

PART TWO

A General Theory of Marriage

The general theory of marriage presented in the following two chapters serves as basis for the other chapters in this volume. It is a *general* theory in that it covers many causal factors and is applicable to many aspects of marriage, including interactions between marriage and labor. The interaction between marriage and *labor supply* is emphasized in Chapter 3. There, hypotheses regarding labor supply and marriage are derived based on the interaction between labor and marriage markets. The theory presented in Chapter 3 is also a general theory of labor and marriage to the extent that it analyzes labor and marriage in a general equilibrium framework. The interaction of marriage and productivity at work, a major aspect of the *demand* for labor, is the subject of Part Six. Whereas the focus of Chapter 3 is on applications regarding labor supply, Chapter 4 presents applications to marriage, divorce, cohabitation, conjugal power, polygamy, bridewealth and dowry.

As Chapter 3 uses mathematical and graphical tools, some readers may want to skip it and move to Chapter 4.

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A Theory of Allocation of Time in Markets for Labor and Marriage

Economists have long recognized that the nature of the household plays a role in determining the supply of factors of production and the demand for goods and services. However, it was not until the "new home economics" developed by Mincer (1962), Becker (1965), and Lancaster (1966) that household structure was given a significant role in economic theory. Today labor economists regularly write about the value of married women's time,¹ and marital status enters economic analyses of consumption.² However, in most models used in labor economics no allowance is made for potential changes in the character of the household: single persons do not marry and married couples do not divorce. In each case the contact of the couple or the individual with the outside world is limited to exchange in goods, factor or asset markets. We have no theory analyzing the interdependence between labor and marriage markets. This universally accepted assumption of a predetermined marital status is puzzling in the light of more than a decade of contributions to the economics of marriage and an even older sociological literature on marriage markets (see Chapter 1).

It is argued here that marriage market conditions influence the value of time in the home. For instance, the value of the time of a married woman varies according to the number of single men and women surrounding the household. *Ceteris paribus*, she is better off in a town with numerous single men than in a city disproportionately inhabited by single women.

Generally, marriage-related market mechanisms create a mutual dependence between men and women who want to work, buy, or reproduce.

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The prevalent assumption that household decisions are independent of marriage market conditions has led labor economists to overlook important factors of relevance to the study of labor supply. Accordingly, in this chapter marriage and labor markets are viewed as mutually related.

This chapter has three sections: a theoretical exposition, implications for labor supply, and other implications. The theoretical part follows traditional micro-economic analysis in that it first analyzes individual decision-making assuming that a market equilibrium exists. This leads to the derivation of (1) an

individual supply of *spousal labor*, generally a positive function of the quasi-wage w^* that can be obtained for such labor, and a negative function of wages in regular labor markets and income from sources other than work (which may include welfare payments); (2) an individual supply of (regular) *labor*, which is likely to be reduced if the wage for spousal labor increases; and (3) an individual demand for spousal labor, which is likely to be a negative function of the price of such labor (the quasi-wage w^*). Some readers may want to skip the calculus and move directly to equations 3.7 through 3.9 and Figure 3.1.

The theory then leads to the derivation of market wages and quasi-wages for household services provided through marriage. In a general equilibrium, labor markets and spousal labor markets are interdependent. Conditions in one type of market influence conditions in all other markets.

This general theory of labor and marriage can be useful even though (1) quasi-wages for spousal labor cannot be measured directly, and (2) some of the assumptions behind a competitive market equilibrium do not always hold. All the usual caveats associated with neo-classical economics are applicable here. In addition, marriage markets function under the additional constraint of monogamy. It is also recognized here that individual marriages may reflect some degree of bilateral monopoly. This would leave room for bargaining between spouses, each trying to bring the quasi-wage for spousal labor closer to their best interest. However, as long as divorce and remarriage are possible, the degree of monopoly power spouses have over each other is limited, and the market theory presented here is applicable.

The next two parts of this chapter discuss implications of this theory, principally to labor supply. The two principal applications are marriage squeeze effects on labor supply, the subject of Part Three, and compensating differentials, the subject of Part Four.

This section also sheds some new light on the meaning of differences in labor supply across various groups, such as ethnic or racial groups. It is hypothesized that if a group has low correlations between the wage of women in the labor market and their quasi-wage in the marriage market, these women's labor supply may be more elastic than that of women belonging to a group with high correlations between wage and quasi-wage for spousal labor. This idea could explain differences in the elasticity of substitution between black and white working wives in the United States, as well as differences in the elasticity of labor supply between Israeli Jewish women of European-American descent and those of Asian-African descent.

A general equilibrium theory of labor and marriage markets can further our understanding of income and wage effects on the labor supply of married workers in other ways as well. The theory predicts, for instance, that income changes influence wives' labor supply more than they do husbands', and that women's labor supply is more backward bending than men's. Also, income or wage changes may lead spouses to adjust their labor supply in ways differing from adjustments by single workers, as they may take the implications of their behavior on expected marital stability into account. This leads to a simultaneous theoretical analysis of labor supply and divorce, a subject pursued further in Chapter 10.

The last section briefly mentions implications of this theory for subjects other than labor supply. Here the reader can find a critique of Willis's (1974) influential conclusions regarding the effect of male income on the fertility of families with working and non-working wives. Other subjects briefly discussed in this section are consumption, divorce settlements, and some of the subjects covered more in depth in Chapter 4.

Theory

To stress the mutual dependence between labor and marriage, marriage is analyzed within the theoretical framework of neo-classical labor economics. Marriages are viewed as exchanges of *spousal labor*,³ i.e., labor which benefits one's (actual or potential) spouse. Examples of spousal labor are cooking, child care, counselling, or gardening. What transforms a household task into spousal labor, is that the task is performed for a longer time than one would spend on such a task if living alone.⁴ Women demand male spousal labor, and supply female spousal labor as well as labor in the ordinary sense of the word (henceforth simply labor), and similarly for men. In all, transactions take place in four interrelated labor markets, markets for male and female spousal labor, and markets for male and female labor. First, individual supply and demand schedules are derived. It is initially assumed that equilibrium prices have been established in product and factor markets. Subsequently, individual demands and supplies are aggregated and market equilibria are established.

Individual Supplies and Demands

It is assumed that each individual makes a separate decision according to the same general principles of optimization. Decisions are made *ex ante* for different equilibrium market prices. The planning horizon consists of one period.

Individuals devote their time to three kinds of activity: labor, spousal labor, and leisure (self-oriented time). While benefitting others, both categories of labor can also benefit the worker. If so, labor and spousal labor contribute positively to individual utility. Alternatively, labor and spousal labor may reduce an individual's utility, if they do not enjoy working. In sum, all three categories of time-use enter an individual utility function. Furthermore individuals derive utility from goods and services they purchase: services they obtain from a spouse (spousal labor supplied by *j*) and all other goods and services. Individuals accordingly have utility functions:

$$U_i = U_i(l_i, h_i, s_j, x_i) \tag{3.1}$$

where $i, j = f, m$ ($m = \text{male}, f = \text{female}, i \neq j$), l denotes time allocated to labor, h is spousal labor, s is self-oriented time,⁵ and x denotes commercial goods.

Assuming monogamy is legally imposed, labor can be obtained only from one spouse and hence only a single h_j appears in the utility function. The marginal utility of the two kinds of labor can be positive or negative. Although labor is often unpleasant, people may derive satisfaction from contributing to others' well-being. It is assumed that both labor and spousal labor generally have a negative marginal utility, especially after a person is already engaged in a certain amount of labor. For instance, if labor is measured in hours per day, a person's marginal utility of labor could become negative after one hour of labor per day. Both forms of labor create non-pecuniary rewards, and these rewards may vary across forms of labor, amount of time devoted to an activity, and individual preferences. People often enjoy working for a spouse more than for an employer. For instance, in the case of the same individual mentioned above, the marginal utility of spousal labor could become negative after two hours.⁶

As in other similar models of allocation of time and labor supply, it is assumed that an individual is constrained by limited time and limited income. What is different about this model, is that it includes spousal labor both in the time constraint and in the budget constraint. Individual i can earn an

income from supplying spousal labor, that income depending on the quasi-wage paid per hour of spousal labor worked. That income is paid by spouse j . At the same time, individual i can spend part of his or her income on spousal labor supplied by spouse j .

More formally, the individual maximizes the utility given by 3.1 subject to

$$T = l_i + h_j + s_p \quad (3.2)$$

a time constraint

and a monetary budget constraint

$$w_i l_i + w^*_{j} h_j + V_i = p_i x_i + w^*_{j} h_j \quad (3.3)$$

where T is the maximum time available (e.g., 24 hours per day), w is market wage for labor, w^* is quasi-wage for spousal labor, V is non-wage income, and p is a price vector for commercial goods and services.

The left-hand side of the budget constraint indicates that sources of individual income consist of labor, spousal labor, and income sources unrelated to work. The right-hand side consists of the individual's expenditures on commercial goods and services and labor supplied by the spouse. This individual depends on the equilibrium conditions in the markets for male and female spousal labor to the extent that (1) income from such labor depends on w^*_i , the quasi-wage for spousal labor which depends on the market-determined compensation for individual i 's spousal labor, and (2) expenditures are a function of quasi-wage w^*_j , which depends on the equilibrium compensation for spouse's work. All individuals interested in either supplying or demanding spousal labor affect the market wages for such labor (as shown in the next subsection). This includes married people who can possibly divorce and remarry.⁷

The compensation for spousal labor is not as readily observable as that for labor. In the case of a housewife married to a working husband, the husband transfers part of his income to the wife as a compensation for her spousal labor. She thus earns quasi-earnings from spousal labor and uses these earnings to purchase goods and services she enjoys, including food, lodging, or clothing. (It does not matter if this describes the transaction accurately. The exchange of work for income in the labor market can also take different forms, but nobody denies that there is work for pay). If both husband and wife supply labor to each other, barter will occur. The net income transfers may then possibly cancel out.

Maximizing the utility function 3.1 subject to constraints 3.2 and 3.3 yields supplies of labor and own spousal labor, as well as derived demands for self-oriented time, other's spousal labor, and commercial goods. From the first-order conditions, and assuming $p = I$, we have:

$$w_i = \frac{MU_{x_i}}{MU_{z_i}} + \frac{-MU_{h_i}}{MU_{x_i}}, \tag{3.4}$$

which indicates that in equilibrium the real wage per hour of work is equal to the sum of the monetary equivalent of the value of that hour in self-oriented activities and of the absolute (monetary) value of the disutility of work, and

which has the same meaning as equation 3.4 but relates spousal labor to time for self. Combining 3.4 and 3.5 yields equation 3.6, which expresses the trade-off conditions between the two types of work. Expression 3.6 indicates that time is allocated between two occupations so that the wage in one occupation equals the wage in the other occupation, plus the monetary equivalent of the difference in marginal utility produced

$$w_i^* = \frac{MU_{x_i}}{MU_{z_i}} + \frac{-MU_{h_i}}{MU_{x_i}}, \tag{3.5}$$

by these occupations.⁸

We are now ready to derive an individual supply of spousal labor (equation 3.7) and labor (equation 3.8), as well as a demand for other's spousal labor (equation 3.9). In reduced form, these variables are solely dependent on exogenously determined parameters, including the quasi-wages w^* 's, which are based on quasi-wages established in marriage markets, as is shown in the next subsection.

$$h_i = h_i(w_p, w_i^*, w_j^*, \mathcal{Y}_i) \tag{3.7}$$

$$l_i = l_i(w_p, w_i^*, w_j^*, \mathcal{Y}_i) \tag{3.8}$$

$$h_j = h_j(w_p, w_i^*, w_j^*, \mathcal{Y}_i) \tag{3.9}$$

A graphical representation of these supply functions is found in Figure 3.1. Panels *a* and *b* in Figure 3.1 describe examples of individual supplies of both kinds of labor. Panel *a* describes a relationship between spousal labor and its compensation, w^* , whereas panel *b* presents a relationship between work and its compensation w . It is assumed that initial hours of work produce positive utility, thereby causing the supply curves to start at negative

wage levels. The individual whose labor supplies are depicted in Figure 3.1 enjoys the first hours of spousal labor more than the first hours of labor.

Both supply functions are assumed to have the characteristics giving rise to the standard backward-bending form, i.e., the substitution effect caused by an increase in the real wage (w^*_i in panel *a* and w_i in panel *b*) initially dominates the income effect, but eventually the income effect comes to dominate the substitution effect. The equivalent of non-leisure in conventional models is here the sum of labor and spousal labor. Although this latter sum is predicted to decrease when income rises, this does not necessarily mean that both labor and spousal labor decrease with higher income.

Given that labor and spousal labor are alternative occupations, it follows that w_i is inversely related to the supply of spousal labor h , and that w^*_i is inversely related to the supply of labor L . A SUBSTITUTION EFFECT IS LIKELY TO BE REINFORCED BY AN INCOME EFFECT. NON-WAGE INCOME V IS EXPECTED TO DISCOURAGE BOTH KINDS OF LABOR SUPPLY. AFTER THE DERIVATION OF MARKET EQUILIBRIA THE READER WILL FIND A COMPARISON BETWEEN THIS MODEL AND TRADITIONAL LABOR THEORY IN TERMS OF THEIR IMPLICATIONS FOR LABOR SUPPLY AND THE IMPUTATION OF VALUE OF TIME IN THE HOME.

THE DEMAND FOR H_j IS EXPECTED TO BE A DOWNWARD SLOPING FUNCTION OF REAL WAGE w^*_j , FOR THE USUAL REASONS DETERMINING THE SLOPE OF DERIVED DEMANDS.

EACH PRODUCTIVE INDIVIDUAL IN A SOCIETY CAN BE VIEWED AS HAVING SUCH SUPPLIES OF L_i AND H_i , AND SUCH DEMAND FOR H_j . INDIVIDUAL WOMEN DEMAND MALE LABOR WHEREAS INDIVIDUAL MEN DEMAND FEMALE LABOR. ALL MEN AND WOMEN ACTING AS IF WAGES HAD BEEN ESTABLISHED IN COMPETITION, IN ASSOCIATION WITH EMPLOYERS DEMANDING LABOR, DETERMINE THOSE EQUILIBRIUM WAGES.

MARKET EQUILIBRIA

EQUILIBRIUM WAGES ARE ESTABLISHED IN THE RESPECTIVE MARKETS ONCE ALL INDIVIDUAL DEMANDS AND SUPPLIES ARE AGGREGATED. OUR PREVIOUS ANALYSIS LEADS TO THE DERIVATION OF INDIVIDUAL DEMANDS AND SUPPLIES IN THE MARKETS FOR MALE AND FEMALE SPOUSAL LABOR. IT IS ASSUMED INITIALLY THAT THERE ARE NO COSTS OF DIVORCE AND REMARRIAGE AND THAT THERE IS ONE KIND OF WOMAN AND ONE KIND OF MAN.

AGGREGATE DEMAND AND SUPPLY FUNCTIONS FOR WOMEN ARE PRESENTED IN EQUATIONS 3.10 TO 3.12, AND FOR MEN IN EQUATIONS 3.13 TO 3.15. SUPERSCRIPTS D AND S DENOTE WHETHER A FUNCTION IS A SUPPLY OR A DEMAND. CAPITAL LETTERS ARE USED TO DENOTE AGGREGATE HOURS OF WORK.

$$H_j^s = H_j^s(w_j, w^*_j, w^*_j, p_j, Y_j, \beta_j, N_j), \quad (3.10)$$

$$L_f^s = L_f^s(w_f^*, w_m^*, w_f^*, p_f, \mathcal{V}_f, \beta_f, N_f), \quad (3.11)$$

$$H_m^d = H_m^d(w_m^*, w_f^*, w_m^*, p_m, \mathcal{V}_m, \beta_m, N_m), \quad (3.12)$$

WHERE β IS A FACTOR DESCRIBING TASTES OR PRODUCTIVITY, AND N_f IS THE NUMBER OF WOMEN MARRIED OR ELIGIBLE FOR MARRIAGE.

THE EQUATIONS FOR MEN ARE ANALOGOUS, SUBSCRIPTS F NOW BEING REPLACED BY M , AND VICE-VERSA:

$$H_m^s = H_m^s(w_m^*, w_m^*, w_m^*, p_m, \mathcal{V}_m, \beta_m, N_m), \quad (3.13)$$

$$L_m^s = L_m^s(w_m^*, w_m^*, w_m^*, p_m, \mathcal{V}_m, \beta_m, N_m), \quad (3.14)$$

$$H_f^d = H_f^d(w_f^*, w_m^*, w_m^*, p_f, \mathcal{V}_f, \beta_f, N_f). \quad (3.15)$$

IT WAS ASSUMED THAT EACH PERSON PARTICIPATES IN THREE SEPARATE LABOR MARKETS, AS SUPPLIER OF OWN LABOR AND SPOUSAL LABOR, AND AS EMPLOYER OF SPOUSAL LABOR. IN A SEX-DIFFERENTIATED SOCIETY THIS IMPLIES THE EXISTENCE OF FOUR INTERRELATED MARKETS: TWO MARKETS FOR MALE AND FEMALE SPOUSAL LABOR AND TWO MARKETS FOR MALE AND FEMALE LABOR. A GENERAL EQUILIBRIUM IS OBTAINED WHEN ALL FOUR MARKETS CLEAR. THE GENERAL EQUILIBRIUM MODEL IS COMPOSED OF THE SIX EQUATIONS 3.10 TO 3.15 TO WHICH WE NEED TO ADD TWO EQUATIONS OF LABOR DEMAND BY EMPLOYERS, WHO MAKE THEIR DECISIONS INDEPENDENTLY OF THE INDIVIDUALS SUPPLYING LABOR. IT IS ASSUMED THAT FROM THE EMPLOYERS' PERSPECTIVE WORKERS OF DIFFERENT GENDER SERVE AS POOR SUBSTITUTES FOR ONE ANOTHER, AND THEREFORE EMPLOYERS HAVE SEPARATE DEMANDS FOR MALE AND FEMALE WORKERS. FIGURE 3.2 PRESENTS THE FOUR MARKETS THAT ARE THUS OBTAINED.

THE SYSTEM OF EIGHT EQUATIONS DETERMINES EQUILIBRIUM WAGES AND EMPLOYMENT LEVELS IN EACH OF THE FOUR MARKETS FOR LABOR AND SPOUSAL LABOR. GIVEN DEMANDS D AND SUPPLIES S , THE EQUILIBRIUM WAGES FOR WOMEN AND MEN ARE RESPECTIVELY \bar{w}_f AND \bar{w}_m (PANELS C AND D IN

FIGURE 3.2), AND THE EQUILIBRIUM QUASI-WAGES FOR SPOUSAL LABOR FOR WOMEN AND MEN ARE RESPECTIVELY \bar{w}_F^* AND \bar{w}_M^* (PANELS A AND B.) THE EQUILIBRIUM CONDITIONS IN ALL THESE MARKETS ARE INTERDEPENDENT. WAGES IN LABOR MARKETS AFFECT MARITAL BEHAVIOR AND CONDITIONS IN THE MARKETS FOR SPOUSAL LABOR INFLUENCE LABOR SUPPLY. BEFORE WE SEE HOW THIS GENERAL EQUILIBRIUM ANALYSIS CAN HELP US GAIN NEW INSIGHTS INTO LABOR SUPPLY (THE TOPIC OF THE NEXT SECTION) OR MARRIAGE (THE TOPIC OF THE FOLLOWING SECTION AND OF CHAPTER 4), LET US LOOK AT SOME OF THE RESULTS OBTAINED SO FAR AND COMPARE THEM TO OTHER ECONOMIC THEORIES.

AS IN THE THEORY OF THE COMPETITIVE FIRM, THIS ANALYSIS HAS TAKEN TWO STEPS: (1) INDIVIDUAL MAXIMIZATION ASSUMING COMPETITIVE EQUILIBRIUM PRICES HAVE BEEN ESTABLISHED, AND (2) AGGREGATION OF INDIVIDUAL SCHEDULES AND JUXTAPOSITION OF AGGREGATE DEMAND AND SUPPLY LEADING TO THE DERIVATION OF THESE EQUILIBRIUM PRICES.

MARKETS FOR SPOUSAL LABOR--OR MARRIAGE MARKETS--ARE SIMILAR TO TRADITIONAL LABOR MARKETS. IN ALL LABOR MARKETS, MARKET FORCES ARE RELATIVELY DIFFICULT TO IDENTIFY BECAUSE OF THE ABSENCE OF PHYSICALLY VISIBLE INSTITUTIONS, RIGIDITIES IN COMPENSATION LEVELS AND HOURS OF WORK, LIMITATIONS ON THE RELATIVE PROPORTION OF PECUNIARY TO NON-PECUNIARY COMPENSATION, ETC. SUCH RESTRICTIONS MAY BE PARTICULARLY RELEVANT IN THE CASE OF SPOUSAL LABOR MARKETS. PARTICIPANTS IN MARKETS FOR SPOUSAL LABOR FACE AN ADDITIONAL RESTRICTION THAT PROHIBITS POLYGAMY, THEREBY FORCING ONE-TO-ONE MATCHES.⁹ HOWEVER, IN OTHER LABOR MARKETS THERE EXIST SIMILAR RESTRICTIONS ON THE DEMAND SIDE, AS WE TEND TO GET MATCHES BETWEEN ONE EMPLOYER AND A FEW EMPLOYEES.

THIS MARKET MODEL OF MARRIAGE IS BASED ON THE ASSUMPTION THAT CHOICES ARE AVAILABLE, WHICH MEANS THAT ACTUAL OR POTENTIAL SPOUSES ARE SUBSTITUTABLE. THIS IS ESPECIALLY LIKELY TO BE THE CASE IN DENSELY POPULATED AREAS. IT IS ASSUMED THAT PEOPLE HAVE SOME FREEDOM IN DECIDING WHETHER TO BECOME, OR REMAIN, MARRIED, AND IN ESTABLISHING--OFTEN IMPLICIT--RECIPROCAL SPOUSAL EMPLOYMENT CONTRACTS. IT IS ASSUMED THAT SINGLE PERSONS INTERESTED IN MARRIAGE (OR THEIR REPRESENTATIVES) RESPOND TO MARKET FORCES AND DECIDE ACCORDINGLY WHETHER TO MARRY AND HOW MUCH SPOUSAL LABOR TO CONTRIBUTE AND EMPLOY. MARRIED PEOPLE ARE ALSO VIEWED AS RESPONSIVE TO MARKETS FOR SPOUSAL LABOR, THEIR RESPONSE BEING A FUNCTION OF THE DEGREE OF SUBSTITUTABILITY BETWEEN ONE'S CURRENT SPOUSE AND ALTERNATIVE SPOUSES. IN TURN, THIS DEPENDS ON WHETHER RECONTRACTING INTO NEW MARRIAGES IS COSTLY OR NOT.

IN A MONOGAMOUS SOCIETY MARRIAGE TENDS TO OCCUR WHEN AT THE

EQUILIBRIUM \bar{w}_F^* AND \bar{w}_M^* A MAN DEMANDS THE AMOUNT OF SPOUSAL LABOR A WOMAN WANTS TO SUPPLY AND THAT WOMAN DEMANDS THE AMOUNT OF LABOR SUPPLIED BY THE MAN. A MARRIED COUPLE IN EQUILIBRIUM EXPERIENCES NO EXCESS DEMAND FOR, OR SUPPLY OF, SPOUSAL LABOR AT THE RELEVANT w^* 'S. EXCHANGES OF SUCH LABOR ARE EGALITARIAN IF THE MARKET VALUE OF HER SERVICES $w_{fH_f}^*$ IS IDENTICAL TO $w_{mH_m}^*$ THE MARKET VALUE OF HIS SERVICES. TO THE EXTENT THAT $w_{fH_f}^*$ EXCEEDS $w_{mH_m}^*$, THE HUSBAND TRANSFERS GOODS (OR MEANS TO PURCHASE GOODS) TO THE WIFE. NET TRANSFERS FROM THE WIFE TO THE HUSBAND ARE ALSO POSSIBLE.

THIS VIEW OF MARRIAGE MAY SOUND STRANGE. AS A DESCRIPTION OF ATTITUDES IT IS PROBABLY NOT MUCH MORE CONTROVERSIAL THAN WHAT ECONOMISTS WRITE ABOUT DECISION MAKING BY FIRMS. HOWEVER, OUR GOAL IS NOT TO DESCRIBE, BUT RATHER TO DERIVE TESTABLE HYPOTHESES. FEELINGS ARE NOT NECESSARILY ABSENT FROM THIS THEORY. PERSONAL LIKING CAN FORMALLY BE INCORPORATED IN THE FORM OF A HIGHER DEMAND CURVE FOR THE SPOUSAL LABOR OF A PARTICULAR PERSON (OR A SHIFT TO THE RIGHT IN THE SUPPLY OF SUCH LABOR TO THAT PERSON).

THIS VIEW OF MARITAL RELATIONS DIFFERS FROM PREVIOUS ECONOMIC ANALYSES OF MARRIAGE IN ITS EMPHASIS ON THE TIME SPOUSES DEVOTE TO EACH OTHER'S SERVICE. CHANGING OUTSIDE FACTORS CAN LEAD NOT ONLY TO CHANGES IN INCOME REDISTRIBUTION BETWEEN THE SPOUSES OR TO MARITAL BREAK-UP (AS IN BECKER 1973, 1981), BUT ALSO TO NEW MARITAL LABOR RELATIONS. THUS A MARRIED WOMAN'S SUDDEN REALIZATION THAT ATTRACTIVE LABOR MARKET OPPORTUNITIES ARE OPEN TO HER COULD POSSIBLY LEAD TO A NEW SPOUSAL EMPLOYMENT CONTRACT, THE WIFE REDUCING HER BURDEN OF SPOUSAL LABOR AND USING SOME OF HER ADDITIONAL WAGE INCOME TO OBTAIN SUBSTITUTES FOR HER SPOUSAL LABOR, INCLUDING PERHAPS HER HUSBAND'S SPOUSAL LABOR.

SO FAR IT HAS BEEN ASSUMED THAT MEN AND WOMEN ARE RESPECTIVELY HOMOGENEOUS. IN THE REAL WORLD, POPULATIONS ARE HETEROGENEOUS. PEOPLE OF CERTAIN CLASSES, RACES, OR RELIGIONS MAY BE FORBIDDEN TO INTERMARRY. IN SUCH CASES, SEPARATE MARKETS COULD BE CONSIDERED, ONE FOR EACH GROUP OF SUBSTITUTABLE POTENTIAL SPOUSES.¹⁰ IN THAT SENSE, AGAIN, SPOUSAL LABOR MARKETS ARE NOT INTRINSICALLY DIFFERENT FROM OTHER LABOR MARKETS.

THE COMPETITIVE MARKET MODEL MAY NOT ALWAYS BE APPLICABLE. MONOPOLISTIC ELEMENTS ENTER INTO AN EXISTING MARITAL RELATIONSHIP TO THE EXTENT THAT DIVORCE AND MARRIAGE ARE COSTLY (E.G., DUE TO SEARCH COSTS). IN THAT CASE ONE COULD FIND DIVERGENCE BETWEEN THE MARKET w^* AND THE PARTICULAR w^* PREVAILING IN A PARTICULAR COUPLE. BILATERAL MONOPOLY COULD OFTEN OPERATE. PARTNERS EXPERIENCING HIGHER DIVORCE AND REMARRIAGE COSTS ARE LIKELY TO ABSORB MORE CONSEQUENCES OF

MONOPOLISTIC EXPLOITATION (SEE CHAPTER 10).

THE REMAINDER OF THIS PAPER DEALS PRIMARILY WITH THIS THEORY'S IMPLICATIONS FOR LABOR SUPPLY. IT IS SHOWN THAT LABOR ECONOMICS CAN BE ENRICHED BY TAKING ACCOUNT OF CONDITIONS IN SPOUSAL LABOR MARKETS, EVEN THOUGH w^*_F OR w^*_M CANNOT BE DIRECTLY MEASURED. NEW INSIGHTS ARE OFFERED REGARDING (1) NEW VARIABLES THAT MAY AFFECT LABOR SUPPLY AND ARE NOT TYPICALLY INCORPORATED INTO LABOR THEORY, AND (2) REINTERPRETATIONS OF THE EFFECT OF VARIABLES INCLUDED IN TRADITIONAL LABOR THEORY.

IMPLICATIONS FOR LABOR SUPPLY

THE MODEL PRESENTED HERE--A GENERAL THEORY OF LABOR AND MARRIAGE OR GTM--DIFFERS IN A NUMBER OF WAYS FROM TRADITIONAL MODELS OF LABOR SUPPLY. SOME OF THESE DIFFERENCES ARE SUMMARIZED IN TABLE 3.1. IN BOTH MODELS THE DECISION TO ENTER THE LABOR FORCE IS BASED ON A COMPARISON OF THE ATTRACTIVENESS OF WORK, MEASURED AS THE WAGE (POSSIBLY *MINUS* THE MONETARY EQUIVALENT OF THE DISUTILITY OF WORK) AND THE ATTRACTIVENESS OF STAYING AT HOME, WHICH IS TYPICALLY DENOTED AS THE RESERVATION WAGE w^* . TRADITIONAL THEORY OF LABOR SUPPLY AND THE THEORY PRESENTED HERE DIFFER FIRST AND FOREMOST IN THE WAY THEY DERIVE w^* , THE VALUE OF TIME IN THE HOME.

VALUE OF TIME, w^* . TRADITIONALLY, w^* IS DERIVED ASSUMING A PREDETERMINED MARITAL STATUS. HOUSEHOLDS ARE EITHER SINGLE PERSONS OR HUSBAND-WIFE TEAMS WITH NO OPTIONS TO MARRY OR DIVORCE. THE ASSUMPTIONS COMMON TO THE TRADITIONAL LITERATURE TRANSLATE INTO AN INDIVIDUAL SUPPLY OF TIME FOR HOME PRODUCTION IN THE FORM OF A TRANSPOSED L , HORIZONTAL AT THE WAGE LEVEL THE INDIVIDUAL WOULD RECEIVE IF WORKING IN THE MARKET SECTOR AND VERTICAL AS SOON AS THE TIME CONSTRAINT IS REACHED. AS IT IS DIFFICULT TO MEASURE VALUE OF TIME, PREVIOUS RESEARCHERS HAVE INCLUDED VARIABLES WHICH INFLUENCE SUCH VALUE OF TIME IN THEIR ESTIMATIONS OF LABOR SUPPLY. FOR INSTANCE, IT HAS BEEN FOUND THAT INDICATORS OF WOMEN'S VALUE OF TIME IN THE HOME, SUCH AS NUMBER AND AGE OF CHILDREN AND HUSBAND'S INCOME, ARE INVERSELY RELATED TO MARRIED WOMEN'S LABOR SUPPLY (FOR AN EARLY EXAMPLE, SEE MINCER 1962).

IN THE TRADITIONAL MODEL, THE VALUE OF A PERSON'S TIME DEPENDS ONLY ON HOUSEHOLD CHARACTERISTICS. THERE EXISTS NO MARKET FOR SPOUSAL LABOR. HOUSEHOLDS ARE INTERDEPENDENT ONLY TO THE EXTENT THAT THEY SUPPLY WORK TO THE SAME MARKETS OR THAT THEY BUY GOODS FROM THE SAME SELLERS. BY USING HOUSEHOLDS AS THEIR DECISION-MAKING

UNITS AND BY ASSUMING THAT MEN AND WOMEN ARE PERMANENTLY BOUND INTO FAMILIES, ECONOMISTS HAVE LOST SIGHT OF SOME IMPORTANT DETERMINANTS OF LABOR SUPPLY, ESPECIALLY THE LABOR SUPPLY OF MARRIED WOMEN. THE REALIZATION THAT THE SUPPLY OF LABOR CAN SHIFT FOLLOWING CHANGES IN A MARKET-DETERMINED WAGE FOR SPOUSAL LABOR OR QUASI-WAGE w^* , OPENS NEW DIRECTIONS FOR RESEARCH IN LABOR ECONOMICS AND IN PARTICULAR, FOR STUDIES OF FEMALE LABOR SUPPLY.

WHEREAS ACCORDING TO TRADITIONAL THEORY w^* IS ENTIRELY ESTABLISHED IN THE HOUSEHOLD, ACCORDING TO GTM, VALUE OF TIME IN THE HOME IS PARTIALLY ESTABLISHED IN A MARKET FOR MARRIAGE. BOTH TRADITIONAL THEORY AND GTM RECOGNIZE THAT THE VALUE OF TIME CONTAINS A NON-PECUNIARY OR PSYCHIC COMPONENT BASED ON HOW MUCH ONE VALUES ACTIVITIES OTHER THAN WORK-FOR-PAY, INCLUDING ACTIVITIES PERFORMED IN THE FRAMEWORK OF MARRIAGE. WHERE THE THEORIES DIVERGE IS IN THAT GTM RECOGNIZES THAT VALUE OF TIME w^* --IN PARTICULAR, MARRIED WOMEN'S VALUE OF TIME--MAY HAVE A PECUNIARY (BUT NOT NECESSARILY MONETARY) COMPONENT AS WELL. IN MOST SOCIETIES, INCLUDING OUR OWN, MOST HUSBANDS OFFER THEIR WIVES SOME FORM OF MATERIAL OR PECUNIARY COMPENSATION FOR WORK MARRIED WOMEN PERFORM IN THE FRAMEWORK OF MARRIAGE, USUALLY IN THE HOME. ACCORDING TO GTM THIS PECUNIARY COMPONENT OF THE VALUE OF TIME VARIES POSITIVELY WITH VALUE IN ONE'S MARRIAGE MARKET (THE MARKET FOR ONE'S SPOUSAL LABOR). IN PARTICULAR, THE BETTER WOMEN'S MARRIAGE MARKET, THE HIGHER THE PECUNIARY COMPENSATION THEY CAN GET AS WIVES AND THE HIGHER THEIR VALUE OF TIME. A NUMBER OF REASONS WHY A WOMAN'S VALUE IN THE MARRIAGE MARKET MAY VARY ARE DISCUSSED IN THE REMAINDER OF THIS CHAPTER AND IN THE NEXT CHAPTER.

INDIVIDUAL w^* 'S MAY DIVERGE FROM THE EQUILIBRIUM w^* ESTABLISHED IN ONE'S MARRIAGE MARKET TO THE EXTENT THAT THERE ARE COSTS OF DIVORCE AND REMARRIAGE (IN SHORT, COSTS OF DIVORCE.)

THE MORE IT IS COSTLY TO DIVORCE AND REMARRY, THE MORE THE ACTUAL w^* OF A MARRIED PERSON IS LIKELY TO DIVERGE FROM THE w^* ESTABLISHED IN THE CORRESPONDING MARRIAGE MARKET. FOR INSTANCE, A MARRIED WOMAN TO WHOM DIVORCE AND REMARRIAGE WOULD BE COSTLY WILL BE WILLING TO ACCEPT A w^* BELOW THE MARKET-DETERMINED VALUE OF TIME. THIS IS ANALYZED IN MORE DETAIL IN CHAPTER 10.

FURTHERMORE, AN INDIVIDUAL w^* MAY DIVERGE FROM THE MARKET-DETERMINED w^* DUE TO THE PRESENCE OF NON-PECUNIARY BENEFITS FROM WORK AND SPOUSAL LABOR. EVEN IF DIVORCE COSTS ARE ZERO, AN INDIVIDUAL ASKING w^* BASED ON EQUATION 3.5 MAY DIVERGE FROM THE EQUILIBRIUM w^* ESTABLISHED IN THE MARKET FOR SPOUSAL LABOR. SOME PEOPLE MAY COLLECT AN ECONOMIC RENT FROM SUPPLYING SPOUSAL LABOR TO THE EXTENT THAT

THEIR INDIVIDUAL ASKING w^* IS LOWER THAN THE w^* IN THE MARKET. FURTHER INDIVIDUAL VARIATIONS IN w^* COULD ALSO BE ATTRIBUTED TO INDIVIDUAL DIFFERENCES IN SPOUSAL LABOR PRODUCTIVITY.

ACCORDING TO TRADITIONAL THEORY, THE VALUE OF TIME IN THE HOME ALWAYS DEPENDS ON THE INDIVIDUAL'S WORK STATUS. IF THE INDIVIDUAL WORKS, THE VALUE OF TIME w^* IS EQUAL TO THE WAGE, AND IF SHE DOES NOT WORK, w^* EXCEEDS THE WAGE. ACCORDING TO GTM THE VALUE OF TIME DEPENDS ON WORK STATUS TO THE EXTENT THAT INDIVISIBILITIES IN HOURS OF WORK PLAY A ROLE. FOR BOTH WORKING AND NON-WORKING MARRIED INDIVIDUALS, VALUE OF TIME IS EQUAL TO A w^* BASED ON A MARKET-DETERMINED PECUNIARY COMPONENT, DIVORCE COSTS, AND A NON-PECUNIARY COMPONENT. ASSUME THAT AN INDIVIDUAL'S MARKET w^* IS THE ONE FOUND ON THE LEFT-HAND SIDE OF EQUATION 3.6. THAT w^* IS THEN EQUAL TO THE RIGHT-HAND SIDE OF EQUATION 3.6, I.E. THE WAGE PLUS THE DIFFERENCE IN UTILITY BETWEEN THE TWO OCCUPATIONS. IF DIVORCE AND REMARRIAGE ARE COSTLESS AND HOURS OF WORK OUTSIDE THE HOME AND IN THE HOUSEHOLD ARE EASILY DIVISIBLE, THE VALUE OF TIME EQUALS THE SAME w^* ESTABLISHED IN THE MARRIAGE MARKET WHETHER THE INDIVIDUAL WORKS OR NOT. IF HOURS OF WORK ARE NOT SO EASILY DIVISIBLE, THE INDIVIDUAL MAY HAVE TO SPEND EITHER TOO MUCH OR TOO LITTLE TIME AT WORK, IN COMPARISON TO A SITUATION OF PERFECT DIVISIBILITY. FOR INSTANCE, IF THERE ARE FIXED COSTS OF GOING TO WORK, A SOLUTION OF SPENDING 7 HOURS IN H AND 1 HOUR IN L IS NOT FEASIBLE. INSTEAD THE INDIVIDUAL MAY NOT WORK OUTSIDE AT ALL, I.E. H WILL BE 8 AND L WILL BE ZERO. THIS IMPLIES THAT THE VALUE OF TIME w^* WILL BE HIGHER THAN THE LEFT-HAND SIDE OF EQUATION 3.6, THE MARKET-DETERMINED w^* . IF THE INDIVIDUAL SPENDS "TOO MUCH" TIME AT WORK IN COMPARISON TO AN OPTIMAL ALLOCATION OF TIME, THEN THE ACTUAL w^* WILL BE LOWER THAN THE MARKET-DETERMINED ONE.

THE DECISION TO WORK. FOLLOWING THESE BASIC DIFFERENCES IN THE WAY THE TWO THEORIES DEFINE VALUE OF TIME AT HOME w^* THE TWO THEORIES ALSO LEAD TO DIFFERENT HYPOTHESES REGARDING LABOR SUPPLY. ACCORDING TO BOTH THEORIES THE DECISION TO WORK IS BASED ON A COMPARISON OF w AND w^* . TRADITIONAL THEORY ESTIMATES w^* BASED ON THE UTILITY OF LEISURE. SUCH ESTIMATES ARE BASED ON THE CHARACTERISTICS OF THE INDIVIDUAL OR THE HOUSEHOLD. THE DECISION TO WORK CAN ALSO TAKE ACCOUNT OF THE (DIS)UTILITY OF LABOR, AS IS ASSUMED IN THE LAST COLUMN OF TABLE 3.1.

ACCORDING TO GTM, THE DECISION TO WORK IS ALSO BASED ON A COMPARISON BETWEEN w AND w^* . HOWEVER, GTM VIEWS w^* AS DEPENDING ON MORE FACTORS THAN THOSE TAKEN INTO CONSIDERATION BY TRADITIONAL THEORY. ACCORDING TO GTM, w^* IS COMPOSED OF A PECUNIARY AND A NON-PECUNIARY COMPONENT. IN TURN, THE PECUNIARY COMPONENT DEPENDS ON

- (1) THE EQUILIBRIUM VALUE OF THE QUASI-WAGE FOR SPOUSAL LABOR, ESTABLISHED IN A MARKET FOR SUCH SPOUSAL LABOR, AND
- (2) COSTS OF DIVORCE AND REMARRIAGE.

THE NON-PECUNIARY COMPONENT OF w^* DEPENDS ON THE DIFFERENCE IN THE VALUE OF MARGINAL UTILITIES OF WORK AND SPOUSAL LABOR H .

THE HIGHER THE VALUE OF TIME--BOTH PECUNIARY AND NON-PECUNIARY--THE LESS A PERSON IS LIKELY TO PARTICIPATE IN THE LABOR FORCE. IF WOMEN PREFER TO PERFORM HOUSEHOLD TASKS AT HOME INSTEAD OF WORKING FOR PAY OUTSIDE THE HOME, THE WAGE NEEDS TO EXCEED THE PECUNIARY COMPENSATION FOR WORK IN THE HOME.

THE INTRODUCTION OF A COMPONENT OF w^* ESTABLISHED IN A MARKET FOR SPOUSAL LABOR (OR MARRIAGE MARKET) LEADS TO A NUMBER OF THEORETICAL IMPLICATIONS WHICH ARE DERIVED NEXT. NEW VARIABLES ARE INTRODUCED INTO THE ANALYSIS OF LABOR SUPPLY: NAMELY SEX RATIOS AND GROUP DIFFERENCES IN MARRIAGE OPPORTUNITIES. I ALSO DISCUSS NEW INTERPRETATIONS OF INCOME AND WAGE EFFECTS, AND OF THE BACKWARD-BENDING SUPPLY OF LABOR.

THE SEXUAL DIFFERENTIATION ASSUMED IN THE REST OF THIS DISCUSSION FOLLOWS OBSERVED PATTERNS OF DIVISION OF LABOR, WOMEN BEING GENERALLY RESPONSIBLE FOR MOST HOUSEHOLD PRODUCTION. IT IS ALSO ASSUMED THAT BOTH MEN AND WOMEN DIFFER IN PRODUCTIVITY, TASTES, AND INCOME.

MARRIAGE SQUEEZE EFFECTS

DEMOGRAPHERS HAVE DEFINED SEX RATIOS AS THE NUMBER OF MALES DIVIDED BY THE NUMBER OF FEMALES. A MARRIAGE SQUEEZE FOR MEN OCCURS WHEN THE SEX RATIO EXCEEDS 1, AND A MARRIAGE SQUEEZE FOR WOMEN WHEN THE SEX RATIO IS LESS THAN 1. SEX RATIOS AND FEMALE LABOR FORCE PARTICIPATION ARE CONNECTED TO THE EXTENT THAT MARRIAGE SQUEEZES AND SEX RATIOS INFLUENCE THE MARKET-DETERMINED VALUE OF TIME w^* , AND IN TURN THAT VALUE OF TIME IS RELATED TO THE DECISION TO PARTICIPATE IN THE LABOR FORCE.

IT FOLLOWS FROM THE GENERAL EQUILIBRIUM EQUATIONS (3.10 TO 3.15 PLUS TWO LABOR DEMAND EQUATIONS) THAT THE NUMBER OF WOMEN N_f AND THE NUMBER OF MEN N_m ARE PARAMETERS WHICH CAN POTENTIALLY INFLUENCE THE EQUILIBRIUM VALUE OF ALL WAGES w AND w^* . GIVEN THAT THE SEX RATIO IS THE RATIO N_m/N_f , IT FOLLOWS THAT THE SEX RATIO IS ALSO A DETERMINANT OF WAGES AND QUASI-WAGES w^* . IN PARTICULAR, GIVEN THE IMPORTANCE OF SPOUSAL LABOR AS AN ALTERNATIVE FORM OF EMPLOYMENT FOR MARRIED WOMEN, MARRIED WOMEN'S VALUE OF TIME w^* MAY BE A

FUNCTION OF SEX RATIO.

IN ORDER TO DERIVE HYPOTHESES REGARDING THE EFFECT OF MARRIAGE SQUEEZE AND SEX RATIO ON THE VALUE OF TIME w^* AND THE LABOR SUPPLY OF MARRIED WOMEN, WE START BY DECOMPOSING THE SEX RATIO INTO ITS TWO COMPONENTS. CONSIDER THE SIMPLE CASE OF AN INCREASE IN N_M , THE NUMBER OF MALES, FOR INSTANCE DUE TO A WAVE OF ALL-MALE IMMIGRATION. SUCH INCREASE IN N_M AFFECTS THE SYSTEM OF EQUATIONS 3.13-3.15: MEN'S AGGREGATE SUPPLIES OF LABOR AND DEMAND FOR WIFE LABOR ALL SHIFT TO THE RIGHT. IN ORDER TO PREDICT THE NET EFFECT OF SUCH INCREASE IN THE NUMBER OF MEN ON FEMALE LABOR SUPPLY WE DIVIDE THE ANALYSIS INTO THREE STAGES: (1) INITIAL EFFECTS ON w_f^* (2) SECONDARY EFFECTS ON w_f^* AND (3) EFFECT OF w_f^* ON THE AMOUNT OF LABOR SUPPLIED BY WOMEN.¹¹

1. *INITIAL EFFECTS.* ACCORDING TO FUNCTION 3.15, AN INCREASE IN N_M CAUSES AN INCREASE IN THE AGGREGATE DEMAND FOR FEMALE SPOUSAL LABOR. IN GRAPHICAL TERMS, THIS IMPLIES A SHIFT TO THE RIGHT FROM D TO D' IN PANEL A OF FIGURE 3.2, THEREBY LEADING TO AN INCREASE IN THE MARKET-ESTABLISHED \bar{w}_f^* . ALSO, DECREASES IN MALE EQUILIBRIUM WAGES \bar{w}_m^* AND \bar{w}_m ORIGINATE FROM SHIFTS IN SUPPLY IN PANELS B AND D (DOWNWARD RIGIDITY IN WAGES MAY IMPEDE ADJUSTMENT IN BOTH LABOR MARKETS).
2. *SECONDARY EFFECTS.* THESE WAGE CHANGES IN TURN CAUSE MORE CHANGES. LOWER MALE INCOME DUE TO REDUCTIONS IN BOTH MALE WAGES TENDS TO PUSH THE AGGREGATE DEMAND FOR FEMALE SPOUSAL LABOR, H_f , BACK DOWN.¹² MOREOVER, A LOWER MALE HOUSEHOLD WAGE w_m ALSO TENDS TO LEAD TO A REDUCTION IN DEMAND FOR H_f DUE TO A SUBSTITUTION EFFECT IN HOME PRODUCTION AND CONSUMPTION (ASSUMING MALE AND FEMALE SPOUSAL LABOR ARE SUBSTITUTES). THIS FACTOR WILL BE MINOR IF MEN DON'T ENGAGE MUCH IN SPOUSAL LABOR, AS IS THE CASE IN MANY SOCIETIES. IF IT IS ASSUMED THAT SUCH LEFTWARD SHIFT IN THE DEMAND FOR H_f FROM D' TO D'' IS SMALLER THAN THE ORIGINAL RIGHTWARD SHIFT FROM D TO D' , THE EQUILIBRIUM WAGE w_f^* ENDS UP INCREASING IN COMPARISON TO ITS PRE-IMMIGRATION LEVEL, FOR INSTANCE TO POST-IMMIGRATION WAGE FOR WIFE LABOR $\bar{w}_f^{*''}$ IN FIGURE 3.2 (PANEL A).
3. *LABOR SUPPLY.* IN TURN, THE RISE IN WAGE IN ONE OCCUPATION, SPOUSAL LABOR, CAUSES A DECREASE IN THE SUPPLY CURVE TO THE OTHER OCCUPATION. THIS FOLLOWS

FROM EQUATION 3.8, ACCORDING TO WHICH THE SUPPLY OF LABOR IS INVERSELY RELATED TO w^*_F DUE TO A SUBSTITUTION AND INCOME EFFECT. ACCORDINGLY, WOMEN'S SUPPLY OF LABOR IS EXPECTED TO SHIFT LEFTWARDS TO S' IN PANEL C.¹³ IN ADDITION, LOWER WAGES FOR MALE WORKERS INDUCE EMPLOYERS TO SUBSTITUTE MALE WORKERS FOR FEMALE WORKERS, LEADING TO A DOWNWARD SHIFT IN D , THE DEMAND FOR FEMALE WORKERS, IN PANEL C.

THIS COMBINATION OF A REDUCTION IN DEMAND AND IN SUPPLY OF FEMALE LABOR UNAMBIGUOUSLY LEADS TO A REDUCTION IN TOTAL FEMALE EMPLOYMENT. WE HAVE THUS SEEN THAT AN INCREASE IN THE NUMBER OF MEN-- WHICH BRINGS A MARRIAGE SQUEEZE FOR MEN--IS PREDICTED TO CAUSE AN INCREASE IN WOMEN'S VALUE OF TIME w^* AND THEREFORE A DECREASE IN TOTAL FEMALE EMPLOYMENT. IN GENERAL,

HYPOTHESIS 1

A MARRIAGE SQUEEZE FOR MEN IS EXPECTED TO BE ASSOCIATED WITH LESS FEMALE LABOR SUPPLY THAN A MARRIAGE SQUEEZE FOR WOMEN.

THE AGGREGATE EMPLOYMENT LEVELS IN FIGURE 3.2 DO NOT DETERMINE THE DIVISION BETWEEN TOTAL NUMBER OF WORKERS AND HOURS OF WORK PER WORKER. THE EFFECT OF A MARRIAGE SQUEEZE FOR MEN IS LIKELY TO ACT ON BOTH THESE DIMENSIONS: IT WILL (1) REDUCE THE PROPORTION OF WOMEN WHO PARTICIPATE IN THE LABOR FORCE, AND (2) DECREASE THE NUMBER OF HOURS INDIVIDUAL WOMEN WORK OUTSIDE THE HOME.

WHILE THE PREDICTIONS REGARDING THE EFFECT OF A MARRIAGE SQUEEZE FOR MEN ON EMPLOYMENT LEVELS ARE UNAMBIGUOUS, THE PREDICTION REGARDING ITS EFFECT ON WAGES IS AMBIGUOUS. FEMALE WAGES COULD GO UP OR DOWN, DEPENDING ON WHETHER DEMAND OR SUPPLY SHIFTS MORE IN THE MARKET FOR WOMEN'S WORK.¹⁴

HYPOTHESIS 1 HOLDS FOR ALL WOMEN PARTICIPATING IN MARRIAGE MARKETS AFFECTED BY AN INCREASE IN THE NUMBER OF MEN. IF WE DISTINGUISH BETWEEN MARRIED WOMEN AND SINGLE WOMEN, AND BOTH GROUPS PARTICIPATE IN MARRIAGE MARKETS, WE EXPECT THE HYPOTHESIS TO HOLD SEPARATELY FOR MARRIED WOMEN AND FOR SINGLE WOMEN. GIVEN THAT SINGLE WOMEN DO NOT FACE DIVORCE COSTS, THEIR w^* IS LIKELY TO VARY MORE WITH MARKET CONDITIONS THAN THE w^* OF MARRIED WOMEN. HOWEVER, IT IS EXPECTED THAT HYPOTHESIS 1 IS MORE APPLICABLE TO MARRIED WOMEN THAN TO SINGLE WOMEN GIVEN THAT AN OCCUPATIONAL CHOICE BETWEEN WORK AND SPOUSAL LABOR IS LIKELY TO BE LESS RELEVANT TO SINGLE WOMEN THAN TO MARRIED WOMEN. ALTHOUGH IT MAY HAVE BEEN MORE COMMON IN THE PAST, FEW SINGLE WOMEN TODAY REDUCE THEIR PARTICIPATION IN THE

LABOR FORCE IN ORDER TO PREPARE FOR MARRIAGE. A CORRELATE OF
HYPOTHESIS 1 IS THEREFORE THAT

HYPOTHESIS 1'

*A MARRIAGE SQUEEZE FOR MEN IS EXPECTED TO BE ASSOCIATED WITH LESS
LABOR FORCE PARTICIPATION BY MARRIED WOMEN THAN A MARRIAGE
SQUEEZE FOR WOMEN.*

RELATED HYPOTHESES ARE DEVELOPED IN CHAPTER 6, WHICH ALSO REPORTS TESTS FOR SOME OF THE HYPOTHESES LINKING MARRIAGE SQUEEZES AND LABOR SUPPLY. RECENT TRENDS IN THE SEX RATIO OF THOSE ELIGIBLE FOR MARRIAGE AND IN FEMALE LABOR FORCE PARTICIPATION TEND TO SUPPORT HYPOTHESIS 1, WHICH STATES THAT MARRIAGE SQUEEZES ARE RELATED TO FEMALE LABOR SUPPLY. AS POINTED OUT IN GLICK *ET AL.* (1963), MARRIAGE SQUEEZES AND SEX RATIOS VARY OVER TIME BECAUSE (1) ON AVERAGE, WOMEN MARRY MEN WHO ARE GENERALLY SOMEWHAT OLDER, AND (2) THE NUMBER OF BIRTHS FLUCTUATES FROM YEAR TO YEAR. IN THE EARLY 1950S THERE WERE MORE MEN THAN WOMEN IN MOST WESTERN COUNTRIES AS A RESULT OF DECLINING NUMBERS OF BIRTHS DURING THE LATE 1920S AND EARLY 1930S. CONVERSELY, IN THE MID-SIXTIES, WHEN THE BABY-BOOM GENERATION STARTED TO REACH MARRIAGEABLE AGE, WOMEN IN THE UNITED STATES AND OTHER COUNTRIES WITH SIMILAR DEMOGRAPHIC TRENDS, BEGAN TO EXPERIENCE A SHORTAGE OF MEN. HEER (1978) AND HEER AND GROSSBARD-SHECHTMAN (1981) SHOW THAT THIS WAS TRUE IN THE UNITED STATES BY 1964.¹⁵ SINCE THE U.S. BIRTH RATE STARTED A RENEWED DOWNWARD TREND FROM 1961, YOUNG MEN HAVE BEEN FINDING RELATIVELY FEW MARRIAGEABLE WOMEN IN THE 1980S.

CONSISTENT WITH HYPOTHESES 1 AND 1' IS THE DRAMATIC UPSURGE IN THE EMPLOYMENT OF U.S. WOMEN--MARRIED WOMEN IN PARTICULAR--THAT OCCURRED IN THE LATE SIXTIES AND DURING THE SEVENTIES, A PERIOD OF MARRIAGE SQUEEZE FOR WOMEN. THIS INCREASE PERSISTED "DESPITE A SIGNIFICANT SLOWING OF THE GROWTH IN REAL WAGES AND DRAMATIC ACCELERATION OF THE RATE OF INFLATION. IN FACT, BETWEEN 1973 AND 1975, REAL WAGES FELL IN TWO SUCCESSIVE YEARS, YET WOMEN'S LABOR FORCE PARTICIPATION CONTINUED TO GROW" (NIEMI AND LLOYD 1980). INCREASED PARTICIPATION DESPITE STAGNANT WAGES SUPPORTS HYPOTHESIS 1, WHEREBY A REDUCTION IN SEX RATIO PUSHES THE SUPPLY OF LABOR RIGHTWARDS, WHEREAS WAGES MAY GO DOWN TO THE EXTENT THAT AN INCREASE IN WOMEN'S SUPPLY OF LABOR DOMINATES AN INCREASE IN EMPLOYERS' DEMAND FOR FEMALE LABOR FOLLOWING A DECREASE IN MALE MANPOWER. A POPULAR ALTERNATIVE EXPLANATION FOR THE GROWTH IN FEMALE LABOR SUPPLY, NAMELY AN INCREASE IN THE DEMAND FOR FEMALE WORKERS, IMPLIES AN UNAMBIGUOUS INCREASE IN WAGES.¹⁶ SINCE 1990, FOR THE FIRST TIME IN ALMOST THIRTY YEARS, THERE HAS BEEN A DECREASE IN WOMEN'S LABOR FORCE

PARTICIPATION. THIS COULD BE RELATED TO THE MARRIAGE SQUEEZE FOR MEN OF THE BABY-BUST GENERATION THAT FOLLOWED THE BABY-BOOM (SEE CHAPTER 5).

ADDITIONAL EVIDENCE FOR THE THEORY IS PROVIDED BY COMPARISONS BETWEEN BLACKS AND WHITES IN THE UNITED STATES. BLACK WOMEN HAVE GENERALLY BEEN FOUND TO HAVE HIGHER RATES OF PARTICIPATION IN THE LABOR FORCE THAN WHITE WOMEN (FOR INSTANCE, IN A STUDY OF LABOR FORCE ATTACHMENT SOON AFTER PREGNANCY BY MOTT AND SHAPIRO 1978), EVEN AFTER STATISTICAL CONTROL FOR INCOME, EDUCATION, MARITAL STATUS, AND OTHER IMPORTANT VARIABLES. THIS CAN BE EXPLAINED BY THE MARRIAGE SQUEEZE HYPOTHESIS STATED HERE, FOR AMONG U.S. BLACKS THE SEX RATIO OF THOSE ELIGIBLE FOR MARRIAGE IS SIGNIFICANTLY LOWER THAN AMONG WHITES, DUE TO LOWER SEX RATIO AT BIRTH, HIGHER MORTALITY, AND HIGHER RATES OF IMPRISONMENT. MOREOVER, BLACK MALES SHOW A MUCH HIGHER TENDENCY TO INTERMARRY WITH WHITES THAN DO BLACK FEMALES, WHICH ADDS TO THE SHORTAGE OF MEN EXPERIENCED BY BLACK WOMEN (SEE SPANIER AND GLICK 1980).

EFFECTS OF INDIVIDUAL OR GROUP DIFFERENCES IN MARRIAGE OPPORTUNITIES

AS CAN BE SEEN FROM EQUATION 3.6 VARIATION IN LABOR FORCE PARTICIPATION CAN BE A CONSEQUENCE OF VARIATION EITHER IN WAGES OR IN THE VALUE OF TIME IN THE HOME. IN THEIR EMPIRICAL STUDIES ECONOMISTS HAVE LOOKED SOLELY AT HOUSEHOLD CHARACTERISTICS (SUCH AS NUMBER AND AGE OF CHILDREN OR NUMBER OF ADULTS) AS DETERMINANTS OF THE VALUE OF WOMEN'S TIME AND THOSE OF LABOR SUPPLY. (SEE, FOR INSTANCE, GRONAU 1973, HECKMAN 1974).¹⁷ IT FOLLOWS FROM THIS THEORY THAT INDIVIDUAL OR GROUP DIFFERENCES IN MARRIAGE OPPORTUNITIES ARE ALSO RELATED TO THE VALUE OF TIME IN THE HOME, AND THEREFORE LABOR SUPPLY.

THE FOLLOWING HYPOTHESIS CAN POSSIBLY BE TESTED USING A VARIETY OF FACTORS INFLUENCING VALUE OF TIME w^* .

HYPOTHESIS 2

THE HIGHER A WOMAN'S VALUE IN THE MARRIAGE MARKET, THE HIGHER HER VALUE OF TIME AND THE LOWER HER LABOR SUPPLY.

VALUE IN THE MARRIAGE MARKET IS NOT ALWAYS EASY TO ESTABLISH. AS MENTIONED ABOVE, EDUCATION AND INCOME OF FAMILY OF ORIGIN COULD POSSIBLY INFLUENCE VALUE IN THE MARRIAGE MARKET. A WOMAN'S ABILITY TO MARRY INTO A WEALTHIER FAMILY (JUDGING FROM A COMPARISON OF WEALTH

OR INCOME IN THE BRIDE'S AND THE GROOM'S FAMILY), OR HER RELATIVE NUMBER OF PREVIOUS MARRIAGES, MIGHT ALSO SERVE AS INDICATORS OF HER w^* (HOLDING OTHER CHARACTERISTICS CONSTANT).¹⁸

FURTHERMORE, THE PECUNIARY COMPONENT OF A PARTICULAR WOMAN'S VALUE OF TIME DEPENDS NOT ONLY ON HER OWN CHARACTERISTICS AND OVERALL VALUE IN THE MARRIAGE MARKET. IN THE CASE OF MARRIED WOMEN, THE PECUNIARY COMPONENT OF w^* ALSO DEPENDS ON THE HUSBAND'S CHARACTERISTICS. COMPENSATING DIFFERENTIALS MAY EXIST, WHEREBY HUSBANDS WHO OFFER RELATIVELY LOW NON-PECUNIARY BENEFITS TO THEIR WIFE MAKE UP FOR SUCH SHORTCOMING BY PROVIDING THEIR WIFE WITH MORE GENEROUS PECUNIARY BENEFITS THAN DO HUSBANDS OFFERING RELATIVELY HIGH NON-PECUNIARY BENEFITS. IN OTHER WORDS, HUSBANDS CAN MAKE UP FOR AN UNDESIRABLE TRAIT, SUCH AS OLD AGE OR POOR HEALTH, BY SHARING A HIGHER PROPORTION OF THEIR WEALTH WITH THEIR WIFE. GIVEN THAT THE SUPPLY OF LABOR DEPENDS ON ALTERNATIVE WAYS OF OBTAINING PECUNIARY BENEFITS, IT FOLLOWS THAT

HYPOTHESIS 3

COMPENSATING DIFFERENTIALS LEADING TO PECUNIARY COMPENSATIONS BY HUSBANDS TO WIVES HAVE A DISCOURAGING EFFECT ON WIVES' LABOR SUPPLY.

THIS HYPOTHESIS HOLDS FOR A GIVEN INCOME LEVEL OF HUSBANDS, AS IT IS ASSUMED THAT HUSBANDS DO NOT AUTOMATICALLY SHARE A FIXED PROPORTION OF INCOME WITH THEIR WIFE. HYPOTHESIS 3 WILL BE TESTED IN CHAPTER 7.

MORE HYPOTHESES RELATING MARRIAGE-MARKET FACTORS TO LABOR SUPPLY COULD BE ELABORATED, BUT I PREFER TO LIMIT THIS THEORETICAL DISCUSSION TO HYPOTHESES THAT BUILD TOWARDS THE MORE EMPIRICAL CHAPTERS FOUND LATER IN THIS BOOK. FURTHERMORE, GTM, THE THEORY PRESENTED HERE, CAN ALSO SHED NEW LIGHT ON TRADITIONAL TOPICS IN LABOR SUPPLY THEORY, SUCH AS WAGE AND INCOME EFFECTS.

MARRIAGE AND WAGE

RACIAL OR ETHNIC ORIGIN CAN NOT ONLY SHIFT THE CONSTANT TERM IN LABOR SUPPLY REGRESSIONS, BUT IT CAN ALSO INFLUENCE THE SLOPE OF A LABOR SUPPLY. WAGE EFFECTS OFTEN DIFFER BY CHARACTERISTICS SUCH AS RACIAL OR ETHNIC ORIGIN.

SUCH DIFFERENCES IN SLOPE HAVE BEEN EXPLAINED IN THE PAST IN TERMS OF CULTURAL DIFFERENCES OR DISCRIMINATION. TRADITIONAL LABOR SUPPLY THEORY DOES NOT RECOGNIZE THAT MARRIAGE MARKET CONDITIONS CAN INFLUENCE THE ELASTICITY OF LABOR SUPPLY. IT IS HYPOTHESIZED HERE THAT

DIFFERENCES IN MARRIAGE MARKET CONDITIONS CAN ALSO ACCOUNT FOR SOME RACIAL OR ETHNIC DIFFERENCES IN WAGE EFFECTS.

IN ORDER TO SEE HOW MARRIAGE MARKET CONDITIONS CAN HAVE AN EFFECT ON THE ELASTICITY OF LABOR SUPPLY CONSIDER THE EXAMPLE OF TWO ETHNIC OR RACIAL GROUPS. FIGURE 3.3 REPRESENTS THE SUPPLY OF TWO WOMEN, ONE FROM EACH GROUP, WITH IDENTICAL OPPORTUNITIES w_0 AND w^*_0 IN THE TWO RELEVANT LABOR MARKETS. ORIGINALLY, THEIR SUPPLY COINCIDES AT SUPPLY S . WE THEN COMPARE THESE TWO WOMEN WITH WOMEN WHO ARE OFFERED A HIGHER WAGE, w_1 . THE *OBSERVED* ELASTICITY OF LABOR SUPPLY, BASED ON A CROSS-SECTION OF EACH GROUP, COULD DIFFER ACROSS GROUPS DUE TO VARYING CORRELATIONS BETWEEN w AND w^* . IF THERE IS NO LINK BETWEEN w AND w^* , THE *OBSERVED* ELASTICITY IS ALSO THE *TRUE* ELASTICITY HOWEVER, IF w AND w^* ARE POSITIVELY CORRELATED, FOR INSTANCE, BECAUSE THE SAME UNMEASURED CHARACTERISTICS--SUCH AS ABILITY--RAISE OPPORTUNITIES IN BOTH THE LABOR MARKET AND THE SPOUSAL LABOR (OR MARRIAGE) MARKET, AN INCREASE IN WAGES FROM w_0 TO w_1 LEADS SIMULTANEOUSLY TO BOTH A MOVEMENT ALONG THE SUPPLY CURVE AND A LEFTWARD SHIFT OF THE SUPPLY CURVE (DUE TO A SUBSTITUTION EFFECT AND AN INCOME EFFECT AWAY FROM WORK). THE OBSERVED ELASTICITY THEN DIFFERS FROM THE TRUE ELASTICITY. MORE SPECIFICALLY,

HYPOTHESIS 4

THE MORE POSITIVELY w^ AND w ARE CORRELATED IN A CROSS-SECTION OF WOMEN, THE LOWER THE OBSERVED ELASTICITY OF LABOR SUPPLY.*

A CASE IN POINT IS THE FINDING BY GRONAU (1981) THAT IN ISRAEL THE LABOR FORCE PARTICIPATION OF WOMEN OF ASIAN-AFRICAN ORIGIN IS MORE SENSITIVE TO CHANGES IN WAGE (ACTUAL OR POTENTIAL) THAN THAT OF EUROPEAN-AMERICAN WOMEN. GRONAU'S EXPLANATION FOR THE HIGHER OBSERVED ELASTICITY OF LABOR SUPPLY AMONG ASIAN-AFRICAN WOMEN IS THAT THE FORMER WOMEN REACT MORE TO PECUNIARY REWARDS. THE PRESENT THEORY LEADS TO AN ALTERNATIVE EXPLANATION BASED ON ETHNIC DIFFERENCES IN THE PREVALENCE OF MARRIAGE. MARRIAGE SEEMS TO BE MORE PREVALENT AMONG ASIAN-AFRICAN JEWS THAN AMONG EUROPEAN-AMERICAN JEWS, AS INDICATED FOR INSTANCE BY THE LOWER PERCENT OF THE POPULATION AT MARRIAGEABLE AGE WHO IS UNMARRIED AMONG ASIAN-AFRICAN JEWS. THIS IS PROBABLY RELATED TO STRICTER ADHERENCE TO

TRADITIONAL SPOUSE ROLES AMONG ASIAN-AFRICAN JEWS (DOCUMENTED FOR INSTANCE BY YOGEV AND AYALON 1982). AS A RESULT OF THESE DIFFERENCES IN MARRIAGE PATTERNS, IT IS MORE LIKELY THAT TALENTED ASIAN-AFRICAN WOMEN WILL SPECIALIZE IN SPOUSAL LABOR AND NOT WORK AT ALL OUTSIDE THE HOME, WHICH IMPLIES A LOWER CORRELATION BETWEEN w AND w^* THAN FOR WOMEN OF EUROPEAN-AMERICAN ORIGIN. IN TURN, A LOWER OBSERVED CORRELATION BETWEEN w AND w^* AMONG ASIAN-AFRICAN WOMEN THAN AMONG EUROPEAN-AMERICAN WOMEN IMPLIES THAT THE OBSERVED ELASTICITY AND THE TRUE ELASTICITY ARE MORE LIKELY TO COINCIDE IN THE CASE OF ASIAN-AFRICAN WOMEN THAN FOR EUROPEAN WOMEN. IN THE CASE OF EUROPEAN-AMERICAN WOMEN THE SUPPLY SCHEDULE IS MORE LIKELY TO SHIFT LEFTWARDS TO S^e , IMPLYING A LOWER OBSERVED ELASTICITY OF LABOR SUPPLY FOR EUROPEAN-AMERICAN WOMEN THAN FOR ASIAN-AFRICAN WOMEN.

AVAILABLE EVIDENCE SUGGESTS THAT WHEREAS ALL ISRAELI WOMEN SUCCEEDING MORE IN MARRIAGE ARE LESS LIKELY TO WORK, THIS IS MORE SO AMONG WOMEN OF ASIAN-AFRICAN ORIGIN. FOR INSTANCE, MATRAS AND SELBY (1981) FOUND THAT ALL WOMEN WHO MARRIED MEN WHOSE FATHER HAD A HIGHER OCCUPATION THAN THEIR OWN FATHER (AN INDICATOR OF HIGHER w_f^*) WERE LESS LIKELY TO PARTICIPATE IN THE LABOR FORCE, BUT THAT A HIGH w_f^* HAD A MUCH MORE DISCOURAGING EFFECT ON THE LABOR-FORCE PARTICIPATION OF ASIAN-AFRICAN WOMEN. THIS COULD INDICATE THAT w_f AND w_f^* ARE CORRELATED LESS POSITIVELY IN THAT GROUP THAN AMONG EUROPEAN-AMERICAN JEWS. THIS ALTERNATIVE EXPLANATION OF GROUP DIFFERENCES IN THE ELASTICITY OF LABOR SUPPLY THUS SEEMS TO BE APPLICABLE TO ISRAEL.¹⁹

HYPOTHESIS 4 COULD ALSO BE APPLIED TO BLACK-WHITE DIFFERENCES IN THE ELASTICITY OF LABOR SUPPLY IN THE UNITED STATES. HALL (1973) FOUND A POSITIVE ELASTICITY OF SUBSTITUTION FOR U.S. WOMEN AS A WHOLE, WHILE HE FOUND A NEGATIVE ELASTICITY OF SUBSTITUTION FOR A SAMPLE OF U.S. BLACK WIVES. HALL'S FINDING CAN BE EXPLAINED IN TERMS OF BLACK-WHITE DIFFERENCES IN MARRIAGE AND FAMILY PATTERNS. FOR WHATEVER REASONS (POSSIBLY A MORE IMBALANCED SEX RATIO AMONG BLACKS), MARRIAGE AND SPECIALIZATION IN SPOUSAL LABOR ARE FOUND LESS FREQUENTLY AMONG BLACKS THAN AMONG WHITES. SOME TALENTED WHITE WOMEN, WHO COULD POSSIBLY OBTAIN BOTH A HIGH w AND A HIGH w^* MAY END UP HAVING EITHER A HIGH w OR A HIGH w^* , AS MANY OF THEM HAVE THE OPTION OF SPECIALIZING IN SPOUSAL LABOR. THAT OPTION BEING VERY RARE FOR TALENTED BLACK WOMEN, ONE EXPECTS MORE OF A POSITIVE CORRELATION BETWEEN THE w AND w^* OF VARIOUS WOMEN AMONG BLACKS THAN AMONG WHITES. IN TURN, A HIGHER CORRELATION BETWEEN w AND w^* AMONG BLACK WOMEN THAN AMONG WHITE WOMEN IMPLIES LESS OF A NEGATIVE ELASTICITY OF SUBSTITUTION IN BLACK WOMEN'S LABOR SUPPLY AMONG BLACK WOMEN THAN AMONG WHITE WOMEN, WHICH IS CONSISTENT WITH HYPOTHESIS 4. IT IS HOPED

THAT THIS INTERPRETATION OF HALL'S FINDING WILL BE TESTED MORE DIRECTLY, AS IT HAS IMPORTANT POLICY IMPLICATIONS.

A GENERAL THEORY OF LABOR AND MARRIAGE CAN ALSO BE USED TO DERIVE PREDICTIONS REGARDING MALE AND FEMALE DIFFERENCES IN ELASTICITY OF LABOR SUPPLY. INDIVIDUAL SUPPLY OF LABOR OUTSIDE THE HOME CAN BE SUBSTITUTED FOR BOTH SPOUSAL LABOR AND SELF-ORIENTED TIME. THE (COMPENSATED) SUPPLY OF (OUTSIDE) LABOR BY MARRIED WOMEN WILL BE MORE ELASTIC THAN THAT OF MARRIED MEN IN VIEW OF THE LARGER POSSIBILITIES OF SUBSTITUTION BETWEEN THE TWO TYPES OF WORK AVAILABLE TO WOMEN IN COMPARISON TO MEN. THIS CONCLUSION CAN ALSO BE FOUND IN TRADITIONAL LABOR THEORY. WHEN WE ANALYZE UNCOMPENSATED WAGE EFFECTS WHICH ALSO INCLUDE INCOME EFFECTS, THE ANALYSIS ACCORDING TO GTM BECOMES MORE COMPLICATED. BEFORE CONSIDERING SUCH UNCOMPENSATED WAGE EFFECTS, WE LOOK AT INCOME EFFECTS.

MARRIAGE, DIVORCE AND INCOME

THE PRESENT THEORY ALSO LEADS TO NEW INSIGHTS REGARDING INCOME EFFECTS ON LABOR SUPPLY AND DIVORCE. INCOME EFFECTS ON LABOR SUPPLY ARE EXAMINED HERE, AND INCOME EFFECTS ON DIVORCE ARE ANALYZED BRIEFLY IN CHAPTER 4, AND IN MORE DETAIL IN CHAPTER 10. IT FOLLOWS FROM THIS THEORY THAT INCOME EFFECTS ON LABOR SUPPLY ARE LIKELY TO BE DIFFERENT FOR MEN AND WOMEN. FURTHERMORE, INCOME EFFECTS ON THE LABOR SUPPLY OF MARRIED WORKERS ARE CLOSELY RELATED TO INCOME EFFECTS ON DIVORCE. WE START BY CONSIDERING CHANGES IN INCOME ORIGINATING FROM SOURCES OTHER THAN OWN LABOR, I.E. NON-WAGE INCOME. IT IS ASSUMED THAT THESE CHANGES WERE NOT EXPECTED AT THE TIME OF MARRIAGE.

CONSIDER INDEPENDENT INCREASES IN THE NON-WAGE INCOME OF A COUPLE INITIALLY IN EQUILIBRIUM AT THE MARKET WAGES FOR SPOUSAL LABOR \bar{w}_f^* AND \bar{w}_m^* (SEE FIGURE 3.4). ASSUMING THAT SPOUSE'S LABOR IS POSITIVELY RELATED TO OWN INCOME IN UTILITY FUNCTION 3.1, HIGHER INCOMES LEAD TO RIGHTWARD SHIFTS IN EACH SPOUSE'S DEMAND FOR THE OTHER'S LABOR (BOTH HUSBAND AND WIFE HAVE A DEMAND FOR SPOUSAL LABOR SUCH AS FUNCTION 3.9 WHERE THE PARTIAL EFFECT OF NON-WAGE INCOME, V , IS POSITIVE). IF THE SHIFTS ARE PROPORTIONAL TO THE EXISTING AMOUNT OF SPOUSAL LABOR SUPPLIED, IN MOST CASES THE SHIFT IN HUSBAND'S DEMAND FOR THE WIFE'S LABOR WILL BE LARGER THAN THE CORRESPONDING SHIFT IN WIFE'S DEMAND FOR THE HUSBAND'S LABOR.

AT THE SAME TIME, THE WILLINGNESS TO SUPPLY ONE'S OWN LABOR IS MOST LIKELY TO DECREASE AS A RESULT OF HIGHER INCOME V . THIS FOLLOWS FROM NEGATIVE PARTIAL EFFECTS OF V ON H AND L ACCORDING TO EQUATIONS

3.7 AND 3.8. GRAPHICALLY, THIS IMPLIES THAT S SHIFTS LEFTWARDS IN BOTH PANELS OF FIGURE 3.4, AND PROBABLY BY A LARGER ABSOLUTE AMOUNT IN THE CASE OF FEMALE SPOUSAL LABOR THAN IN THAT OF MALE SPOUSAL LABOR.

ASSUMING MARKET WAGES FOR SPOUSAL LABOR HAVE NOT CHANGED (E.G., BECAUSE FEW PEOPLE ARE FACING A SIMILAR INCREASE IN INCOME), THIS COUPLE NOW EXPERIENCES EXCESS DEMANDS FOR SPOUSAL LABOR. GIVEN WIVES' SPECIALIZATION IN SPOUSAL LABOR, EXCESS DEMAND FOR THE WIFE'S LABOR IS EXPECTED TO BE LARGER THAN EXCESS DEMAND FOR THE HUSBAND'S LABOR.

THE EFFECTS OF SUCH EXCESS DEMANDS FOR SPOUSAL LABOR DEPEND ON WHETHER DIVORCE AND REMARRIAGE ARE COSTLY. WITH ZERO DIVORCE COSTS, THE COUPLE WHO WAS PREVIOUSLY IN EQUILIBRIUM IN FIGURE 3.4 WILL OPT FOR A DIVORCE AND REMARRIAGE TO NEW PARTNERS WITH WHOM THEY DO NOT EXPERIENCE EXCESS DEMAND FOR SPOUSAL LABOR.

IF DIVORCE IS COSTLY AND THE COUPLE CHOOSES TO REMAIN MARRIED, THEY CAN DO TWO POSSIBLE THINGS: (1) LET THE MATERIAL COMPONENT OF w^* THEY GIVE EACH OTHER INCREASE BEYOND THE MARKET LEVEL \bar{w}_F^* AND \bar{w}_M^* , OR (2) FIND WAYS TO REDUCE EXCESS DEMANDS FOR SPOUSAL LABOR. ONE WAY TO REDUCE SUCH EXCESS DEMAND IS BY AN INCREASE IN THE SUPPLY OF SPOUSAL LABOR AT THE EXPENSE OF LABOR OUTSIDE THE HOME. TO THE EXTENT THAT THERE EXISTED AN INITIAL DIVISION OF LABOR ASSOCIATED WITH LARGER AMOUNTS OF THE WIFE'S SPOUSAL LABOR, THIS ADJUSTMENT WILL REQUIRE A LARGER REDUCTION IN THE WIFE'S LABOR SUPPLY THAN IN HER HUSBAND'S. TO THE EXTENT THAT INTERNAL ADJUSTMENTS IN w^* ARE LIMITED, IT FOLLOWS THAT

HYPOTHESIS 5

IF A HUSBAND AND WIFE WHO ARE MARRIED TO EACH OTHER EXPERIENCE INDEPENDENT EQUAL INCREASES IN INCOME, THE WIFE'S LABOR SUPPLY IS LIKELY TO DECREASE MORE THAN THE HUSBAND'S.

THIS REJOINS MINCER'S (1962) CONCLUSION THAT CHANGES IN HOUSEHOLD INCOME ARE LIKELY TO REDUCE THE WIFE'S LABOR SUPPLY MORE THAN THE HUSBAND'S. WHAT THE PRESENT ANALYSIS ADDS IS THAT IT POINTS OUT TO SOME OF THE CORRELATES OF THIS ASYMMETRIC EFFECT OF INCOME ON HUSBAND'S AND WIFE'S LABOR SUPPLY. IT WILL BE SHOWN IN CHAPTER 10 THAT THE EFFECT OF INCOME ON HUSBAND'S AND WIFE'S LABOR SUPPLY IS LIKELY TO BE MORE ASYMMETRIC THE HIGHER THE DIVORCE COSTS, THE HIGHER THE DIVORCE COSTS OF THE WIFE RELATIVELY TO THOSE OF THE HUSBAND, THE MORE THE WIFE'S INCOME IS AFFECTED RELATIVELY TO THE HUSBAND'S INCOME, THE FEWER THE SUBSTITUTES FOR SPOUSAL LABOR, AND THE MORE WOMEN ARE WILLING TO SUBSTITUTE BETWEEN LABOR AND SPOUSAL LABOR.

PART OF THIS DISCUSSION OF MARRIAGE, DIVORCE AND INCOME EFFECTS IS ALSO APPLICABLE TO THE STUDY OF WAGE EFFECTS. AN UNCOMPENSATED WAGE (w) INCREASE INCLUDES (1) A POSITIVE INCOME EFFECT LEADING PEOPLE TO WORK LESS IN GENERAL, AND MOST LIKELY ALSO LESS OUTSIDE THE HOME, AND (2) A POSITIVE COMPENSATED WAGE EFFECT LEADING TO SUBSTITUTION OF OUTSIDE LABOR FOR SPOUSAL LABOR AND TIME FOR SELF. IT FOLLOWS FROM THE THEORY THAT BOTH THESE EFFECTS WILL HAVE A STRONGER DISCOURAGING INFLUENCE ON THE LABOR SUPPLY OF WIVES THAN OF HUSBANDS, IF COUPLES STAY MARRIED. WIVES WILL INCREASE THEIR SPOUSAL LABOR IN ORDER TO BRIDGE THE GAP BETWEEN DEMANDED AND SUPPLIED SPOUSAL LABOR THAT ORIGINATES FROM A WAGE INCREASE EXPERIENCED BY BOTH WIFE AND HUSBAND.

HYPOTHESIS 5 WAS TESTED USING RESULTS FROM A NEGATIVE INCOME TAX (NIT) PROGRAM, WHICH TRANSFERRED INCOME AS A FUNCTION OF EARNINGS, AND THEREFORE INCLUDED BOTH A POSITIVE INCOME EFFECT AND A NEGATIVE COMPENSATED WAGE EFFECT. THESE RESULTS, PRESENTED IN CHAPTER 10, SUPPORT HYPOTHESIS 5.

THE ANALYSIS LEADING TO HYPOTHESIS 5 ALSO IMPLIES THAT UNEXPECTED CHANGES IN INCOME WILL CAUSE DIVORCE. THIS IS DISCUSSED IN MORE DETAIL IN CHAPTERS 4 AND 10.

THE BACKWARD-BENDING SUPPLY OF LABOR

THE TRADITIONAL EXPLANATION FOR A BACKWARD-BENDING SUPPLY OF LABOR IS THAT THE SUPPLY HAS A NEGATIVE SLOPE WHEN A NEGATIVE INCOME EFFECT DOMINATES A POSITIVE SUBSTITUTION EFFECT. THE REASONING BEHIND ETHNIC OR RACIAL DIFFERENCES IN THE ELASTICITY OF LABOR SUPPLY CAN ALSO PROVIDE AN ADDITIONAL RATIONALE FOR A BACKWARD-BENDING SUPPLY CURVES. THE BACKWARD-BENDING SUPPLY OF LABOR COULD RESULT FROM A POSITIVE CORRELATION BETWEEN w AND w^* , A SITUATION RELEVANT TO WOMEN MORE THAN TO MEN. HIGHER WAGE LEVELS COULD CAUSE LEFTWARD SHIFTS IN THE SUPPLY OF LABOR IF w^* AND w ARE POSITIVELY CORRELATED (E.G., DUE TO LACK OF CONTROL FOR ABILITY). IF THE ENSUING SHIFT IN SUPPLY IS LARGE ENOUGH, THE *OBSERVED* SUPPLY SCHEDULE COULD HAVE A NEGATIVE SLOPE. IN ORDER TO SEE THAT, ONE CAN VISUALIZE A SUPPLY OF LABOR SUCH AS THE ONE PRESENTED IN FIGURE 3.3, WHICH LIES TO THE LEFT OF S^e , SUFFICIENTLY SO IN ORDER FOR THE OBSERVED AMOUNT OF LABOR SUPPLIED BY WOMEN OBTAINING A WAGE w_1 TO BE LESS THAN THE AMOUNT SUPPLIED BY WOMEN OBTAINING A WAGE w_0 .

IT FOLLOWS FROM THIS EXPLANATION THAT A BACKWARD-BENDING SUPPLY CURVE IS MORE LIKELY TO BE OBSERVED AMONG WOMEN THAN AMONG MEN. IT SHOULD NOT COME AS A SURPRISE, THEREFORE, THAT ONE OF THE FEW

CROSS-SECTIONAL STUDIES FINDING A BACKWARD-BENDING SUPPLY OF LABOR USED A SAMPLE OF NURSES (LINK AND SETTLE 1981).²⁰

OTHER IMPLICATIONS

THIS SECTION BRIEFLY MENTIONS SOME ADDITIONAL IMPLICATIONS OF THIS THEORY OF ALLOCATION OF TIME IN MARKETS FOR LABOR AND MARRIAGE REGARDING CONSUMPTION, FERTILITY AND MARRIAGE. MANY OF THE IMPLICATIONS FOR MARRIAGE ARE DEVELOPED IN MORE DETAIL IN CHAPTER 4.

CONSUMPTION. AS HAS BEEN MENTIONED BY BECKER (1973,1981), THE RELATIVE POSITION OF HUSBANDS AND WIVES IN THEIR RESPECTIVE MARRIAGE MARKETS IS PREDICTED TO INFLUENCE THEIR *CONSUMPTION* PATTERNS. IN TERMS USED HERE, THE HIGHER w^*_f RELATIVELY TO w^*_m , THE HIGHER THE WIFE'S WELL-BEING COMPARED TO THE HUSBAND'S. ONE OF THE MEANS BY WHICH THIS COULD BE EXPRESSED IS THROUGH A LARGE SHARE OF HOUSEHOLD EXPENDITURES BENEFITTING THE WIFE RATHER THAN THE HUSBAND. VARIATION IN RELATIVE COMPENSATIONS FOR SPOUSAL LABOR COULD ALSO EXPLAIN RELATED TRENDS IN GENDER DIFFERENCES IN HEALTH, LONGEVITY, OR TIME SPENT ON RECREATIONAL ACTIVITIES.

FERTILITY. THE STUDY OF *FERTILITY* IS ANOTHER AREA THAT COULD BENEFIT FROM THIS THEORY. IT FOLLOWS FROM THE THEORY PRESENTED ABOVE THAT THERE WILL BE NO STRONG CONTRAST BETWEEN MALE INCOME EFFECTS ON THE FERTILITY OF MARRIED WOMEN WHO ARE NOT EMPLOYED OUTSIDE THE HOME AND THOSE EFFECTS ON MARRIED WOMEN WORKING OUTSIDE THE HOME. IN CONTRAST, ACCORDING TO WILLIS (1974) AND OTHERS FOLLOWING HIS APPROACH, AN INCREASE IN HUSBAND'S INCOME WILL NOT AFFECT THE TIME COST OF CHILDREN OF A MARRIED WOMAN EMPLOYED IN THE LABOR FORCE, UNLESS SHE IS INDUCED TO STOP WORKING OUTSIDE THE HOME, WHEREAS SUCH INCREASE IN HUSBAND'S INCOME IS EXPECTED TO LEAD TO AN INCREASE IN THE VALUE OF TIME OF A HOUSEWIFE. FROM WILLIS' POINT OF VIEW, SO LONG AS A WOMAN IS WORKING OUTSIDE THE HOME, THE VALUE OF HER TIME EQUALS HER WAGE AND IS UNAFFECTED BY CHANGES IN MALE INCOME. BUT IF MALE INCOME RISES AND THE WIFE IS NOT WORKING OUTSIDE, THE DEMAND FOR SPOUSAL LABOR SHIFTS UPWARDS, HER VALUE OF TIME IN THE HOME AND COST OF CHILDREN RISE, WHICH ATTENUATES THE IMPACT OF AN INCOME EFFECT. THIS LEADS WILLIS TO PREDICT THAT THE ABSOLUTE VALUE OF A MALE INCOME EFFECT ON FERTILITY WILL BE LARGER IF THE WIFE WORKS OUTSIDE THE HOME THAN IF SHE DOES NOT.

IN CONTRAST, IT FOLLOWS FROM THIS MODEL THAT A WOMAN'S VALUE OF TIME IN THE HOME IS DETERMINED IN A MARKET FOR SPOUSAL LABOR. A RISE IN THE DEMAND FOR WOMEN'S SPOUSAL LABOR RESULTING FROM AN INCREASE

IN MALE INCOME MAY BE ASSOCIATED WITH AN INCREASE IN THE VALUE OF TIME IN THE HOME (w^*), EVEN FOR WOMEN WORKING OUTSIDE THE HOME. FOR INSTANCE, IN THE CASE OF TIME SERIES, INCREASES IN AGGREGATE MALE INCOMES ARE EXPECTED TO CAUSE A RIGHTWARD SHIFT IN DEMAND FOR WOMEN'S SPOUSAL LABOR, AND THEREFORE AN INCREASE IN w^* , THE VALUE OF WOMEN'S TIME. HOWEVER, IT REMAINS TRUE THAT A SHIFT IN DEMAND AT A POINT WHERE THE SUPPLY IS CLOSER TO VERTICAL WILL CAUSE A LARGER INCREASE IN w^* THAN AN UPWARD SHIFT IN DEMAND AT A POINT WHERE THE SUPPLY CURVE IS MORE ELASTIC, AND THAT SUPPLY IS LESS LIKELY TO BE ELASTIC WHEN WOMEN DO NOT WORK OUTSIDE THE HOME. ALSO, AS POINTED OUT EARLIER, INCOME EFFECTS ON VALUE OF TIME DEPEND ON DIVORCE COSTS. BUT ACCORDING TO THE PRESENT APPROACH, IT DOES NOT NECESSARY FOLLOW THAT THE MALE INCOME EFFECT ON FERTILITY WILL BE STRONGER IF LABOR FORCE PARTICIPATION BY MARRIED WOMEN IS MORE WIDESPREAD, AN IMPLICATION STATED IN WILLIS (1974). IT IS THEREFORE NOT SURPRISING THAT ERMISCH'S (1979) ANALYSIS OF BRITISH TIME SERIES OF FERTILITY AND BUTZ AND WARD'S (1979) ANALYSIS OF SUCH SERIES FOR THE UNITED STATES DID NOT SHOW THAT MALE INCOME HAD A STRONGER POSITIVE EFFECT IF WOMEN PARTICIPATED IN THE LABOR FORCE. WHATEVER ONE'S SOURCE OF INTEREST IT IS IMPORTANT TO APPRECIATE THAT, ACCORDING TO EQUATION 3.6, THE VALUE OF SOMEONE'S TIME IN THE HOME DOES NOT NEED TO BE EQUAL TO THEIR WAGE IN THE LABOR MARKET (ASSUMING THEY WORK). PEOPLE WHO ARE MUCH MORE PRODUCTIVE IN THE LABOR MARKET THAN IN THE MARRIAGE MARKET, WHICH WOULD BE REFLECTED IN A w^* MUCH LOWER THAN w , WILL PROBABLY DEVOTE SMALL AMOUNTS OF TIME TO SPOUSAL LABOR. FOR EXAMPLE, THE SUCCESSFUL EXECUTIVE WITH AN AVERAGE MARKET w^* MAY SPEND FEW BUT VERY ENJOYABLE HOURS WORKING IN SPOUSAL LABOR (INCLUDING TIME DEVOTED TO CHILDREN BEYOND THE AMOUNT OF TIME THAT THE EXECUTIVE WOULD CONTRIBUTE AS A SINGLE PARENT).

ALIMONY. THE IMPLICATIONS OF THIS THEORY FOR VALUE OF TIME IN THE HOME ARE ALSO RELEVANT FOR THE DETERMINATION OF ALIMONY OR LIFE INSURANCE BENEFITS. ONE CAN USE SOME OF THE IDEAS PRESENTED HERE IN DETERMINING OPTIMAL METHODS FOR PROPERTY AND INCOME DISTRIBUTION AT DIVORCE. THE EMPHASIS ON HOUSEHOLD EMPLOYMENT AND MARKET-ESTABLISHED VALUES OF SPOUSAL LABOR IMPLIES (1) LESS EMPHASIS ON THE NUMBER OF HOURS A PERSON WORKS OUTSIDE THE HOME THAN IS PRESENTLY THE CASE; WIVES (OR HUSBANDS) WHO WORK OUTSIDE THE HOME SHOULD NOT NECESSARILY BE DEPRIVED OF A COMPENSATION AT THE TIME OF DIVORCE, NOR SHOULD FULL-TIME HOUSEWIVES NECESSARILY RECEIVE A LARGE COMPENSATION; (2) LESS EMPHASIS ON INCOME UNRELATED TO SPOUSAL LABOR; (3) A RETURN TO THE MORE INDIVIDUALIZED DIVORCE SETTLEMENTS WHICH MANY JURISDICTIONS HAVE RECENTLY REPLACED BY SIMPLIFIED PROCEDURES.

MARRIAGES INVOLVE A GREAT VARIETY OF (OFTEN IMPLICIT) RECIPROCAL EMPLOYMENT CONTRACTS, AND AT DISSOLUTION EACH CASE NEEDS TO BE STUDIED SEPARATELY.

FINALLY THIS THEORY HAS MANY INSIGHTS TO OFFER REGARDING OUR UNDERSTANDING OF VARIATIONS IN MARRIAGE AND DIVORCE RATES, PREFERENCE FOR COHABITATION VERSUS FORMAL MARRIAGE, ACCEPTANCE OF POLYGAMY, INTERMARRIAGE, OR AGE AT MARRIAGE. THESE ARE PURSUED FURTHER IN THE REST OF THIS BOOK.

SUMMARY AND CONCLUSIONS

THIS CHAPTER HAS PRESENTED A THEORY OF INTERRELATED LABOR AND MARRIAGE MARKETS. DEMAND AND SUPPLY SCHEDULES FOR LABOR AND SPOUSAL LABOR WERE DERIVED BASED ON A THEORY OF ALLOCATION OF TIME AND ON THE ASSUMPTION THAT INDIVIDUALS CAN ENTER AND DISCONTINUE MARRIAGE CONTRACTS. PARTICULAR EMPHASIS WAS GIVEN TO THE THEORY'S IMPLICATIONS FOR THE STUDY OF LABOR SUPPLY. AMONG THE MAJOR INSIGHTS DERIVED FROM THE MODEL ARE THE HYPOTHESES THAT LABOR FORCE PARTICIPATION OF MARRIED WOMEN VARIES WITH THE EXTENT OF MARRIAGE SQUEEZES, THAT INCOME CHANGES INFLUENCE WIVES' LABOR SUPPLY MORE THAN HUSBANDS', THAT GROUP DIFFERENCES IN PATTERNS OF DIVISION OF SPOUSAL LABOR INFLUENCE THE ELASTICITY OF FEMALE LABOR SUPPLY, AND THAT A POSITIVE CORRELATION BETWEEN ACHIEVEMENT IN MARKETS FOR LABOR AND SPOUSAL LABOR CAN PROVIDE AN ADDITIONAL EXPLANATION FOR THE BACKWARD-BENDING SUPPLY OF LABOR. THE THEORY ALSO OFFERS INTERESTING INSIGHTS REGARDING CONSUMPTION, FERTILITY, AND MARRIAGE.

FURTHER RESEARCH OUGHT TO REFINE THE THEORETICAL APPARATUS PRESENTED HERE, TEST IT AGAINST FURTHER EMPIRICAL EVIDENCE, AND EXPLORE ITS IMPLICATIONS FOR PUBLIC POLICY. NUMEROUS LAWS AND GOVERNMENT PROGRAMS AFFECT WOMEN'S LABOR FORCE PARTICIPATION, MARRIAGE, FERTILITY, AND DIVORCE, AS WELL AS THE RELATIVE WELFARE OF MEN AND WOMEN, WHETHER MARRIED OR NOT. THIS THEORY WILL HOPEFULLY ADD TO OUR UNDERSTANDING OF THE CONSEQUENCES OF PUBLIC POLICY FOR PRODUCTION, REPRODUCTION, AND THE DISTRIBUTION OF WEALTH.

NOTES

1. THE DERIVATION OF VALUE OF TIME IN THE HOME, ALSO CALLED THE SHADOW WAGE, FOLLOWS THE ECONOMIC THEORY OF ALLOCATION OF TIME.
2. MARITAL STATUS OBVIOUSLY COUNTS IN ECONOMIC ANALYSES OF FERTILITY (SEE BECKER 1960, FOR INSTANCE).
3. FOR THE PURPOSE OF THIS DISCUSSION, NO DISTINCTION IS MADE BETWEEN FORMALIZED MARRIAGE AND LIVING TOGETHER ARRANGEMENTS. IT IS ASSUMED THAT SPOUSES ARE HETEROSEXUAL.
4. A SIMILAR DISTINCTION BETWEEN WORK AT HOME AND LEISURE IS MADE IN GRONAU (1977).
5. THE SAME ACTIVITY COULD BE EITHER WORK OR SELF-ORIENTED TIME, DEPENDING ON THE CIRCUMSTANCES OR THE PERSON. BECAUSE NO DISTINCTION IS MADE BETWEEN CONSUMPTION AND PRODUCTION, THE TIME SINGLE PERSONS DEVOTE TO ACTIVITIES SUCH AS COOKING OR CLEANING GENERATES POSITIVE UTILITY.
6. A PERSON SUPPLYING EITHER KIND OF LABOR IN THE RANGE OF NEGATIVE OR ZERO WAGES, IS PERFORMING VOLUNTEER WORK.
7. IF COSTS OF SUCH RECONTRACTING ARE POSITIVE, THIS COULD MAKE DIVORCE PROHIBITIVELY COSTLY AND LEAD TO A DISCREPANCY BETWEEN A MARRIED PERSON'S ACTUAL w^* AND THE w^* THAT PERSON COULD RECEIVE ON THE MARKET. LIKEWISE, "ON-THE-JOB" TRAINING OCCURRING DURING MARRIAGE COULD CAUSE SUCH DISCREPANCY.
8. THE ORIGINAL *ECONOMIC JOURNAL* ARTICLE ALSO CONTAINED AN ADAPTATION OF BECKER'S (1965) CONCEPT OF FULL INCOME INCORPORATING MARKET-DETERMINED w^* 'S.
9. EVEN IN SOCIETIES ALLOWING POLYGAMY, SPECIFIC RULES LIMIT THE KINDS AND NUMBERS OF MARRIAGES. FOR AN ECONOMIC ANALYSIS OF POLYGAMY SEE BECKER (1973) AND CHAPTER 11 HERE.
10. SUCH SEPARATION IS DONE IN THE ANALYSIS OF INTERMARRIAGE FOUND IN CHAPTER 8.
11. IT IS ASSUMED THAT THE INFLUX OF MEN DOES NOT AFFECT THE AGGREGATE DEMAND FOR TOTAL LABOR AND THE LEVEL OF NON-WAGE INCOME. THE FOLLOWING HYPOTHESES 1 AND 1' ARE ABOUT THE EFFECT OF THE NUMBER OF MEN, ALLOWING THE TOTAL POPULATION TO CHANGE. IF ONE WERE TO ANALYZE THE EFFECT OF SEX RATIOS KEEPING THE SIZE OF THE TOTAL POPULATION CONSTANT, IT WOULD FOLLOW THAT AN INCREASE IN SEX RATIO WOULD BE ACCOMPANIED BY BOTH AN INCREASE IN THE NUMBER OF MEN AND A DECREASE IN THE NUMBER OF WOMEN. IN THAT CASE AN ADDITIONAL INITIAL EFFECT WOULD BE A LEFTWARD SHIFT IN WOMEN'S SUPPLY OF LABOR, WHICH WOULD CAUSE THE WAGES OF FEMALE WORKERS TO INCREASE, A FACTOR ENCOURAGING WOMEN'S LABOR FORCE PARTICIPATION. THIS EFFECT WILL BE STRONGER IF MALE AND FEMALE WORKERS ARE POOR SUBSTITUTES IN THE LABOR MARKET.
12. THIS WILL BE TRUE AS LONG AS THE GOODS AND SERVICES PRODUCED WITH THE HELP OF WOMEN'S SPOUSAL LABOR HAVE A POSITIVE INCOME ELASTICITY. NOTE THAT PART OF THE REDUCTION IN DEMAND COMES FROM MEN WHO WERE ALREADY MARRIED.
13. WOMEN WITH HIGHER INCOME WILL GENERALLY CHOOSE TO WORK LESS,

IMPLYING IN MOST CASES A SMALLER PROPENSITY TO SUPPLY SPOUSAL LABOR (SEE THE NEXT SECTION ON INCOME EFFECTS). THE SUPPLY OF FEMALE LABOR IS ALSO EXPECTED TO SHIFT TO THE LEFT IF THE NUMBER OF WOMEN DECREASES AS THE NUMBER OF MEN INCREASES, LEAVING THE TOTAL POPULATION SIZE UNCHANGED. CONSEQUENTLY, A GIVEN WOMAN MIGHT NOT NECESSARILY BE LESS LIKELY TO WORK WHEN THE SEX RATIO INCREASES. SHE WILL BE MORE WILLING TO WORK TO THE EXTENT THAT HER WAGE INCREASES, AND LESS WILLING TO WORK TO THE EXTENT THAT HER QUASI-WAGE FOR SPOUSAL LABOR INCREASES.

14. IN ADDITION, THERE COULD ALSO BE SHIFTS IN WOMEN'S DEMAND FOR MALE SPOUSAL LABOR AND SUPPLY OF OWN SPOUSAL LABOR AS A RESULT OF CHANGES IN INCOME AND IN w^*_m , LEADING TO FURTHER RIPPLE EFFECTS. THESE AND OTHER PRESUMABLY SMALL RIPPLE EFFECTS ARE IGNORED.

15. HEER AND GROSSBARD-SHECHTMAN (1981) COMPARED THE NUMBER OF UNMARRIED MALES AGED 20-29 TO UNMARRIED FEMALES AGED 18-29. THE DIVIDING LINE BETWEEN THE TWO KINDS OF MARRIAGE SQUEEZE WAS SET AT 1.00 (SEE CHAPTER 5).

16. AN ADDITIONAL EXPLANATION FOR A POSSIBLE RIGHTWARD SHIFT IN THE SUPPLY OF FEMALE LABOR HAS BEEN ATTRIBUTED TO CHANGES IN FEMALE IDEOLOGY FOLLOWING THE SURGE OF THE FEMINIST MOVEMENT. SUCH EXPLANATION IS HARD TO DIFFERENTIATE FROM THE MARRIAGE SQUEEZE EXPLANATION GIVEN THE DATA AVAILABLE. HOWEVER, HEER AND GROSSBARD-SHECHTMAN (1981) VIEW THE FEMINIST MOVEMENT IN PART AS ANOTHER CONSEQUENCE OF THE FEMALE MARRIAGE SQUEEZE.

17. HOUSEHOLD CHARACTERISTICS SUCH AS HOUSEHOLD SIZE AND LABOR FORCE PARTICIPATION HAVE BEEN ANALYZED AS JOINTLY DETERMINED, FOR INSTANCE, BY CAIN AND DOOLEY (1976) AND CARLINER *ET AL.* (1981).

18. AS ARGUED IN CHAPTER 9, IN CERTAIN SOCIETIES FORMALIZATION OF MARRIAGE CAN ALSO INDICATE A WOMAN'S HIGHER w^* . IN LADINO VILLAGES IN GUATEMALA, WOMEN WITH MORE SCHOOLING AND COMING FROM BETTER HOMES WERE FOUND MORE LIKELY TO BE MARRIED FORMALLY RATHER THAN TO BE LIVING CONSENSUALLY. THIS CAN BE CONNECTED WITH DAVANZO'S (1972) FINDING THAT IN CHILE, WOMEN COHABITING WITHOUT A FORMAL MARRIAGE ARE MORE LIKELY TO PARTICIPATE IN THE LABOR FORCE THAN WOMEN MARRIED FORMALLY. SINCE DAVANZO ANALYZED LABOR SUPPLY, MARRIAGE TYPE AND WAGES SIMULTANEOUSLY, AN ALTERNATIVE EXPLANATION--THAT WORKING WOMEN PREFER COHABITATION--IS NOT SO LIKELY.

19. ANOTHER EXPLANATION VIEWS WOMEN FROM THE TWO ETHNIC GROUPS ON THE SAME SUPPLY SCHEDULE, BUT AT DIFFERENT POINTS CORRESPONDING TO DIFFERENT WAGE LEVELS.

20. RELYING ON DATA FROM TIME SERIES, SOME HAVE VIEWED SECULAR DECLINES IN HOURS OF WORK AS EVIDENCE FOR A BACKWARD-BENDING SUPPLY CURVE (E.G., CAIN AND WATTS 1973). HOWEVER, THESE STUDIES DID NOT ISOLATE FACTORS OTHER THAN WAGES AND INCOMES SUCH AS TECHNOLOGICAL CHANGE.