の実施、開所時間が長い、障害児保育や一時保育など特例保育を行っている、送迎バスがある等となっている。このことから、公立保育所は高費用であるが、需要側の多様なニーズには応えていないことがわかる。

つぎに規制緩和による新しい保育サービスについてみてみよう。

（1）新しい保育サービス

川崎市や横浜市などは低年齢の待機児が多く存在している。しかし、公立保育園の増加は財政上の理由により困難として、東京都は「認証保育所」、横浜市では「横浜保育室」など自治体が独自に設定した基準の保育所を開所している。東京都の認証保育所、横浜保育室とも利用者と保育所の直接契約方式である。認証保育所では、０歳児保育の実施が必須であり、基準面積が緩和（０歳児・１歳児の一人当たり基準面積は認可では 3.3 ㎡であるが、2.5 ㎡としている）されており、保育料は上限付きで保育所側が自由に設定できる。また横浜市では 18 区全部に横浜保育室があり、３才未満児の定員が 20 人以上確保されており、概ね３歳未満児４人に１人の保育従事者となっている。

また、調理員を置かないために無認可であるが文部科学省共済組合による「かすみがせき保育室」が 2001 年 10 月 19 日に開所した[23]。施設・設備等は文部科学省が無償提供を行い、株式会社コティに運営の委託を行っている。コティは利用者の保育料等により運営を行い、文部科学省共済組合からの報酬、対価等はない。朝８時 30 分から夜 10 時まで保育を行っていること、１時間単位での一時保育の実施が可能であることが特徴であり、夜 10 時までの利用者も３名いる。年齢別の常時保育（基本保育８時間につき）の月額保育料と入室者状況は、図表－８のとおりである[24]。

図表－８　保育料と入室者状況

	月額保育料	入室者
０歳児	49,000 円	８名（男女各４名）
１歳児	48,000 円	４名（男３名、女１名）
２歳児	47,000 円	２名（女２名）
３歳児	45,000 円	３名（男１名、女２名）
４歳児以上	45,000 円	０名

出所：文部科学省共済組合「かすみがせき保育室」

23) 「かすみがせき保育室」へのヒアリングによる。以下のデータは、平成 13 年 11 月 1 日現在である。
24) 延長保育は、年齢に関係なく 1 時間 600 円である。

０歳児から３歳児まで合計 17 人が保育を受けているが、４歳児以上の利用はない。前述のように、無認可保育施設では児童の年齢の上昇により、保育料がそれほど低下しない。一方認可保育所では３歳以上になると保育料が大幅に低下する。認可保育所を利用した場合の保育料と比較した場合、３歳以上では認可保育所がとくに安価となるため、４歳児以上の利用は今後も見込めないと考えられる。

（２）規制緩和の影響：公設民営の保育所

これまで認可保育所の運営主体は市町村や社会福祉法人などに限定されるという参入障壁が存在した。しかし、2000 年３月に「保育所の設置認可等について」が改正されたため、株式会社やＮＰＯなど市町村や社会福祉法人以外であっても認可保育所の設置が可能となった。2001 年４月までに、社会福祉法人以外の主体による保育所が 27 件設置されたが、そのうち認可外保育所から認可に移行したものが 15 件である[25]。設置主体別（括弧内は認可外からの移行数）では、社団・財団法人１件（１）、学校法人６件（２）、宗教法人６件(３)、ＮＰＯ３件(１)、有限・株式会社６(４)、個人５件(４)となっている。

また、地方自治法第 244 条の２第３項の解釈が変化したために、地方自治体が設置する保育所を民間主体（株式会社やＮＰＯ）へ委託することが可能となった[26]。こうして 2001 年４月に全国で初めて株式会社に運営の委託を行った公設民営の三鷹市立東台保育所が開所した。三鷹市の保育士の平均年齢は 40 歳を超えており、平均年収は 820 万円と人件費単価が高いために、三鷹市の公立保育所においては０歳児一人あたり年間 600 万円の費用負担が行われている[27]。三鷹市が直接運営した場合には約１億８千万円かかると試算[28]していたが、8,837.5 万円の委託費[29]によって運営が行われており、約半額となっている。なお、委託であっても他の市立保育園と同様に市が責任を持ち、保育の質についても市の関与により水準以上のものが確保されているため保護者に大きな安心感を与えているとしている。さらに「公の施設の管理」については引き続き三鷹市が行うこととし、委託は保育所の運営についてのみである。

委託を受けたベネッセが価格を低く抑制できたのは、保育士を１年契約で雇用しているためである[30]。運営業務委託プロポーザル（企画提案）に参加した別の企業では、一人当たり職員の月給を 233,300 円として計算しており、この場合の総経費は約 1 億 2,500 万円で

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25) 「保育所設置に係る多様な主体の認可状況等について－平成 12 年３月の規制緩和措置の効果－」
26) 「地方公共団体が設置する保育所に係る委託について（平成 13 年３月 30 日）」。
27) 三鷹市へのヒアリングによる。
28) 『三鷹市自治体経営白書～効率的で開かれた自治体、「21 世紀型自治体」を目指して～』（平成 14 年７月）。
29) 広報みたか No.1209(2001.4.15)。
30) 三鷹市立東台保育所へのヒアリングによる。

あった[31]。

三鷹市ではさらに2002年4月に公設民営により2歳児以下30名定員の保育所を開設した[32]。低年齢の待機児が多いためということであるが、この年齢がとくにコストが高い。それを民間に委託するのであるから、公立保育所を新たに開所する場合と比較してコストが大幅に低く供給できる。

民間による保育サービスでは保育士の年齢が若い層だけとなる可能性があり、これまでの公立保育所のような幅広い年齢の保育士による保育は困難となってくる。これに対して保育料よりも保育の質を重視する保護者の間では不安が存在する[33]。

認可保育所では企業にとっての収入となる保育料と施設面や保育士の配置基準などが決められているため、その制約条件の下で企業が利潤最大化を行う、つまり費用を最小化するためには人件費の削減が大きい。保育サービスは主として人的サービスであるので、今後人件費の削減によって質の低下が起こる可能性がないとはいえない。

かすみがせき保育室、三鷹市立東台保育所とも施設・設備などは公的に供給されており、フローの部分のみが企業の費用となっている。しかしそれでも利潤をあげるのは難しく、今回参入を行ったのは、競争によって選ばれたことで他の企業よりも保育の質が高いというシグナルを示したことや将来に向けての企業戦略などが目的であって、短期的な利潤目的ではないと考えられる。この場合、企業の参入が今後それほど増加しないと考えられる。

横山(1999)では、滋賀県の民間保育所数と自治体の人口規模、定員充足率との関係を推計している。それによれば、人口が多いと民間保育所数は多く、また定員充足率と正の関係があり、民間保育所は需要の見込める地域でしか運営できないとしている[34]。つまり公的な支援がない自由競争では民間保育所が地方で経営を行うことは困難である。

また乳児と幼児では園庭の有無など求める保育の質が異なる[35]。保育の質の評価は難しい問題であるが、人的サービス以外の施設等の面からも保育サービスを考える必要がある。

認可保育所への入所が可能になった場合、こどもが保育所に慣れていて、友達もいるため、無認可から認可に移るのをためらう場合もある。これまで、保育サービスは主として保護者の就労との関係で考えられてきたが、こどもにとってのウェルフェアを考え、こどもにとって望ましい保育サービスを考えることが必要である。こどもの側から考えれば、保護者の長期労働によって保育所で長時間過ごすことが望ましいとはいえない。それよりも育児休暇の取得を容易にしたり、こどもが低年齢の間は短時間労働にシフトするなど、就労形態の多様化がより求められる。法令以上の休暇取得や短時間勤務などの育児支援制

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31) 「自治体保育事業への民間企業の参入－東京三鷹市の保育園民営化関係資料－」,『賃金と社会保障』, 1308(2001年10月下旬号), 65～83。

32) 社会福祉法人ユーカリ福祉会が行うことに決定された（広報みたかNo.1227、2002.1.20)。

33) 2001年9・10月に実施したフォーカス・グループ・ディスカッションによる。

34) [横山, 1999：414～415]

35) 2001年9・10月に実施したフォーカス・グループ・ディスカッションによる。

度を現在実施している企業の割合は23.9%であり、実施している企業のうちでは、拡充していきたいが7.7%、現状維持が91.4%である。現在実施していない企業であっても23.0%は今後実施していきたいと考えている[36]。

こうした企業側の努力だけでなく、少子化対策や女性の就労の促進を図ることを目的とするのであれば、国として長期的な観点からマクロレベルでの政策が必要である。

5．まとめ

地方自治体の保育所運営費の多くを占めているのは人件費である。それは保育士の賃金体系と平均年齢が大きな要因であり、現在公立保育所の運営費用に対して市区町村が多大な負担を行っている。一方、無認可保育所では保育士の勤務年数が短く、賃金が年齢や勤続年数によってそれほど上昇しないために人件費は認可保育所に比べて低い。保育サービス需要（待機児童）が存在していても新たに公立保育所を開所するためには多額のコストがかかる。待機児の減少を目指して規制緩和が行われ新たな形態の保育所が開設されることで、現在の認可保育所の効率化が進むことが予測される。また今後利用者と保育所の直接契約が行われるようになれば選別が行われ、競争が生じることにより、同価格であってもサービスの向上が起こることも考えられる。しかし、保育サービスを質の面から考えると今後低下する可能性も存在する。

待機児の多くは０～２歳児であるが、この年齢の児童一人当たりの費用がとくに高い。高い費用がかかる自治体では、現在の規制緩和が一時的な解決とはなっても、企業が利潤を生じない状況では、長期的な解決策となるかどうかは明らかではない。

そこで根本的な解決策の一つとして、育児休暇取得の促進があげられる。これはすでに高山(1982)で示唆されている[37]が、出産後１年間は育児休暇を取得するようにすれば多額の費用がかかる０歳児の保育費用の削減が可能となる。滋野(2001)では、保育費用が高いほど育児休業の取得確率が高まる[38]としている。これは需要側である既婚女性についての分析結果であるが、供給側からも保育サービスの代替という観点から育児休業を考える必要がある。雇用保険制度による育児休業給付は、育児休業取得前の賃金額の約40%とされているが、育児休業中の臨時職員の採用など育児休業取得に関わるさまざまな費用と保育所を利用した場合に要する費用を比較など、保育サービスの供給側からより効率的な方法を考える必要がある。保育費用の削減効果と育児休暇取得に関わる費用の比較は今後の課題としたい。その際、費用だけではなくこどもの厚生も考慮に入れて考える必要がある。

高齢化の進展や地方財政の悪化などによって、地方自治体が保育所運営に現在以上の公費負担を行うことが次第に困難になっている。受益者負担の観点から、望ましい保育料の

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36) （財）生命保険文化センター『平成10年度企業の福利厚生制度に関する調査』,p.127。

37) ［高山，1982：250脚注(28)］

38) ［滋野，2001：348～349］

設定や負担率について再検討を行うことも今後の課題である。その場合、保育サービスの費用側からだけではなく、収入や他の消費サービスとも関連して利用者側から考えた望ましい費用徴収額と上限も併せて考えることが必要である。

参考文献

右田紀久恵・里見賢治・平野隆之・山本　隆，1989，『福祉財政論』，ミネルヴァ書房.

刈屋武昭監修，1985，『計量経済分析の基礎と応用』，東洋経済新報社.

勝又幸子研究代表，2002，『こどものいる世帯に対する所得保障、税制、保育サービス等の効果に関する総合的研究　平成13年度総括研究報告書』.

駒村康平，2002，「保育サービスの費用分析と需給のミスマッチの現状」，国立社会保障・人口問題研究所編『少子社会の子育て支援』，東京大学出版会.

滋野由紀子，2001，「子育て支援策と労働市場－「平成８年度人口動態社会経済面調査（出生）」を用いた分析」，国立社会保障・人口問題研究所『社会保障の社会経済への効果分析モデル開発事業調査研究報告書』，340～354.

周燕飛・大石亜希子，2002，「保育サービスの潜在需要と価格弾力性の分析」，『こどものいる世帯に対する所得保障、税制、保育サービス等の効果に関する総合的研究』ワーキング・ペーパーNo.0202.

全国保育協議会編，2001，『保育年報2001』，全国社会福祉協議会.

全国保育団体連絡会・保育研究所編，2001，『保育白書2001年版』，草土文化.

高山憲之，1982，「保育サービスの費用負担－応能負担原則の再検討－」，『経済研究』，33(3)，239～250.

地方自治経営学会，2001，「公立と民間とのコストとサービス比較－全国延べ316自治体からの報告とその分析－」，『賃金と社会保障』，1279，62～73.

朽尾　勲編集代表，1999，『保育所運営マニュアル：今、求められる保育サービス』，中央法規出版.

中村強士，2001，「保育所保育料の利用者負担の実態と保育料政策－名古屋市保育料負担実態調査を中心に－」，『総合社会福祉研究』，19，129～144.

林　浩康・イト・ペング，2001，「家計に占める育児コストに関する研究」，『季刊家計経済研究』，50，69～72.

保育行財政研究会編著，2000，『公立保育所の民営化－どこが問題か－』，自治体研究社.

三鷹労政事務所，2000，『多摩地域における民間保育園の労働条件等の実態と保育士の意識』.

横山由紀子，1999，「保育における規制緩和と民営化」，『季刊・社会保障研究』，34(4)，413～420.

Child Care Services, Extended Families, and Female Labor Force Participation in Japan

November 2002

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1. Introduction

Japan cannot avoid the decreases in the total population and labor force due to the declining fertility rates. It is expected that more women must work in order to maintain labor force in the society. At the same time, women themselves are willing to work in order to achieve economic independence. Increases in female labor force participation rates are thus hoped for by both by demand and supply.

However, increases in the female labor force may exacerbate the problem of the declining fertility rates. There are many reasons for the decline in birth rates in Japan, other than female labor force participation. However, birth rates among female workers who have full-time jobs tend to be low and labor force participation rates of women who have already had children are low. What should we do to improve the current situation?

Some of the preceding research on female labor and birth rates led to the conclusion that both birthrates and female labor force participation rates in Japan will increase if there are more nursery schools. However, we doubt that an increase in the number of nursery schools is the only remedy for declining fertility rates. Using econometric methods, this paper examines factors other than nursery schools, such as informal family care and the employment policies of enterprises in contemporary Japan.

2. The relationship between female labor and the declining fertility rates

2－1. The trends in female labor force participation rates and birth rates

Before the period of the rapid economic growth, female labor force participation rates in Japan were higher than those in the United States. According to the 1950 Labor Force Survey, female labor force participation rates in Japan was 56.7% while in the U.S. it was 33.9%. However, the total fertility rate in Japan was higher than in the U.S. at that time. Japanese female workers were mainly engaged in family businesses including agriculture. That is, women's employment does not always hinder childbirths. The relationship between female labor and birth rates depends on the surrounding social and economic conditions.

Japanese female labor force participation rates declined from 1960 to 1970 while rapid economic growth took place. The bottom was recorded in 1976 at 45.8%. It rebounded after1976 but never recovered to the level same as 1950. While female labor force participation rates made a sluggish recovery, birth rates declined rapidly. Thus the Butz-Ward model, which presupposes that female labor suppresses childbirth, has only limited explanatory power for the time-series data of Japan.

However, the negative relationship between female labor and birth rates appeared after 1970. In particular, labor force participation rates of females between ages 25 and 34 increased. At the same time, total fertility rates gradually decreased. It is likely that childbirths have been negatively affected by female labor, as the years between 25 and 34 are associated with the highest birth rates in a woman's life.

If it was easy for married women to work as employees and take care of children, then female labor force participation rates would have no effects on birth rates. Actually, however, while female workers who give birth to children tend to quit jobs, female workers who continue to work have fewer children.

According to the 11th Survey on Childbirth conducted by the Ministry of Health and Welfare in 1997, female workers who continued to work after the childbirth had, on the average, fewer children than those who once quit jobs. This suggests that women who continue to work after childbirth tend to give up having additional children. It also suggests that some female workers who continue to work are giving priority to

business. Another explanation for the negative effects of labor force participation rates on birth rates is that female workers have high risks of miscarriages or abortion (Kojima(2001)).

2−2. Preceding analyses on female labor force participation and childcare support

Before the period of the rapid economic growth, both fertility rates and female labor force participation rates were high in Japan. The reason why female work did not have negative effects on birth rates was that the extended family supported child care in many ways and that female workers were mainly engaged in family jobs.

After the period of rapid economic growth, Japanese female labor force participation rates declined for several reasons. One of the reasons was that the status in employment changed not only for women but also for men. As Higuchi (1991) stated, "There were some obstacles for female labor force participation in the process of the structural change in which people had to move from the workplace nearby their dwellings to the faraway workplaces." One obstacle was that female wages in the new industries at that time were significantly lower than male wages, and another obstacle was that the nuclear family increased during the process of the structural change. Some women chose to be housewives and others quit jobs involuntarily.

In the 1970s educational attainment for women got higher. This means that women's potential labor supply increased. However, female labor participation rates especially those for women in their thirties did not increase. This was because the household division of work between husbands and wives did not change drastically and because there were not enough childcare facilities in urban areas. In Japan, nursery schools were first established in rural areas where women were engaged in agriculture. The rapid economic growth and the consecutive era led people to move from rural to urban areas. This meant that women moved to places where the supply of childcare services was not enough. It also meant that people had come to live in the places where informal childcare support was rarely given. Firms' low demand for female workers blurred the problem of the shortages of childcare services.

Since the beginning of the 1980s, female labor supply increased, especially for ages 25-29 as the educational levels of women went up and firms' labor demand for female labor increased. Educated women have come to be engaged in a variety of jobs. At the same time, the conflict between childcare and labor force participation became serious. The conflict is not limited to the fact that it is hard for married women to balance childcare and jobs. Career interruption for female workers has cost them opportunities. Late marriage was preferred by some women who were afraid of career interruption and wage losses. It caused declining fertility rates.

If the late marriage and declining fertility rates had been caused by the shortages in the childcare support system, then establishing a childcare facilities would help the situation. However, we cannot overestimate the effects of the childcare facilities too much, as the effects of childcare facilities on female labor supply, marriage, and childbirth have not been clarified yet.

Research papers and theses on childcare and female labor supply written since 1990 have led to various conclusions. Nagase(1997) found that for a Japanese married woman, not only full-time jobs but also part-time jobs are hard to continue if she has to look after children and that labor force participation as a full-time worker is often supported by informal childcare given by the extended family. On the other hand, Shigeno and Ohkusa(2001) analyzed the Survey on Standards of Living of the Japanese People and reached the conclusion that if the capacity of nursery schools increases, then female labor force participation rates will increase. However, the

causal relationship between supply of nursery schools and female labor force participation is not clear. Kishi (2000) examined the causality from nursery schools to TFR for each prefecture and concluded a negative result.

The results of researches on the relationship between the supply of childcare services and female labor force participation are still unstable. However, the effects of childcare support in a broad sense on female labor have become clear. For example, Matsuura (2001) concluded that wives' decision to work is more strongly affected by the fulfillment of childcare support of all kinds than by husbands' income. The original point of Matsuura's thesis was that it put all kinds of childcare support into a variable and found that for some of the married women's labor supply behavior did not depend on their husbands' income.

Preceding analyses on female labor force participation have pointed out that the conflict between employment and childcare cannot be solved merely by establishing more nursery schools. It is possible that the difficulties facing working married women are worsened by terms of employment in contemporary Japan. Thus in the following subsection we analyze the effects of childcare facilities, employment conditions and their interactions.

3. Empirical analysis using 1996 Survey on Time Use and Leisure Activities

Preceding analyses conducted by the Japanese researchers have found that female labor force participation rates have a negative relationship with husband's income and a positive relationship with the wife's potential wage rates. In addition, predecessors pointed out that wives' labor participation rates are higher in extended families than in nuclear families, higher for families that can utilize nursery schools or daycare centers near by, and lower for families with many children. The effects of household factors on female labor force participation rates are observed not only in Japan but also in the United States.

There are a number of factors explaining female labor force participation rates. However, in the following subsection, we mainly explore the effects of variables concerning childcare factors and working conditions of employees.

3−1. The data

In this paper we use the official 1996 Survey on Time Use and Leisure Activities. This data classified types of households in various ways. However, we concentrate on households with children and classify them into two types: households of extended families and those of nuclear families.

<table>
<tr><td>Households of a couple, children and parents
Households of a couple, children and a parent</td><td>Households of extended families</td></tr>
<tr><td>Households of a couple and children
Households of a mother and children(a child)
Households of a father and children (a child)</td><td rowspan="2">Nuclear family</td></tr>
<tr><td>Households of a married parent and children (a child)</td></tr>
</table>

We reclassified the employment statuses of wives in the following way.

Wife is self-employed	Self-employed
Both husband and wife are employees(wife works less than 35 hours a week)	Not full-time workers
Both husband and wife are employees (wife works more than 35 hours a week)	Full-time workers
Both husband and wife are employees (wife's working hours are not reported)	Not full-time workers
Husband works while wife does not work	
Both husband and wife don't work	

As for the availability of childcare facilities, we classified them into three and six categories for households with a child and those with more than two children, respectively. We also estimated the effects of interaction terms between types of households and availability of childcare facilities on wives' labor force participation. This was to clarify whether informal and formal childcare services are complements or substitutes.

The 1996 Survey on Time Use and Leisure Activities does not separate husband's and wife's earnings. Thus we used firm size dummy variables as representing husband's and wife's wage income.

Table1 Explanatory variables

data	categorical variables
dependent variable	
full-time worker	(reference group: not working or part-time workers) labor force participation as a full-time worker
independent variables	
number of children before school age	(reference group: zero) one more than two
childcare facility where a child attends(for households with a child)	(reference group: not attending) kindergartens nursery schools
childcare facilities where children attend(for households with more than two children)	(reference group: all of them are not attending) all attending nursery schools all attending kindergartens some attending nursery schools, others kindergartens some attending kindergartens some attending nursery schools
type of household	(reference group: nuclear family households) extended family#

size of firm where husband works	(reference group: less than 30 employees) from 30 to 99 employees from 100 to 299 employees from 300 to 499 employees from 500 to 999 employees more than 1,000 employees offices
working hours of husbands	(reference group: less than 15hours) 15-34 hours 35-42 hours from 43 to 48 hours from 49 to 59 hours more than 60 hours not fixed
wife's education	(reference group: junior or senior high school diploma) junior college diplomas college diplomas

excluding households with someone who has to be looked after

3－2. Estimation of female labor force participation as full-time employees

Using log-logistic models, this section estimates the probabilities that married women work as full-time employees. The basic style of the model is as follows. 'P' represents the probability that a married woman works full-time.

log(p/(1-p))=Σ(variables concerning a woman's potential earnings) + Σ(variables concerning husband's income or other working conditions)+Σ(variables concerning childcare facilities)

Before the analysis, we excluded the following samples:

Men
Women younger than 20 or older than 40
Self-employed workers
Unmarried women

The reason why we concentrate on women from ages 20 to 40 is that the conflict between childcare and employment occurs mainly at this stage in life.
The equations used for estimation are (1) for 28,363 samples including those without children and (2) for those with children.

$$(1)\quad \log\left(\frac{p_i}{1-p_i}\right) = \mu + \sum \alpha_k N_i + \sum \beta_k (SETAI)_i + \sum \delta_k (ED)_i + \sum \gamma_k (H\_H)_i + \sum \rho_k (H\_T)_i + \sum \zeta_k (Fsize)_i + \varepsilon_i$$

$$(2)\quad \log\left(\frac{q_j}{1-q_j}\right) = \varpi + \sum a_k (Nurs)_j + \sum b_k (SETAI)_j + \sum c_k (ED)_j + \sum d_k (H\_H)_j + \sum r_k (H\_T)_j + \sum s_k (Fsize)_j + u_j$$

In equations (1) and (2), p and q are the probabilities that a wife works full-time. The meanings of the independent variables are as follows:

N: children before school age
Nurs: using nursery schools
SETAI: type of household
ED: educational attainment
H_H: husband's hours of commuting
H_T: husband's commuting hours
Fsize: Size of firms where husband works

All independent variables are categorical as shown in Table1. The suffix 'k' denotes the k-th category. For example, ED_1 correspond to junior college diplomas and ED_2 college diplomas. On the other hand, suffixes 'i' and 'j' denote the i-th and the j-th sample, respectively. There are six categories for both H_H and 'Fsize'. As there are too many categorical variables on the right hand sides of equations (1) and (2), we applied the stepwise method to exclude the variables for which p-values are less than 0.10.

We used the independent variable H_T in order to test whether long commutating hours make it difficult for husbands to look after children. Fsize represents the size of the firm in which the husband works, which in turn reflects the husband's wage income. We expected that a wife's labor force participation rates are negatively related with husband's income, as empirical researches in the past had found.

4. Results of econometric analyses

4−1. Results on data including households with no children

First we made estimates for 28,363 samples including women with no children. The estimated results are shown in Table 2. This table compares the results for 20,030 women in their twenties and 8,333 women in their thirties.

According to Table 2, wives' labor force participation rate is the highest for those with no children and higher for those with a child than for those with more than two children. That is, the number of children before school age is negatively related to wives' labor force participation rates. It suggests that for married women in Japan, it is still hard to continue full-time jobs while taking care of children.

The variable representing extended family with no one who has to be looked after for has a positive effect on wives' labor force participation as full-time workers. This result confirms the results obtained by preceding analyses such as Nagase (1997). Wife's education, especially a college diploma has a positive effect on labor force participation as a full-time worker. On the other hand, if husband's working hours exceed 49 hours a week or husband's commuting hours exceed one hour, then wife's labor force participation as a full-time worker gets significantly lower as expected.

The unexpected result is that the size of firms in which husbands work has only a limited effect on the probability that wives become full-time workers. For example, wives whose husbands work in firms with 30 to 199 employees are more likely to work as full-time employees than those with husbands working for firms with less than 30 employees. That is, there is not a linear relationship between wife's labor force participation as a full-time worker and husband's wage income. In Japan, economists have estimated labor supply functions of married women for years and found that wife's labor force participation rates are negatively related to husband's income. However, it is possible that the female labor supply function has become more

complicated than it was before.

According to Table 2, government officials' wives are more likely to work as full-time workers than wives of business firm employees. The reason may be that hours of work for government officials are shorter than those for other employees. Moreover, there are many couples in which both husband and wife are government officials.

If we compare estimated results for wives in their twenties with those for wives in their thirties, we find the following differences. First, the effects of husbands' hours of work are weak for wives in their twenties but significant for wives in their thirties. In particular, for wives in their thirties, whether husbands work for more than 49 hours a week is an important factor in determining labor supply. However, husbands' hours of work are not crucial for wives in their twenties. Likewise, husbands' commuting hours have significant effects on labor force participation for wives in their thirties but not for wives in their twenties.

For wives' determination to be full-time workers, number of children before school age has a significant negative effect. That is, wives in their twenties are willing to work irregardless of husbands' working status, but are unable to work if there are children before school age.

Table 2 Wife's labor force participation rate as a full-time worker, samples including households with no children

wife's age	20-39	20-29	30-39
intercept	-0.4075 (0.0439) #	-0.8250 (0.0592) #	-0.3237 (0.0569) #
number of children			
no children before school age	-0.7722 (0.0426) #	-0.4967 (0.2031)	-0.7630 (0.0557) #
a child before school age	-1.3631 (0.0417) #	-1.4496 (0.0656) #	-1.2791 (0.0577) #
more than two children before school age	-1.7026 (0.0510) #	-1.7830 (0.0872) #	-1.5916 (0.0671) #
type of household			
extended family with no one who has to be looked after	1.2268 (0.0351) #	1.0542 (0.0872) #	1.2457 (0.0386) #
education			
junior college diplomas	0.0935 (0.0333)	0.2847 (0.0626) #	
college diplomas	0.5648 (0.0485) #	0.6608 (0.1020) #	0.5065 (0.0531) #
husband's working hours a week			
from 49 to 59 hours	-0.1326 (0.0348) #		-0.1741 (0.0408) #
more than 60 hours	-0.1560 (0.0392) #		-0.2212 (0.0466) #
not constant	-0.8537 (0.0877) #	-0.8966 (0.1658) #	-0.8005 (0.1030) #
husband's commuting hours			
from 60 to 90 minutes	-0.5275 (0.0565) #	-0.3341 (0.1106)	-0.5980 (0.0657) #
from 90 to 120 minutes	-0.4253 (0.1033) #		-0.5286 (0.1197) #
size of firm where husband works			
from 30 to 99 employees	0.2454 (0.0462) #	0.4799 (0.0835) #	0.2135 (0.0530) #
from 100 to 299 employees	0.2341 (0.0486) #	0.4697 (0.0867) #	0.1959 (0.0561)
from 300 to 499 employees		0.6906 (0.1143) #	
from 500 to 999 employees	0.1218 (0.0643)	0.4767 (0.1125) #	
more than 1,000 employees	-0.3331 (0.0437) #		-0.3826 (0.0494) #
offices	0.4858 (0.0460) #	0.9799 (0.0876) #	0.3770 (0.0508) #
deviance	3035.0	1190.9	2791.8
AIC	31934.417	8937.088	22965.32
number of samples	28363	8333	20030

Figures in parentheses are standard errors.
#: $p<0.001$

4−2. Estimated results for households with a child before school age

For women with a child (or children) before school age, we applied equation (2) to estimate the effects of childcare facilities on the decision to work full-time. The results for women with a child before school age and those with more than two children before school age are shown in Table 3 and Table 4.

Table 3 compares the labor supply of 3,684 wives in their twenties with that of 6,940 wives in their thirties. This table indicates that wife's labor force participation as a full-time worker is promoted by ①availability of a nursery school, ② extended family with no one who has to be looked after, and ③husband who is a government official. Availability of a nursery school is especially important for a working mother. It is not clear whether nursery schools push women into the labor market or simply working mothers utilize nursery schools. However, the latter is not always true, as utilization of kindergartens does not have positive effects on female labor force participation.

The main difference between nursery schools and kindergartens is the age distribution of children they look after. According to 1996 Survey on Time Use and Leisure Activities, no children from 0 to 2 years old are attending kindergartens. It is plausible that kindergartens do not look after children of this age. In 1996, some nursery schools did not look after children from 0 to 2 years old. However, about 4% of households with a child under 1 year old and 15.5% of households with a child from 1 to 2 years old utilized nursery schools according to this data (Table 5). In order to be substitutes for nursery schools, kindergartens have to take care of children younger than 2 years old.

Labor force participation activities of wives in their twenties are different from those of wives in their thirties. First, the relationship between educational levels and are closely related with the decision to work for wives in their twenties, while for wives in their thirties, educational levels have little effect on the decision to work. It is possible that the demand for educated female workers has increased only recently.

The effects of husband's working hours a week on wife's decision to work are significant if a wife is younger than 30 but not significant if a wife is over 30. This result is just the same as that obtained in the analysis in the previous section that included households with no children. The effects of firm sizes in which husbands work are again not clear.

Table3 Wife's labor force participation as a full-time worker, households with a child before school age

wife's age	20-39	20-29	30-39
intercept	-3.1555 (0.0722) #	-3.2787 (0.1173) #	-3.1547 (0.0923)#
childcare situation			
kindergartens	0.1281 (0.0826)	0.4056 (0.2454)	0.1943 (0.0948)
nursery schools	2.3715 (0.0643) #	2.4684 (0.1162) #	2.4070 (0.0816) #
type of household			
extended family with no one who has to be looked after	1.2816 (0.0639) #	1.2353 (0.1254) #	1.3336 (0.0756) #
education			
junior college diplomas	0.4344 (0.0646) #	0.7764 (0.1139) #	0.2991 (0.0790) #
college diplomas	0.8183 (0.0927) #	1.2452 (0.1915) #	0.7221 (0.1068) #
husband's working hours a week			
from 43 to 48 hours	0.2061 (0.0638) #		0.2745 (0.0772) #
more than 60 hours			
not constant	-0.9592 (0.1893) #	-0.7513 (0.2911)	-1.1499 (0.2467) #
husband's commuting hours			
from 60 to 90 minutes	-0.6696 (0.1196) #		-0.7981 (0.1435) #
from 90 to 120 minutes	-0.6836 (0.2065) #		-0.7780 (0.2402)
more than 120 minutes	-1.1191 (0.6193)		
size of firm in which husband works			
from 30 to 99 employees	0.5468 (0.0862) #	0.5748 (0.1518) #	0.5223 (0.1034) #
from 100 to 299 employees	0.6036 (0.0897) #	0.6848 (0.1577) #	0.5383 (0.1076) #
from 300 to 499 employees	0.5279 (0.1252) #	0.9642 (0.1956) #	
from 500 to 999 employees	0.6068 (0.1214) #	0.5712 (0.2159)	0.6058 (0.1466) #
more than 1,000 employees			
government	1.0722 (0.0627)	1.0932 (0.1558) #	1.0397 (0.0959) #
deviance	1570.9	721.7	1446.3
AIC	10475.157	3256.569	7179.467
number of samples	10624	3684	6940

Figures in parentheses are standard errors.
#: $p<0.001$

4-3. Estimated results for households with more than two children before school age

For households with more than two children before school age, we estimated the effects of five dummy variables on the childcare situation on wives' labor participation rates. Variables other than the childcare situation are the same as those used for households with a child before school age. The estimated results are listed in Table 4. This table compares the results of 5,672 women in their twenties with those of 1,991 women in their thirties. Table 4 depicts that for households with more than two children before school age, wives' labor force participation rates are significantly raised by ① nursery schools, ② husbands who are government officials, and ③ extended families with no one who has to be looked after. Estimated parameters in Table 4 tell us that being the wife of a government official is more important for wives with more than two children than those with one child.

The tendency that nursery schools push wives' labor force participation rates up while kindergartens give only vague effects on wives' decision to work is seen in Table 4 as it was in Table 3. Women whose children all attend nursery schools or kindergartens exhibit higher rates of labor participation than women whose children all stay home. However, women whose children all attend kindergartens do not necessarily have higher labor force participation rates than women raising children at home.

The relationship between size of firms in which husbands work and wives' labor supply as full-time workers are not regular as it was in the case with households with a child. However, it is clear from Table 4 that wives whose husbands are government officials have higher probabilities to work than the other groups.

Table4 Wife's labor force participation as a full-time worker, households with more than two children before school age

wife's age	20-39	20-29	30-39
intercept	-3.5699 (0.1215) #	-3.9453 (0.1953) #	-3.1775 (0.1622) #
childcare situation			
All attending nursery schools	2.8590 (0.1257) #	3.2616 (0.2061) #	2.7467 (0.1566) #
All attending kindergartens			
all attending either nursery schools or kindergartens	2.5540 (0.2469) #	3.0553 (0.4442) #	2.3111 (0.3008) #
some attending nursery schools	1.4345 (0.1284) #	1.6147 (0.2125) #	1.3788 (0.1583) #
some attending kindergartens	-0.2573 (0.1379)		-0.3453 (0.1618)
type of household			
extended family with no one to be looked after	1.2671 (0.0958) #	1.2852 (0.1788) #	1.2365 (0.1146) #
education			
junior college diplomas	0.3988 (0.0994) #		0.4092 (0.1193) #
college diplomas	0.9821 (0.1395) #		1.0140 (0.1530) #
husband's working hours a week			
from 43 to 48 hours		-0.4646 (0.1996)	
from 49 to 59 hours			-0.2508 (0.1227)
more than 60 hours			-0.4478 (0.1460)
not constant	-0.4933 (0.2234)	-0.6225 (0.3689)	-0.6678 (0.2899)
husband's commuting hours			
from 60 to 90 minutes	-0.5950 (0.1966)	-0.8079 (0.4562)	-0.5989 (0.2218)
from 90 to 120 minutes			
size of firm where husband works			
from 30 to 99 employees	0.5337 (0.1254) #	0.8259 (0.2207) #	0.4784 (0.1568)
from 100 to 299 employees	0.4741 (0.1312) #	0.8546 (0.2398) #	0.3303 (0.1604)
from 500 to 999 employees		0.9762 (0.3419)	
more than 1,000 employees			
government	1.1956 (0.1189) #	2.0582 (0.2591) #	0.9095 (0.1368) #
deviance	1389.1	553.3	1190.5
AIC	4849.626	1479.275	3349.435
number of samples	5672	1991	3681

Figures in parentheses are standard errors. #: $p<0.001$

Table5 Children's age and usages of childcare facilities

children's age	nursery schools	kindergartens	family care
0	68	0	1769
1—2	540	0	3285
3	495	260	964
4—5	1244	1874	338

Note: Samples are from households with one child

5. The problems of nursery schools

5-1. Who utilizes nursery schools

The preceding results give us a strong impression that for women with children before school age, availability of nursery schools is crucial for the decision to work full-time. However, this does not mean that building additional nursery schools is the sole remedy for the conflict between childcare and jobs for working women, as contemporary nursery schools are not exclusively for working mothers.

According to 1996 Survey on Time Use and Leisure Activities, among households utilizing nursery schools, 27% and 50% answered that wives were part-time workers and full-time workers, respectively. The remaining 23% households reported that wives were not working.

The reason why some nursery schools accept children whose mothers are not working is that they are in remote areas where the number of children is decreasing. They are acting as substitutes for kindergarten. There is an oversupply of nursery schools in rural areas. On the other hand, there are acute shortages of nursery schools in urban areas.

5-2. The complementary effects of extended family and nursery schools

Estimated results tell us that both extended family and nursery schools have positive effects on wives' labor force participation rates. From these results, it appears that extended family and nursery schools are substitutes for each other and that wives of nuclear family households can balance childcare and jobs. Actually, however, extended family and nursery schools are complements. Re-estimation of the equation of wife's labor force participation rates reveals that the interaction of nursery schools and extended family gives significant positive effects on wives' labor force participation. That is, wives' labor force participation is promoted by the additional effects of extended family and nursery schools(Table6). As for the estimated results for wives in their twenties, the sum of parameters of 'nursery schools' 'extended family' 'nursery schools cum extended family' is 3.2274, which is larger than the sum of 'nursery schools' and 'nuclear family' 2.6176. The difference between 3.2274 and 2.6176 could lead to differences in labor force participation rates of women with college diplomas for about 10%[†]. The similar results are seen for wives in their thirties. The sum of the parameters of 'nursery schools' 'extended family' 'nursery schools cum extended family' is 3.3962, which exceeds the sum of 'nursery schools' and 'nuclear family households' 2.7019. These estimates suggest that female labor is supported by both nursery schools and informal childcare support given by parents or parents-in-law. It is likely that a working wife's parents are taking children to and from nursery schools. It suggests that for working mothers, increases in childcare services other than nursery schools will be needed in order to compensate for the decreasing number of extended families.

It is possible that childcare services that complement nursery schools will be given by the old people who live nearby. Old people will be able to look after children in the

community as they have enough time and energy to take care of their grandchildren.

† For a woman with a college diploma whose husband works for a firm with more than 500 employees, log (p/(1-p)=-3.3171+3.2274+1.2529 if she lives in an extended family and log (p/(1-p)=-3.3371+3.2274+1.2529 if she lives in a nuclear family.