).

In reality, however, defining and measuring care work depends much on what time-use surveys can offer in a specific context. Efforts to carefully develop conceptual schemes from time-use surveys are being undertaken, but inconsistencies in survey designs across these surveys only complicate how to define and measure child care (Folbre and Yoon, 2007). Nevertheless, the time-diary method provides a better quality of estimates of unpaid, care, and leisure activities than do surveys based on stylized questions about amounts of time (Juster and Stafford, 1991).

Even with the use of time-use surveys, parental time still may be underestimated and undervalued, for several reasons. Most time-use surveys ask respondents to record their “activities”, which are often based on physical mobility. A focus on a narrow definition of “activities” thus fails to capture a much broader dimension of parental responsibilities for supervising or being around children even when parents are not engaging in explicit forms of direct child care. To overcome this limitation, many studies experimented with unique features of time-use surveys. Some studies find that the inclusion of a secondary use of time for estimating total care time creates a larger estimate than that solely based on primary activities (William and Donath, 1994; Floro and Miles, 2003; Craig and Bittman, 2007).

Australian estimates of child care using both primary and secondary time

are close to those derived from the stylized question “Last week, how many hours did you spend looking after children who live in your household?” included in the Canadian time-use survey (Ironmonger, 2004). A growing consensus suggests that the inclusion of secondary activities is appropriate because parental efforts go beyond direct child care to include the reconfiguration and intensification of effort in many other uses of time.

The inclusion of child care as responsibilities or constraints based on an even broader definition of child care ( “Was there a child in your care?” ) in the American Time Use Survey 2003 yields the inflation of total child-care time from 2.8 hours to 10.8 hours per day for married mothers with at least one child aged under 5 (Yoon, 2005). Studies use other information (such as “With whom?”) available in time-use surveys to specify care work more carefully—considering care work as responsibilities and variations in the density of care (Folbre et al., May 2005).

All these efforts still fail to overcome the potential problems of overlooking the emotional dimensions of parental effort. Parents often view time with children as “leisure” and “socializing,” not “child care,” thereby generating response biases in capturing the amount of parental time associated with raising children. For instance, a parent describing walking with a child at a park may be confused about whether such an activity constitutes child care or leisure. Attending an informal meeting organized among mothers could be viewed as socializing, but participating in a mothers’ network to seek educational information is a crucial part of care work (Choi, 2008).

In addition, the conventional approach to examining child-care time generally fails to include the housework—cooking, cleaning, laundry, and shopping—associated with the presence of children, that parents do for their children. But the time spent in unpaid work is an important component of the time costs of raising children (Craig et al., 2007; Folbre et al., 2007). The problem is that since time-use surveys generally do not collect information about “for whom” an activity is performed (except those activities that explicitly include child-specific wording in their descriptions, e.g., planning for children), it is difficult to carve out the portion of total housework that is due to caring for children.



The valuing of time devoted to children also faces some critical issues. Previous studies often employed opportunity-cost and replacement-cost methods, without carefully reflecting on the assumptions behind them. Folbre (2004) contextualizes the two different approaches of valuing parental time, highlighting the different implicative assumptions of each method. One is based on opportunity costs, or the idea that the next-best alternative use of caring time is paid employment, and that individuals make their decision on time allocation between paid employment and unpaid work in order to maximize individual utilities. Potential wage rates for caregivers can be used as a measure of the value of parental time. These represent the value to the individual parent. The other method is based on replacement costs, or the cost to parents if they completely withdrew their time from care work. These costs are conceived of as lower-bound estimates of the value to society of caring for children. Market prices of goods and services can be used as a measure of the value of parental time. Wages for domestic helpers and babysitters, for instance, can be used for the services replaced.

Whatever wage and price rates are used, the valuing of child-care time according to market-wage and price rates, however, suffers from two major faults: (1) the wage rates reflect discriminatory practices against occupations that are primarily occupied by females (England et al., 2002), and (2) the methods do not factor in comparable adult-to-child ratios and comparable quality between parental care and paid care provided in the market.

In this study, I offer only a replacement-costs-based value of parental time by applying average wage rates for domestic helpers and caregivers. The value is subject to underestimation partly because of the limitations of the KTUS due to its failing to ask for additional information about parental time efforts, as mentioned above, and thereby is only a lower-bound value of parental time.

## IV. Methods

### 1. Data

The KTUS 1999 was the first effort to produce a nationally representative measure of time spent on various activities, including household production, using time-diary methods in South Korea (Shon, 1999). The second KTUS, conducted in 2004, is the one I use for this study. The KTUS 2004 was fielded during a 12-day period from September 2 to September 13, 2004. It surveyed 32,000 individuals aged 10 years and over in 12,750 households about their time use for two designated consecutive days. Activities were coded into 125 categories. Households were divided into 5 groups by the designated two consecutive days: Friday and Saturday, Sunday and Monday, Tuesday and Wednesday, Thursday and Friday, and Saturday and Sunday.

The respondents were asked about the primary and secondary activities they spent time on, structured in 10-minute intervals, secondary activities taking place simultaneously with primary activities. The method of clustering and stratification in the sampling contributed to the relatively higher response rate by allowing for monitoring of the process of completing diaries.<sup>5)</sup> The overall response rate was 98.3%, which yielded 63,268 diaries. The KTUS 2004 asked for other information about households and their members. It includes data on housing, car ownership, the presence of preschool children, types of paid care, sex, age, education, marital status, employment status, occupation, work hours per week, location of workplaces, time pressure and fatigue, and holiday arrangements.

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5) Time diaries were left with respondents to fill out a trained interviewer visited individual households the day before the designated days to explain the purpose and contents of the survey and to administer the household and individual questionnaires. The interviewer revisited the household on the second day to help respondents complete the diary and to check that they were doing so properly. If a person did not fill out her/his activities properly, then the interviewer conducted an interview regarding the previous day's activities to supplement the diaries in order to improve the data quality. In some cases face-to-face interviews supplemented the diaries for the elderly, who often had difficulties completing them. The respondents were asked to describe their activities in the open survey in as much detail as possible.

The KTUS 2004 categorized certain kinds of activities as either housework or child care: housework includes meal preparation, caring for clothes, cleaning, house upkeep, purchasing goods for household care, and activities related to household management; child care includes physical care for preschoolers, educational care for preschoolers, physical care for school enrollees, educational care for enrollees, and visiting schools and teachers.

## 2. Sample

For this study, I select all households where children aged 18 and under are living with at least one parent. Households with any children aged 19 and over are excluded. Households where adults other than parents of those children are residing are also excluded from the analysis for the sake of simplicity. A total of 8,664 diaries from mothers and 7,864 diaries from fathers are finally used for analysis.

<Table 1> Sample Descriptive Statistics

|                      | Mother |       | Father |        |
|----------------------|--------|-------|--------|--------|
|                      | mean   | s.d.  | mean   | s.d.   |
| One-parent Household | 0.11   | 0.32  | 0.02   | 0.14   |
| Employed             | 0.50   | 0.50  | 0.96   | 0.21   |
| Children             |        |       |        |        |
| 1 Child (0-6)        | 0.36   | 0.47  | 0.38   | 0.48   |
| 2+ Children (0-6)    | 0.09   | 0.26  | 0.09   | 0.26   |
| 1 child (7-12)       | 0.18   | 0.39  | 0.18   | 0.39   |
| 2+ children (7-12)   | 0.13   | 0.33  | 0.14   | 0.33   |
| 1 child (13-18)      | 0.12   | 0.32  | 0.10   | 0.31   |
| 2+ children (13-18)  | 0.12   | 0.32  | 0.11   | 0.32   |
| Age                  | 36.81  | 5.88  | 39.46  | 6.09   |
| Income (10,000 won)  | 47.78  | 81.67 | 217.99 | 119.04 |
| Diary Day            |        |       |        |        |
| Saturday             | 0.21   | 0.40  | 0.21   | 0.40   |
| Sunday               | 0.20   | 0.40  | 0.20   | 0.40   |
| Observations         | 8,664  |       | 7,864  |        |

〈Table 1〉 presents descriptive statistics for the sample used for the analyses. Family structures include one-parent and two-parent households. About 11% of mothers are raising children by themselves<sup>6)</sup>. About 45% of parents have preschool-aged (0-6 years) children. About half of mothers are employed, whereas 96% of fathers are employed. Employment includes working for a family business. Mothers and fathers are in their late 30s. The 2004 KTUS provides information on individual monthly income that averages the sum of earnings, profits, transfers, and all other kinds of income over the previous year. Since monthly income is reported by category (10 categories), I take the midpoints of each category to calculate personal monthly income. The majority of mothers earn less than 477,000 won per month. Diary days for Saturday and Sunday are evenly distributed, and combined over-represent the sample: about 40% are collected for weekends.

### 3. Measures of Parental Time

The KTUS 2004 collected information on both primary and secondary activities that could potentially allow for an extended measurement of the actual hours devoted to child care. I included consideration of secondary activities in estimating parental time devoted to children in South Korea. As Yoon (2005) shows, however, child care as a secondary activity adds only 6 minutes per day to the total child-care time of about 3 hours for mothers with at least one child aged below 5. Moreover, child-care activities accounted for only 6% of the total time devoted to secondary activities (1.66 hours per day), which is considerably lower than 30%, the estimate calculated from the Australian Time Use Survey 1997 for all women regardless of parental status. This is due to the fact that the Australian Time Use Survey contains an activity code, “minding children”, in recognizing a passive form of child care (Folbre et al., 2007). The lack of this variable in the KTUS may have

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6) The proportion of one-parent households is slightly higher than that reported by the 2009 Policy on Single-Parent Household, or 8.6% in 2005. The discrepancy is probably due to the sample restriction for this analysis, which excluded three-generation households and households with children over 19 years of age.

resulted in the small contribution of secondary activities to total child-care time. Nonetheless, I included child care and housework as secondary activities in measures of parental time.

The measures of parental time are therefore the number of hours spent per day on housework and child care as primary and secondary activities. I define housework as food and drink preparation; kitchen and food clean-up; food preparation for later use; laundry; sewing, repairing, and maintaining textiles; interior cleaning; interior and exterior maintenance, repair, and decoration; grocery shopping; shopping except groceries; financial management; banking and legal services; and travel related to domestic work. I also define child care: physical care; reading to/playing with children; medical care; helping children get ready for school; helping with homework, consulting with teachers; participating in PTA; and travel related to child care. The sum of direct child care and housework amounts to a lower bound of the magnitude of time costs of raising children.

Assigning the portion of the time spent on housework performed by parents to children poses conceptual difficulties. Prior empirical studies show that the presence of a child is not associated with a large incremental time devoted to housework including meal preparation, laundry, cleaning, and so forth. One cannot argue that only the portion of marginal increase in the time benefits children (Yoon, 2008). But it is no easy task given the limitations posed by the time-use surveys' failure to ask about "for whom" such activities are conducted, as discussed above. Therefore, I present three different ways to calculate parental time depending on how we think about the parental contribution of housework to children.

The first way is to treat all the time spent on housework as parental time for children, which would, as expected, offset the underestimation biases caused by not capturing indirect child care other than secondary child-care "activities". The second way is to calculate per-capita housework and assign children's demands, defined as the number of children, to parental time. For instance, 1 hour of meal preparation by a mother for a three-person household with a child yields 1/3, or about 0.33 hours of parental time. The third way is to calculate "equivalized" housework based on the idea that housework can be characterized as a public

good that benefits multiple persons without dramatically lowering each individual's consumption.

I employ the most conventionally used measure of equivalence scale, square root of household size. Now, 1 hour of meal preparation by the mother for the three-person household would yield  $1/\text{square root of } 3$ , or about 0.57 hours of parental time (Yoon, 2008). But it is still the lower bound of the magnitude since the estimate cannot thoroughly capture all the time that caregivers spend with and devote to the benefit of children (Klevmarken et al., 1999; Budig and Folbre, 2004).

#### 4. Valuation

I calculate economic values of parental time based on replacement cost mainly because the purpose of this study is not to examine behavioral aspects of parental time but to assess how much value is being created by parents and, in turn, how much money is needed to replace parental time. To reiterate, the replacement-cost method assumes that the value of time costs can be approximately equated with the value of market-based substitutes for parental time at similar adult: child ratios. What I mean by “similar adult: child ratios” is that parents often care for fewer children than do child-care workers in the market but would be assumed to care for children under the same work conditions as would child-care workers<sup>7)</sup>.

The choice of the price of market-based substitutes yields different estimates—for example, a generalist's replacement cost versus a specialist's replacement cost<sup>8)</sup>. I choose to adopt the specialist's replacement cost primarily because child care and housework done by family members require person-specific skills and are often performed in packages of various kinds of individual tasks. In doing so, I will use average wage rates for caregivers and domestic helpers as occupations in the market, assuming that human capital and demographic characteristics do not generate variations in quality in the output they produce.

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7) For a detailed discussion of this, see Yoon, J. (2008)

8) For a detailed explanation of this, see Kwon, T. H. (2005)

I generate three different values depending on choice of wage rate. For Value I, I use the wage rates for “educational professionals” (₩7,243) and “cooking and food service workers” (₩4,981) for child care and housework, respectively. For Value II, I use the wage rates for “human services workers” (₩5,157) and “cooking and food service workers” (₩4,981). For Value III, I use the wage rates for “service-related workers” (₩3,974) and “housework, housekeeping, and laundry workers” (₩3,904). Value I reflects wage rates for relatively high-skilled workers, and Value III reflects those for relatively low-skilled workers<sup>9</sup>). This is intended to show how sensitive economic value will get depending on the choices of female occupation. Wages for males are slightly higher, but I use female wage rates, adopting the conventional practices of hiring women as domestic helpers and babysitters.

## V. Findings

Women overall bear a much larger share of the time costs of raising children. Mothers and fathers, particularly mothers, devote substantial amounts of time to children. <Table 2> and <Figure 1> present daily time spent on housework, child care, paid work, and leisure by employment status in different household structures. In order to show different patterns in time use between parents and nonparents, I also present time uses by married childless and unmarried men and women. Only married childless and unmarried persons under 40 years of age are included for comparison in order to exclude those who might have borne and raised children but do not live with them currently. Unmarried persons are defined as never-married and living alone.

Motherhood imposes tremendous workloads on top of paid work. Mothers as a whole spend twice as much time on housework and child care as do married women under 40 years of age without children. Fathers spend about 1.5 times as much as childless married men under 40 years of age. The

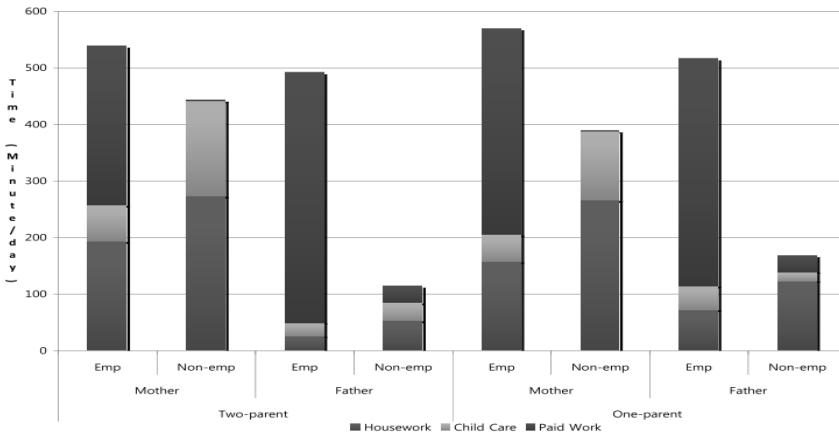
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9) The average wage rates are available from the National Statistical Office Website ([www.nso.go.kr](http://www.nso.go.kr)).

<Table 2> Average Amount of Time Spent by Mothers and Fathers on Housework and Care Work by Household Structure and Maternal Employment

|                      |                         | n     | Housework |        | Child Care |        | Leisure |        | Paid Work |        |
|----------------------|-------------------------|-------|-----------|--------|------------|--------|---------|--------|-----------|--------|
|                      |                         |       | mean      | sd     | mean       | sd     | mean    | sd     | mean      | sd     |
| Two-parent Household | Mother                  | 7,696 | 233       | 1.526  | 117        | 1.72   | 275     | 2.055  | 139       | 3.854  |
|                      | Employed                | 3,856 | 192       | 2.086  | 64         | 1.546  | 217     | 2.668  | 283       | 4.454  |
|                      | Non-employed            | 3,840 | 272       | 2.026  | 168        | 2.673  | 330     | 2.761  | 3         | 0.549  |
|                      | Father                  | 7,696 | 26        | 0.736  | 24         | 0.669  | 294     | 2.495  | 426       | 3.500  |
|                      | Employed                | 7,368 | 25        | 0.733  | 24         | 0.684  | 284     | 2.446  | 443       | 3.470  |
|                      | Non-employed            | 328   | 52        | 4.953  | 32         | 3.220  | 524     | 14.33  | 31        | 5.486  |
|                      | Married Childless Women | 692   | 169       | 4.991  | 6          | 1.042  | 338     | 7.415  | 188       | 10.825 |
|                      | Married Childless Men   | 636   | 29        | 2.220  | 5          | 0.873  | 302     | 9.048  | 420       | 13.036 |
| One-parent Household | Mother                  | 968   | 199       | 4.291  | 77         | 3.884  | 275     | 6.643  | 223       | 9.640  |
|                      | Employed                | 602   | 157       | 4.582  | 48         | 3.068  | 217     | 7.079  | 366       | 11.392 |
|                      | Non-employed            | 366   | 265       | 6.686  | 123        | 7.776  | 363     | 11.057 | 2         | 0.908  |
|                      | Father                  | 168   | 82        | 9.020  | 36         | 9.301  | 297     | 17.169 | 328       | 25.783 |
|                      | Employed                | 134   | 72        | 9.353  | 41         | 11.524 | 258     | 17.004 | 403       | 27.135 |
|                      | Non-employed            | 34    | 123       | 24.053 | 16         | 3.892  | 452     | 37.815 | 30        | 15.703 |
|                      | Unmarried Women         | 444   | 70        | 4.074  | 2          | 0.744  | 310     | 10.098 | 315       | 14.076 |
|                      | Unmarried Men           | 602   | 50        | 3.053  | 1          | 0.555  | 355     | 10.003 | 315       | 13.444 |

<Figure 1> Daily Minutes Spent on Housework, Child Care, and Paid Work



amount of time mother devoted is so large that taking an average of housework and child care for all married women is likely to provide us with a somewhat distorted picture of who is primarily performing the unpaid work. This gap between mothers and married childless women becomes wider when an unmarried mother is compared with an unmarried woman: an unmarried



mother performs four times as much work as an unmarried woman.

The time use of mothers and fathers in general clearly conforms to gendered roles in specializing different areas of activities: mothers undertake most housework and child care, while fathers' main activities are paid work. In two-parent households, mothers spend 117 minutes on child care, five times as much as fathers do, and 233 minutes on housework, nine times as much as fathers do. This would not necessarily mean that fathers contribute less to raising children: fathers and mothers devote their productive efforts to raising children in different ways (Craig, 2002). In a society where there is a strong notion of a gendered division of labor between paid and unpaid work, fathers are traditionally expected to provide financially for children, and mothers to perform unpaid work for the nurturance and development of children, although the two increasingly competing roles are more than ever expected of mothers in order to supplement insufficient funds earned by fathers. Interestingly enough, fathers in two-parent households spend just as much time on housework and child care as do unmarried men (50 minutes per day), and slightly more time than do married childless men (34 minutes per day), which suggests that marriage functions for men as doing less unpaid work and that children hardly impose a significant amount of unpaid work on men. These results are consistent with previous studies for the United States (Hartmann, 1981; Gupta, 1999). The point is that mothers tend to devote their efforts to caring for children without public recognition or due compensation.

Maternal employment fails to dramatically relieve women of maternal duties. Even when mothers are employed, they devote 40% and 70% of what non-employed mothers do at the sacrifice of their leisure time. Non-employed fathers slightly increase their time for housework and childcare, though this increase is insignificant, and enjoy a generous amount of leisure time. Employment for mothers intensifies total work effort, leading to a greater amount of total work than for employed fathers.

Being a single mother seems to lead a woman to devote more time to paid work in order to make ends meet. Women are often underpaid for their work in the labor market, thereby resulting in a longer workday to earn sufficient

income. Children with two parents obviously enjoy more child-care time from both mothers and fathers than do those with only one parent, which has more positive implications for outcomes in later life compared with those for children living with only one parent. Children living with unmarried fathers receive the least amount of parental child-care time. This may be because they benefit more from the contributions of other adults living with them than do children with unmarried mothers (Cho, 2004).

In <Table 3>, I calculated monthly parental time by multiplying daily minutes by 30 and presented three different monthly parental housework times, based on total, per-capita, and equivalized housework. The total-housework method yields the greatest estimate of parental time, the per-capita household method yields the smallest estimate of parental time, and the equivalized-housework method yields a value in between. This implies that the more housework benefits all household members, the higher the value of parental time.

<Table 3> Monthly Parental Time by Household Structure and Maternal Employment (Minutes per Month)

|                       |                         | Household Size | Total Housework | Per Capita Housework | Equivalized Housework | Childcare |
|-----------------------|-------------------------|----------------|-----------------|----------------------|-----------------------|-----------|
| Two-Parent Household  | Mother                  | 3.4            | 7,001           | 2,856                | 5,249                 | 3,520     |
|                       | Employed                | 3.5            | 5,774           | 2,458                | 4,588                 | 1,916     |
|                       | Non-employed            | 3.3            | 8,170           | 3,185                | 5,767                 | 5,048     |
|                       | Father                  | 3.4            | 791             | 322                  | 592                   | 721       |
|                       | Employed                | 3.4            | 757             | 309                  | 568                   | 711       |
|                       | Non-employed            | 3.3            | 1,572           | 628                  | 1,146                 | 946       |
|                       | Married Childless Women | 2.0            | 5,074           | 5,074                | 5,074                 | 166       |
| Married Childless Men | 2.0                     | 862            | 862             | 862                  | 149                   |           |
| One-parent Household  | Mother                  | 2.4            | 5,974           | 3,440                | 5,283                 | 2,310     |
|                       | Employed                | 2.4            | 4,697           | 2,747                | 4,264                 | 1,428     |
|                       | Non-employed            | 2.3            | 7,949           | 4,461                | 6,735                 | 3,675     |
|                       | Father                  | 2.5            | 2,465           | 1,470                | 2,315                 | 1,089     |
|                       | Employed                | 2.5            | 2,157           | 1,304                | 2,072                 | 1,245     |
|                       | Non-employed            | 2.3            | 3,681           | 2,069                | 3,127                 | 476       |
|                       | Unmarried Women         | 1.0            | 2,103           | 2,103                | 2,103                 | 62        |
| Unmarried Men         | 1.0                     | 1,491          | 1,491           | 1,491                | 41                    |           |

<Table 4> Replacement-Cost-Based Economic Value of Parental Time by Household Structure and Maternal Employment (Won/Month)

|                      |                      | Personal Monthly Income | Value I   |            |           | Value II  |            |           | Value III |            |           |
|----------------------|----------------------|-------------------------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|-----------|
|                      |                      |                         | Total     | Per Capita | Equalized | Total     | Per Capita | Equalized | Total     | Per Capita | Equalized |
| Two-Parent Household | Mother               | 440,000                 | 1,006,140 | 662,031    | 860,698   | 884,820   | 540,711    | 739,377   | 688,683   | 418,978    | 574,688   |
|                      | Employed             | 910,000                 | 710,584   | 435,340    | 612,142   | 644,563   | 369,319    | 546,121   | 502,572   | 286,842    | 425,415   |
|                      | Non-employed         | 0                       | 1,287,651 | 873,847    | 1,088,167 | 1,113,660 | 699,856    | 914,176   | 865,951   | 541,620    | 709,599   |
|                      | Father               | 2,200,000               | 152,717   | 113,819    | 136,229   | 127,862   | 88,964     | 111,374   | 99,228    | 68,741     | 86,305    |
|                      | Employed             | 2,300,000               | 148,719   | 111,512    | 132,993   | 124,202   | 86,995     | 108,476   | 96,373    | 67,210     | 84,047    |
|                      | Non-employed         | 0                       | 244,673   | 166,307    | 209,291   | 212,071   | 133,705    | 176,689   | 164,921   | 103,500    | 137,190   |
|                      | Married Women        | 680,000                 | 441,330   | 441,330    | 441,330   | 435,588   | 435,588    | 435,588   | 341,185   | 341,185    | 341,185   |
|                      | Married Men          | 1,730,000               | 89,563    | 89,563     | 89,563    | 84,420    | 84,420     | 84,420    | 65,962    | 65,962     | 65,962    |
|                      | One-parent Household | Mother                  | 770,000   | 774,808    | 564,493   | 717,458   | 695,186    | 484,871   | 637,836   | 541,709    | 376,868   |
| Employed             |                      | 1,270,000               | 562,233   | 400,384    | 526,287   | 513,030   | 351,181    | 477,083   | 400,147   | 273,294    | 371,973   |
| Non-employed         |                      | 0                       | 1,103,623 | 814,051    | 1,002,801 | 976,950   | 687,378    | 876,128   | 760,680   | 533,720    | 681,658   |
| Father               |                      | 1,200,000               | 336,157   | 253,570    | 323,655   | 298,611   | 216,025    | 286,109   | 232,554   | 167,824    | 222,755   |
| Employed             |                      | 1,500,000               | 329,363   | 258,488    | 322,304   | 286,462   | 215,588    | 279,403   | 222,819   | 167,269    | 217,286   |
| Non-employed         |                      | 0                       | 363,006   | 229,211    | 317,047   | 346,613   | 212,818    | 300,654   | 271,016   | 166,151    | 234,935   |
| Unmarried Women      |                      | 1,020,000               | 182,088   | 182,088    | 182,088   | 179,945   | 179,945    | 179,945   | 140,952   | 140,952    | 140,952   |
| Unmarried Men        |                      | 1,280,000               | 128,745   | 128,745    | 128,745   | 127,321   | 127,321    | 127,321   | 99,735    | 99,735     | 99,735    |

<Table 4> presents the economic value of parental time calculated using valuation methods I, II, and III as presented above. I applied corresponding wage rates for housework and child care. Economic values range from Value I, the highest estimate, to Value III, which is the lowest estimate because of the application of varying wage rates. Under each value are three different estimates based on the method of housework allocation. Personal monthly income is presented to assess the relative contribution of the economic value of unpaid work on an individual level. Not participating in paid work is treated as earning no income, because the KTUS did not provide any

information about such earnings.

Mothers as a whole in two-parent households generated goods and services whose values range from 662,031 (per-capita base) to 1,006,140 (total base) won for children, assuming that they would replace their services with those of educational professionals for child care, and with those of cooking and food-service workers for domestic help. The economic value they created could be conceptually parallel to income earned from unpaid work allocated to children. It can then be seen that in spending their time on children, mothers created economic value (or income) of about 150 to 230% of what they would earn from paid work. For fathers, the economic value of the time for children is only 5 to 7% of their earnings from paid work. This suggests that mothers' productive activities in the form of unpaid work contribute to raising children in a different way that fathers' do. In fact, the value of mothers' time constitutes 60 to 70% of the total income from paid and unpaid work, while fathers' constitutes 4 to 6%. Maternal employment certainly shrinks the relative contribution of the economic value of parental time relative to total income, but about 32 to 45% of total income is devoted to raising children in the form of unpaid work. The difference between mothers and married childless women is therefore noticeable: married childless women create only 65% as much earned income, while mothers create 150 to 230%.

<Table 5> presents the average time spent by mothers and fathers on different activities according to six categories determined by children's age and number: 1 child aged 0 to 6; 2 or more children aged 0 to 6; no children aged 0 to 6 and 1 child 7 to 12; no children aged 0 to 6 and 2 or more children 7 to 12; no children aged 0 to 12 and 1 child aged 13 to 18; and no children aged 0 to 12 and 2 or more children aged 13 to 18. As children grow, both mothers and fathers decrease the time spent on direct child-care time. Mature children obviously demand less direct child care such as physical care, but this result is partly driven by the activity-based

&lt;Table 5&gt; Average Time Spent by Mothers and Fathers on Housework and Care Work by Children's Age and Number (Minutes per Month)

|        |                     | Housework |      | Child Care |      | Leisure |      | Paid Work |      |        |
|--------|---------------------|-----------|------|------------|------|---------|------|-----------|------|--------|
|        |                     | n         | mean | sd         | mean | sd      | mean | sd        | mean | sd     |
| Mother | All                 | 8,664     | 230  | 1.442      | 113  | 1.599   | 275  | 1.968     | 148  | 2.762  |
|        | 1 child (0-6)       | 2,940     | 225  | 2.233      | 208  | 2.911   | 259  | 3.098     | 80   | 3.620  |
|        | 2+ children (0-6)   | 778       | 216  | 4.457      | 141  | 4.259   | 245  | 6.190     | 169  | 9.727  |
|        | 1 child (7-12)      | 1,632     | 228  | 3.308      | 75   | 2.254   | 288  | 4.480     | 166  | 6.404  |
|        | 2+ children (7-12)  | 1,236     | 246  | 4.220      | 40   | 1.769   | 280  | 5.339     | 188  | 7.927  |
|        | 1 child (13-18)     | 1,034     | 227  | 4.449      | 31   | 1.869   | 296  | 6.286     | 203  | 8.857  |
|        | 2+ children (13-18) | 1,04      | 240  | 4.663      | 24   | 1.295   | 296  | 6.287     | 216  | 9.272  |
| Father | All                 | 7,864     | 27   | 0.748      | 24   | 0.681   | 294  | 2.469     | 424  | 3.473  |
|        | 1 child (0-6)       | 2,760     | 26   | 1.262      | 42   | 1.462   | 271  | 3.956     | 432  | 5.939  |
|        | 2+ children (0-6)   | 718       | 24   | 2.034      | 36   | 2.340   | 286  | 7.922     | 429  | 10.863 |
|        | 1 child (7-12)      | 1,438     | 34   | 2.039      | 13   | 0.958   | 306  | 5.658     | 411  | 8.120  |
|        | 2+ children (7-12)  | 1,134     | 26   | 1.950      | 9    | 0.883   | 295  | 6.160     | 436  | 8.623  |
|        | 1 child (13-18)     | 868       | 28   | 2.298      | 9    | 1.059   | 328  | 8.139     | 408  | 10.489 |
|        | 2+ children (13-18) | 946       | 25   | 1.739      | 9    | 1.119   | 324  | 7.989     | 413  | 10.389 |

definition of child care. Older children demand more indirect child-care time such as being available for sporadic and intermittent parental attention (Folbre et al., May 2005). Housework time for both mothers and fathers remains fairly constant, although slightly greater when children are school-aged. For mothers, with the exception of the age category 0 to 6, having more children increases the mother's housework given the same age category (e.g. 7-12), while decreasing child-care time. Less child-care time associated with a greater number of children seems to defy expectation, but as the time spent on paid work shows, it is likely that a greater number of children, given the same age category, represents overall older children, which leads to an increased likelihood of maternal employment.

<Table 6> Monthly Parental Time and Replacement-Cost-Based Economic Value of Parental Time by Children's Age and Number (Minutes, Won/Month)

|                     | Hhold Size | Total Housework | Per Capita Housework | Equalized Housework | Child Care | Value I   |            |           | Personal Monthly Income |
|---------------------|------------|-----------------|----------------------|---------------------|------------|-----------|------------|-----------|-------------------------|
|                     |            |                 |                      |                     |            | Total     | Per Capita | Equalized |                         |
| Mother All          | 3.3        | 6,892           | 3,730                | 6,746               | 3,391      | 981,527   | 719,083    | 969,405   | 477,827                 |
| 1 child (0-6)       | 2.9        | 6,760           | 3,299                | 5,648               | 6,241      | 1,314,586 | 1,027,278  | 1,222,220 | 314,778                 |
| 2+ children (0-6)   | 4.1        | 6,473           | 4,107                | 8,318               | 4,224      | 1,047,313 | 850,854    | 1,200,498 | 584,409                 |
| 1 child (7-12)      | 2.9        | 6,835           | 3,273                | 5,552               | 2,237      | 837,535   | 541,782    | 731,011   | 527,815                 |
| 2+ children (7-12)  | 4.0        | 7,391           | 4,625                | 9,261               | 1,214      | 760,028   | 530,469    | 915,308   | 592,736                 |
| 1 child (13-18)     | 2.8        | 6,804           | 3,150                | 5,264               | 923        | 676,248   | 372,891    | 548,412   | 571,949                 |
| 2+ children (13-18) | 3.9        | 7,192           | 4,429                | 8,753               | 708        | 682,478   | 453,137    | 812,061   | 600,868                 |
| Father All          | 3.4        | 823             | 455                  | 835                 | 728        | 156,203   | 125,702    | 157,181   | 2,179,909               |
| 1 child (0-6)       | 3.0        | 795             | 396                  | 684                 | 1,247      | 216,552   | 183,425    | 207,368   | 2,074,858               |
| 2+ children (0-6)   | 4.2        | 729             | 467                  | 956                 | 1,069      | 189,556   | 167,837    | 208,368   | 2,200,939               |
| 1 child (7-12)      | 3.0        | 1,006           | 501                  | 865                 | 381        | 129,529   | 87,585     | 117,836   | 2,198,921               |
| 2+ children (7-12)  | 4.1        | 779             | 493                  | 996                 | 267        | 96,930    | 73,194     | 114,964   | 2,419,628               |
| 1 child (13-18)     | 3.0        | 833             | 411                  | 706                 | 273        | 102,047   | 67,006     | 91,552    | 2,064,824               |
| 2+ children (13-18) | 4.0        | 749             | 468                  | 935                 | 269        | 94,658    | 71,305     | 110,075   | 2,293,260               |

As <Table 6> shows, a mother with one preschool-aged child generates goods and services whose values range from 1,027,278 (per-capita base) to 1,314,586 (total base) won for children on the basis of Value I. The value of parental time decreases as the children grow. Since the mother with one preschool-aged child reduces the time she spends doing paid work, the relative value of her parental time is 3 to 4 times that of her earned income. In fact, the value of the mother's time constitutes 76% of the total income from paid and unpaid work, whereas that of a father with a preschool-aged child constitutes 8%. This suggests that young children consume a substantial amount of parental time in the form of unpaid work and that earned income through paid employment would only partly meet the needs of children. Although the table does not provide estimates at the household level, for instance, we can think of a hypothetical household where a mother and a

father supply parental time to a child aged 0 to 6. For the household, the value of parental time is 1,531,138 won (the sum of the values, total base) and the household income is 2,389,636 won (the sum of personal monthly income). The value of parental time is 64% of the earned income. What this implies for the well-being of children is very clear: children consume more than what is estimated by mere financial costs. If we consider that a substantial portion of earned income is also distributed to the needs of children, raising children requires amazingly enormous resources from parents, who face lower consumption of goods, services, and leisure time than do non-parents.

## VI. Discussion and Suggestions

In sum, the economic value of parental time for children is significant relative to income earned from paid work. The role of unpaid work in generating goods and services for children is particularly crucial for those who engage in no paid employment. Mothers' efforts in raising children mostly take the form of unpaid work, which serves to enhance the economic welfare of children just as paid work does. Fathers specialize in providing financial resources. The key difference is that fathers are indirectly remunerated for their contribution through pension systems, as in many developed countries, but mothers' contributions are neither noticed nor publicly supported. Therefore, given that maternal time consists of a large share of the time costs of raising children, it has significant implications for the living standards of mothers in their old age.

The recognition that raising children is expensive in terms of the time costs to parents, particularly mothers, calls for attention from policy makers in designing and implementing family-related policies relevant to maternal employment and child poverty. From the point of view of mothers, employment choices are critically dependent on a comparison of the economic value of their time as parents and what they could earn from paid

employment. Economists often point out the high reservation wage of mothers as barriers to their participation in the labor market, but make insufficient effort to deciphering what determines it. This study implies that one of the determining factors is the value of parental time, which is constrained by the substitute markets and institutional contexts that replace it. A shift in the substitute markets and institutional contexts would greatly affect the paid employment of mothers, redistribute time and money expenditures between mothers and fathers, and relieve those who expend disproportionately greater time costs, such as non-employed and single-parent mothers, of potentially unwanted burdens. From the point of view of children, their well-being is critically dependent on parental time as well as on financial funds. Supporting optimal level, if any, of parental time is very important to children's development particularly at young ages, given that parental time and market substitutes, including babysitters and toys, are not perfectly substitutable.

It is important and necessary to monitor patterns and trends in parental time in understanding the actual resources devoted to raising children. As Korean society places greater emphasis on acknowledging paid employment as a productive activity and as a means of achieving economic independence, less and less time is devoted to unremunerated activities such as raising children. The lowest low fertility of Korea demonstrates the adverse effects of not recognizing and compensating for parental time. In this context, the economic value of parental time, rather than that of unpaid work done by the entire population, would provide valuable information about the implications of unpaid work for the human capital formation. It is often the case that the marital status of women fails to explain their economic role regarding the human capital sector of maintaining the workforce.

This study suffers from several limitations that should be overcome in future research. First, the magnitude and value of parental time is likely to be subject to underestimates because of the focus on activity-based parental time. Improvements to the KTUS should be required in order to offer better estimates by including passive and indirect parental time for children. Second, despite their obvious importance, grandparental time contributions to raising



children were excluded from this analysis. Understanding the levels and trends of child care provided by relatives is important to understanding parental time, since fewer and fewer grandparents may offer full-time child care to grandchildren as they place higher value on their leisure time in old age or face higher opportunity costs in the labor market where elderly employment is promoted. Finally, time costs are only part of the actual costs, which should include both money and time expenditures for children. It would be interesting to see the importance of time costs in the broader context of total actual costs. I leave these issues for future research.

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