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Report of a Seminar

Women and Agricultural Technology: Relevance for Research

Volume 2 – Experiences in International
and National Research

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Women and Agricultural Technology: Relevance for Research

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Women And Structural Transformation*

by

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ABSTRACT

This paper focuses on an examination of the extent to which and the circumstances under which gender affects economic behavior, thereby influencing women's participation in the process of structural transformation. A review of development literature relevant to women's role in agricultural production and economic development under different social and production systems brings to bear analysis from several major approaches to these issues: the study of agricultural growth and technological change, distributive and demographic factors as they interact with women's economic role, sociological and anthropological literature, and analyses of the impact of government intervention on women in agriculture. A brief summary of trends in agricultural production and overall employment is then developed, particularly with a view to examining its implications for women including substitution of male and female labor, and women's differential access to factors of production and social services in different stages of development and under diverse social situations. In the treatment of these issues, the paper points out policies that are detrimental to productive efficiency and social welfare, that affect the legal framework, the institutional capacity and educational programs of the developing countries. Reform of such policies would contribute to increased societal awareness of the losses implicit in women's unequal access to resources and their consequences for women's participation in economic activity as structural transformation occurs.

1. INTRODUCTION

Concern about women's participation in the process of economic development is relatively new. It has been prompted by a combination of positive analyses and normative judgment. The frequently debated questions are: Do women have an adequate opportunity to participate in the productive processes and welfare benefits in the course of economic development, or are they the beasts of burden who bear a major share of exploitation?¹ And, what factors influence alternative outcomes with regard to women's participation? Conceptualization of the way gender affects participation in economic development is at a relatively early stage (Boserup, 1970; Becker, 1981). Analysis is still quite rudimentary of the women's role as economic actors as distinct from that of the labor force in general.² The extent to which and the conditions under which

¹ Exploitation may be defined in several ways, including unequal wage for equal work among males and females, overt or covert barriers to entry or to upward mobility of female labor, unequal access by females to factors of production, technology information, and to social and family resources, legal rights to property, etc.

² The notable exception is Gary Becker's work (Becker, 1981). By mostly surveying the theoretical and the U.S. empirical literature, Mark Killingsworth observes that "analytical models of dynamic behavior...are also still fairly rudimentary.... Life cycle relationships between fertility, labor force participation (including in particular, discontinuities and gaps in labor force participation, a 'cycling' between the market and the home), and wage rates for married women...do not... emerge readily from available formal models of dynamic optimization" (Killingsworth, 1983, p. 444).

gender may influence a variety of economic outcomes are not well researched. The nature and the extent of segmentation of economic activity between males and females and their changing roles in different socioeconomic settings and during the course of economic development are inadequately investigated in economic literature (Smith, 1980). Consequently, whether the efficiency and welfare losses from women's low participation in economic activity are significant in static and dynamic contexts is inadequately articulated. The simultaneous and rapid changes in incomes, technology, demography and tastes with regard to women's role make the implications of the dynamic factors for public policy at once very significant but complex to analyze in developing countries. Even where policy implications are obvious from the existing limited research however, these have not always been effectively incorporated by governments in their actions.

This paper first summarizes the major themes of the various types of literature relevant to understanding women's role in primary production and economic processes in developing countries. It then reviews briefly the overall trends in production and employment in developing countries over the last two decades with a view to examining their significance to women's participation. The paper then turns to its primary objective, namely to explore women's distinguishing role as economic actors in traditional societies under quite different social and production organization systems. The paper explores women's likely distinct influence on production by examining the degree of substitution between their own labor in agricultural production and other activities, between labor and capital, and between male and female labor under different production, organization and social conditions in static and dynamic contexts. It then examines the implications of women's differential access to factors of production and social services on their individual and family welfare at various stages of economic development and in differing social circumstances. Finally, the paper examines policy implications of existing knowledge and identifies areas where further research is critical for improving the understanding of women's role in development and for policy formulation.

2. LITERATURE RELEVANT TO WOMEN'S ISSUES

There are several quite different strands of literature relevant to the subject of the way gender affects participation in economic development. One major body concerns the relationship of agricultural to overall economic transformation even though the treatment of gender-related issues in much of this literature is quite tangential if it exists at all. This literature explores issues of growth and differentiation among households. Contributions to it have come primarily from academic economists trained in the neoclassical tradition (Ohkawa, 1956; Johnston and Mellor, 1961; Mellor, 1966; Ishikawa, 1967). Its assumptions about the automaticity of the trickledown effects of agricultural growth between households caused a backlash of literature prompted by technological change, which more explicitly treats the issues of employment and income distribution (Frankel, 1971; Griffin, 1979). The major theme of this later literature, namely that the green revolution had an adverse effect on employment and income distribution, among households, led in turn to a more articulate conceptualization of the conditions affecting the effects of technological change on household

employment and income generation (Hayami, 1978; Lele and Mellor, 1981; Hayami and Kikuchi, 1982). These conditions include both the institutional structures and economic policies affecting direct and indirect employment effects. The central tendency of further analysis consequently shifted from assessing whether technological change was "good" or "bad" to an evaluation of how to manage its social effects in the short and the long run.

Whether and by what means these social effects can be managed, with what implications for public policy, and over what time periods are still outstanding questions. Answers to them must inevitably be sought in the context of the particular socioeconomic circumstances of each case. By drawing on this literature we will explore the implication of these issues for women's role in the process of structural transformation later in this paper.

Demographic and poverty-related literature constitute other important areas of research relevant to questions of women in development. The central question in this case is how do intrahousehold decisions affect women's welfare and efficiency? Household benefits may be classified in two categories: domestic income in cash and kind, and access to social services. The poverty related literature directly addresses the questions of intrahousehold resource allocation by gender and the way such distribution affects family welfare and demographic factors (Lipton, 1977 and 1983). The evidence of domestic resources - especially food - going to male and female household members is quite limited and variable. The Narangwal study (Taylor, 1979), one of the most detailed, indicates lower access of female children to household food resources, and higher female child mortality in India.³ Bhalla on the other hand reports other survey data from India and the Philippines to indicate no significant difference in terms of caloric intake (India) and of weights (Philippines) between male and female children (age 0-6) (Bhalla, 1980). Available infant mortality data for some selected countries show a lower rate for females than for males while the opposite is true for children (age 1-4) (Bhalla, 1980). A. Sen and Sengupta provide contrary evidence in their field work in India, with systematic sex bias reflected in higher deprivation of girls vis-a-vis boys (A. Sen and Sengupta, 1983). Case studies on India also show lower access to domestic food by adult females in relations to their workload and caloric requirements in comparison with males, who are observed to receive larger than their "fair" shares (Agarwal, 1983, p. 43). Evidence on education consistently shows lower female access to education (World Development Report, 1983 - hereafter WDR - pp. 196-197), although the rate at which access to education has been growing is frequently faster for females than for males. Women are also frequently concentrated in relatively lower-paid types of skills (Psacharopoulos and Loxley, 1984). Data on female access

³ In these studies, it is important to control for access of members of household to any outside food in kind. Lower domestic consumption of certain family members may well be a result of their greater access to outside sources, i.e., school-feeding programs. It is unlikely however that this effect operated in the Narangwal study as the age group considered is pre-school, and females have lower access to outside sources.

to health and water supply are far more limited, and male and female mortality rates show quite different and not very generalizable patterns (UN Demographic Yearbook, 1982). Rosenzweig and Shultz explain lower female access to household resources as being a response to market forces (Rosenzweig and Shultz, 1982). According to this interpretation, until economic incentives change, distribution of resources among genders may not change. However, economic incentives are both influenced by and influence social norms and thus from the viewpoints of welfare concerns or policy implications the Rosenzweig and Shultz analysis does not go far enough.

Models of household behavior which address women's fertility, labor supply, saving, access to education, consumption and investment behavior are still very rudimentary. Further, while adding to rigour their excessively neoclassical orientation greatly limits their enquiry. They assume that household members maximize a joint utility function and respond to market forces. Becker for instance outlines how under certain neoclassical assumptions one can explain the altruism of family members towards each other and especially of parents towards children, as also the lower market wages for married females than married males, and the gains derived from polygamy by women (Becker, 1980). While this type of analysis is useful as far as it goes, it is not helpful in identifying the relative role of some of the underlying non-market forces vis-a-vis market forces which together influence outcomes with regard to women's participation. Other more dynamic and more empirical work on female labor supply in the U.S. has reflected the high fixed cost of married women's entry into the labor market, but otherwise largely bypassed the causes of these high fixed costs and the circumstances in which they will affect labor supply, focussing instead on the measurement issues related to female labor supply given these factors (Killingworth, 1983; Smith, 1980). Recent literature, especially on developing countries, has however begun to explore these market and non-market interactions. It points out, for instance, that the male and female household members may each, not only have quite different roles, but also different security needs and preferences with regard to household decisions. These may in turn be greatly influenced by social norms (Cain, 1984) leading to a variety of influences on family preferences, for instance, as regards male and female children. These may in turn affect family size and have demographic implications. Further, these various factors can be expected to alter in a dynamic context as gender-based roles adjust in the course of development.⁴

Discussion of institutional factors affecting household behavior are, of course, abundant in social and anthropological works. The "Women in Development" literature has reinforced these concerns by emphasizing that explicit attention be given to understanding women's role in intrahousehold decision-making and in public interventions directed at

⁴ Evidence suggests for example that girls born into families where girls are in majority are significantly more likely to die before age five than girls born into families with more boys than girls. On the other hand, for boys born alive the chance of survival to age five does not depend on the sex composition of the families (Ben-Porath and Welch, 1976).

"households." The incorporation of their concern in the mainstream of economic development and policy analysis has been slow in coming, partly because the strong normative judgments contained in some of the earlier feminist literature have not been broadly shared and partly because a great deal of these works are of a descriptive nature. Also, many of the interpretations contained in this literature, especially at earlier stages, disregarded the diversity of social norms and traditions in developing societies, well recognized in anthropological research, which affect economic choices (See Buvinic, et al, 1976). The consequence was a unidimensional projection in some of this literature of women's worsening status in the course of modernization, attributing it mainly to Western influence (see for example Tinker, 1976).

As with other scholarship on development, the feminist literature has, however, come of age. A movement away from plain advocacy to the exploration of the more complex issues of women's relationships within the household, and to the development processes in general, is taking shape. These enquiries address women's role as economic agents, examining their bargaining position within and outside households, their access to resources and the size of benefits they derive. Contributions from the African continent have been particularly significant in this regard. When so analytically geared, the women's literature is indistinguishable from other intellectual enquiries of the developmental process (Banerjee, 1983), but a great deal more systematic analysis needs to be done to incorporate women's issues in the main stream of development literature.

The final body of development literature relevant for women's issues consists of investigations of the impact of planned interventions as distinct from autonomous processes of social change which can influence woman's position. Here as in the case of the feminist literature, contributions from the African continent are significant. While most of these works relate to project (and program) interventions, some small amount has begun to examine the political processes affecting choice of policies and programs and the way it influences the size and distribution of their impact. This literature challenges the earlier assumptions about governments as benevolent and relatively efficient actors with an unlimited capability to direct public interventions to benefit those with limited assets and access to factors of production (Bates, 1981 and 1983; Lele, 1974). Evidence of significant inefficiencies in public sector management, of interest group capture of seemingly well-intentioned government interventions, and of overtly predatory motivations behind others have raised questions as to the appropriate balance of public and private roles in pursuing even a broadly-accepted set of growth/equity objectives. The pendulum has also swung in favor of growth because of the disenchantment with the ineffective government interventions carried out in pursuit of equity in the 1970's (Coulson, 1982; Lele, 1984). These various concerns about the efficacy of government intervention temper enthusiasm for public interventions targeted to redress grievances of designated groups in the short run, as distinct from pursuance of enlightened public policy in support of broad social reform in the long run. By changing the mix of legal institutions, education and economic incentives, public policy can make a significant difference to social choices affecting female members of traditional households over time.

3. AGRICULTURAL DEVELOPMENT AND LABOR ABSORPTION

To understand women's role in agriculture requires an appreciation of the role of agriculture in structural transformation. Further it needs to be recognized that overall growth in employment is a necessary condition for increasing women's income-earning opportunities, although it is by no means sufficient. The choice of development strategies must thus be a significant focus of attention for those concerned with women's role in economic development. Agriculture's overwhelming importance in the transformation of low income economies is well recognized in the development literature; agriculture is the major provider of employment and income as well as the primary source of food and raw materials for the urban/industrial sectors, exports, revenues for the public sector, and demand for the goods and services produced in the rest of the economy (Johnston and Mellor, 19612). Increasing agricultural productivity is thus critical in facilitating economic transformation of traditional economies by releasing resources for the development of the non-agricultural sectors.

Developing countries reached various stages of structural transformation if the 1960 to 1980 period is considered. While annual growth rates of agricultural production reached 3.8% in Southeast Asia, 3% in Latin America and 2.2% in South Asia in the 1970s, as a region, Sub-Saharan Africa was well behind in initiating its agricultural transformation, with growth rates of only 1.3%.⁵ Not only was African agricultural production growth slow in the 1970s, but, unlike the rest of the developing world population growth rates had accelerated in Africa, reaching close to 4% annually in some countries during this period.⁶ Consequently per capita agricultural production declined in many parts of Africa.⁷

In the densely populated parts of Asia agricultural growth has been mainly the result of technical progress and intensification. However, because labor intensity in agricultural production has already been high, employment elasticities in direct agricultural production have not been high enough to absorb even the annual additions to the labor force. In parts of India, employment elasticities with respect to value of production of 0.6 have been estimated in irrigated rice (Singh, 1979). In Indonesia, however, elasticities as low as 0.28 have been estimated in irrigated rice in the 1970s (Wages and Employment in Indonesia - hereafter, Wages - 1983, p. 42; G. Hart, 1978).

⁵ Annual agricultural output per capita for the same period was -1.4%, 0.6, 1.4, 0.0 for Africa, Latin America, Southeast Asia and South Asia respectively (World Development Report 1982, 1982, p. 41).

⁶ For the period of 1970-81, the annual population growth rate is 4% for Kenya, 3.4 for Tanzania, 3.5 for Liberia, 3.2 for Zimbabwe, 3.4 for Rwanda, 3.1 for Sudan, 3.0 for Malawi. (World Development Report 1983, 1983).

⁷ Indices of per capita agricultural production for the 1970s for Africa show decreases in most countries (USDA, Indices of Agricultural Production in Africa and the Near East, 1970-79, Statistical Bulletin no. 637, June 1980).

In Africa, with the exception of hybrid maize, growth in agricultural production seems to have been mainly a result of extension of the area under cultivation. Estimations of employment elasticities are less easily available for African agriculture. However because of the extensive nature of cultivation (frequently involving land clearing), they may well be higher than those in Asia, perhaps being close to unity. But, rates of urbanization have also been larger in Africa than in Asia⁸, also causing substantial labor shortages in that sector. Women have already been playing an important role in African agricultural production (Boserup, 1970). Urban migration involving male members of households has increased women's role in production as evidenced by the much larger number of female-headed households frequently noted in Africa.⁹ Of course, these are not necessarily fully generalizable patterns. There are areas of substantial population densities in Africa as for instance in parts of Kenya and Malawi where some of the same pressures for intensification apply as in Asia. Recent evidence on patterns of urban migration also shows greater migration of households in parts of Africa than previously assumed (Sabot, 1983; Kumar, on-going research).

Despite their different structures and performances, experience of Asia and Africa suggest that overall employment in agriculture has not grown significantly in either continent when considered in relation to population growth. Regions within countries have however experienced substantial growth in agricultural employment, especially in Asia. Their experience is significant to concerns about women in agriculture. We will explore this in the later parts of this paper.

Record of labor absorption in the non-agricultural sectors of the developing world has been quite variable, but again generally disappointing in relation to the growth in labor supply. Rates of overall economic growth exceeded 7% only in a dozen countries in the 1970's (WDR 1983, pp. 150-151). However, because of the capital intensive nature of industrialization in many of these countries, employment growth in the formal manufacturing sector has not been rapid enough to absorb the pool of surplus labor contained in the agricultural sectors. In Indonesia, for instance, output in the formal manufacturing sector grew at 12.3% per annum during the 1970's; however, employment in this sector grew only at 4% (Wages, 1983, p.42). The rapid growth of the

⁸ Average annual growth rate of urban population ranges between 5 to 8% in many African countries while the rate of the majority of Asian countries is below 5% with the exception of Bangladesh, Afghanistan, Laos (World Development Report 1983, 1983).

⁹ In Zambia's Luapula province, women head one-third of the households, while in Kenya women head approximately 40% of all rural households (Chambers and Singer, 1980, and "Kenyan Women and Smallholder Agricultural Productivity", mimeo, 1982). In India, in contrast women are estimated to be heading 9.6% of rural households (from a study by P. and L. Visaria as reported in Agarwal, 1983, p. 43). This figure may however reflect some under-reporting. The percentage of female-headed households is 18.1% in Malaysia, 10.4% in Taiwan, and 11.8% in Sri Lanka (Visaria, 1980, p. 59).

service sectors noted in countries such as Indonesia, Thailand, Malaysia, Brazil, Nigeria, and Cameroon (WDR 1983, pp. 152-153) have raised questions as to whether they represent a supply push from the agricultural sectors experiencing relatively low levels of marginal labor productivity, or a demand pull resulting from the income growth in the rest of the economy. Whatever the reasons for the growth of the service sector, the need to understand the forces which influence the overall growth rates of employment is obvious.

4. THE CHANGING STRUCTURE OF AGRICULTURAL AND ECONOMIC PRODUCTION AND WOMEN'S ROLE

Understanding of the microprocesses of economic activity is of course crucial to assessing the prospects for women's likely participation in the overall employment growth during the course of economic transformation. Both the social structures and agricultural production systems in developing countries are highly diverse. They each determine women's changing relationship to the household and the economic activity in a complex manner. In this paper we can do no more than scratch the surface of the gender role in the process of agricultural and economic transformation by examining them in the context of three rather simple stylized production systems, with their associated social structures, namely, (i) the intensively cultivated labor-surplus agricultures of Asia, with a "unimodel" land distribution consisting of small and marginal farms and a substantial class of landless households; (ii) the extensively cultivated land-surplus agricultures of Africa; (iii) dualistic agricultures of Latin America with radically different factor intensities in agricultural production between small and large farms and with a small proportion of marginal cultivators and landless agricultural laboring households.

The paper primarily focuses on the first two, on the assumption that structural issues are far more basic in Latin America even in dealing with the women's employment issues, and there may be relatively few easy policy solutions which do not center on these. The questions we wish to address are: are there any generalizable patterns in the women's relationship to their households and economic activities across these three types of agricultural systems? What do we know and how much do we need to know about the nature of differences within and among each of these types of production systems to understand the existing interactions between women's household and economic activities and to predict their future course?

4.1. Women's Time Allocation in Traditional Societies

Despite the diversity of these three production types, the most persistent common evidence in traditional agricultural sectors is one of the very long (and typically longer than men's) hours devoted by low-income women to work.¹⁰ Household work seems to be almost

¹⁰ The long hours result from a combination of three types of activity: household work, contribution to directly productive agricultural activities and/or trade.

exclusively the female responsibility. While some of it is directly the result of women's reproductive function, in addition to child care, women's household work typically involves a number of highly time consuming and directly survival-related activities including fetching water, gathering firewood and food preparation. Gender-related division of labor is thus reinforced by tradition and culture.

Women's role in the agricultural production process varies a great deal among traditional societies. This depends on a variety of factors including the nature of social organization, (whether a patrilineal or a matrilineal society, without or with women's rights to property, whether joint family structure, etc.), religious and cultural attitudes towards women, (whether they are segregated by virtue of their class, caste or religion), the nature of the production organization (whether settled cultivation or nomadism, whether irrigated or rainfed agriculture, whether production of food or nonfood crops, whether perennial or annual crops and whether continuous or shifting cultivation), etc. Despite these differences, the low income women's important role in directly productive agricultural functions in traditional societies is well established. This includes weeding, harvesting, threshing, winnowing, etc. The exceptions are the Middle East, North Africa and parts of South Asia where traditions in the Muslim or Muslim influenced communities prevent women's participation in activities outside the household (Epstein and Watts, 1981).

Women's role in trading differs in different communities, West African women being known as traders par excellence (Bauer, 1954; Meillassoux, 1971). Despite their more limited role elsewhere, literature recognizes women's substantial capability in petty trade and in the production of traditional crafts.

4.2. Labor Substitution Between Income-Earning Activities, Household Work and Leisure

Economists have traditionally treated all work other than indirectly income generating activities as "leisure". The discussion in the preceding paragraphs however illustrates the need to distinguish between "pure" leisure and other household work including childcare which has intergenerational investment implications. Asian literature suggests the low-income women's income elasticity of pure leisure is perhaps significantly higher than men's. This seems to be both due to longer hours of household and income generating work at low levels of income, and social norms, leading to desire for pure leisure. In Asia there is significant evidence suggesting increased substitution of hired labor on farms for household female labor with increased household income (Hayami, 1978; Agarwal, 1983; G. Sen, 1983; and Epstein and Watts, 1981). Preference for improved child care must however also play a part in domestic vs. income earning activities. Due to a combination of these factors with increased income, adjustment in low income women's time allocation seems to come mainly at the cost of directly income-earning activities outside the household (Acharya and Bennett, 1982). The time allocated to household responsibilities including to child care typically tends to be less resilient to income change, although the extent of arduous labor declines with the use of labor saving devices and/or hired labor in household work (Epstein and Watts, 1981). Conflicts between

women's income earning and household responsibilities, especially child care, appear to be considerable in traditional Asian households with important implications for short and long run outcomes with regard to the derivation of women's own utility, household utility and the development of their families and families' long term capabilities and preferences, as they affect socioeconomic development. These tradeoffs are inadequately explored in the feminist literature, which has tended to build on the normative judgments of the utility of women's direct income earnings. The demographic and human capital related literature on the other hand stresses the relationship of the quality of childcare to the size and quality of population and by implication to women's derived welfare (T. Schultz, 1981; also Becker, 1981). To explore these tradeoffs, it is, however, first necessary to examine the determinants of women's access to productive assets, income and preferences as they affect their changing bargaining power, choice and welfare for themselves and their families.

4.3. Women's Role in Asset Ownership, Agricultural Production, Income Earning and Expenditures

Social norms and prevailing practices vary greatly among traditional communities as regards women's ability to mobilize factors of production to earn income. Nevertheless some generalizations are possible. There are also mutually offsetting dynamic effects of modernization on women's ownership of and access to resources, and their preferences. Because these are not well researched, generalizability on these issues is greatly hampered, nor are the effects of these various changes known in quantitative terms even where such evidence exists. In Asia traditionally women have had limited access to land ownership or to other household assets which have been passed on from husbands to sons.¹¹ The prevailing practice with regard to women's contribution to agricultural production or income in Asia has been either in kind through contribution of their labor to the cultivation of their own household plot(s), or in cash through hiring out their labor to other farms. Low-income wives in Asia and Africa are observed to contribute significantly to family's cash income and thereby to the provision of food, clothing and other consumption needs of the family. Micro studies from a diverse set of traditional societies suggest that sources of income matter in patterns of household consumption as preferences in types of expenditure as well as control of income may vary significantly between male and female members of the household according to source. Women's income is more likely to be allocated to expenditures related to children's food, health and educational needs and into savings, than would be observed in the case of increased household income (Kumar, 1977). In contrast, in the feminist literature both from Asia and Africa, male household members are frequently observed as being more inclined to indulge in unproductive consumption (alcoholism, betting, etc.), and/or certain types of farm investment i.e., cattle ownership in Africa. Much stronger empirical evidence is needed through household surveys to examine how significant these differential preferences are in

¹¹ Even in matrilineal societies land is frequently controlled by the mother's brother and passed on to sister's son. Males thus actually control the land.

rural households, to what extent they are influenced by men's (perhaps more) permanent and women's (mostly?) transitory income as distinct from being the result of gender differences, how they relate to economic and social status, access to education of men and women, etc., and how these preferences are exercised by male and female household members. For instance, to what extent and how do women exercise control over the income they earn directly as distinct from the household income needs to be ascertained statistically. There is a frequent message in the anthropological literature both in Asia and Africa that income earning activities outside the household allow women to exercise greater control of income in favor of expenditures they prefer, because of their ability to hide some or all of this income, as well as their increasing bargaining position within the household in comparison to that derived from the contributions they make to household work or domestic agricultural production (Acharya and Bennett, 1982; Bay, 1982). On the other hand, does the substitution of hired for own labor at increased incomes in Asia, referred to earlier, imply poor recognition on the part of women of their ability to exercise greater direct control on income and expenditures through their outside work? It may also suggest their greater ability to exercise control over family income. Social norms which favor the male being the provider of the family in many (but by no means all) parts of Asia may also explain women's withdrawal from the labor market. It is not clear which of these factors prevail, their relative importance, and how they influence women's and household welfare at a given point in time and over time.

The question of increased time spent by women of child-bearing age at home is especially important to explore as it is known to improve the quality of child care and food preparation and the reverse is also reported.¹² These benefits may significantly outweigh the low levels of opportunity cost of women's outside work. Similarly, ability to bear (especially) male children is known to compensate for cash income in women's power and status in the household in many Asian communities (Epstein and Watts, 1981). Increased outside employment is on the other hand also known to reduce women's fertility by increasing marriage age and by providing greater economic security and income (Cain, 1984). Adequate evidence does not exist at this stage to indicate the relative importance of gender and socioeconomic class in these decisions. Demographic literature however suggests a substantial importance of the gender role by pointing out that women's freedom to control fertility may have substantial 'liberating' effects on their other activities and preferences (Birdsall, 1976). Women's increased access to education may improve both the quality of child care as well as reducing desire for number of children.

Perhaps because of these various conflicting and compensatory effects on their welfare through their own and their household's positions, women's advocacy literature tends to be schizophrenic as to the effects of modernization on women's lives. Some laments women's increased

¹² Some evidence shows that domestic work, such as food and cooking are negatively linked with agricultural production and women's outside work (Kumar, 1977, 1979 and on-going work at IFPRI).

employment as a sign of their further exploitation, while others cheer it as leading to their improved status and power (Epstein and Watts, 1981, explore this issue). There is not yet serious analysis of these various tradeoffs in the short and the long run as they affect personal and household welfare in traditional societies. Such analysis is especially important to our understanding of social behavior and its consequences, recognizing that norms and customs may introduce greater rigidity in women's household roles in traditional societies in developing countries than is assumed by their upper income counterparts in developed and developing countries who observe their behavior. The extent of substitutability between women's outside and domestic work, and male and female responsibility, need more value-free empirical analysis in a dynamic context across various social structures.

If anthropological literature is any guide (Epstein and Watts, 1981; Boserup, 1970) norms and practices as regards women's role in household and production decision-making not only seem to differ significantly between the Asian and the African "type" households, but also with regard to their family obligations. Prevailing evidence suggests that overlooking women's role in production in formulating and implementing agricultural policies and programs has particularly unfortunate consequences for efficiency and welfare losses in Africa. In contrast to the situation frequently observed in Africa, surplus labor in many Asian agricultures not only means low productivity of women's labor outside the household, but their low bargaining position in the process of agricultural production.

In large parts of Africa women are solely responsible for the production and sale of certain food crops. They are often but not always entitled to the harvest from their production and are responsible for providing food for their children. Frequently African women also have responsibility for feeding husbands. In polygamous societies they may share this responsibility with their co-wives. To meet these obligations African women may frequently cultivate assigned plots of land by mobilizing their own and other (mostly) household resources. The housing pattern associated with such direct responsibility to women for household survival is frequently reflected in the differences in the African and the prevalent Asian concept of a "household". The latter usually implies conjugal units living under a single roof involving an extended family. In many polygamous African societies, on the other hand, women may frequently inhabit separately with their children within an overall family compound. The compound may be shared with co-wives, their children, the husband and at times with other kins i.e. parents, brothers and their wives, etc. depending on a matrilineal or a patrilineal society. Women may have kitchens, and food storage facilities separate from those of their co-wives. While there are complex and diverse social norms with regard to the disposition of household resources in different African communities, it would appear from the literature that there may be lesser areas of congruence between women's interests and those of their "husbands" as regards agricultural production, consumption, savings, and investment that is typically observed in monogamous households in Asia (Bay 1982). In the latter case, depending on the nature of the extended family, the areas of conflict may be more intergenerational or among conjugal units. Social norms also do not seem to assign Asian women such direct responsibility for household survival, nor as much independent

control of productive resources for its provision, although economic necessity may well dictate this in the case of lower socioeconomic groups. We therefore now explore the implications of this stylized Asian social organization of production in contrast to that typically noted in Africa.

4.4. Women's Access to Factors of Production

Because land is in short supply in Asia, a large part of the rural households is partially or fully dependent on wage labor. Close to 40% of households in rural India own less than 0.49 acre while in Bangladesh, about 30% of all rural households own no arable land and 50% of these own no land at all (Cain, 1983). These landless or near landless households frequently also have little access to other factors of production. In the case of these families, public policy which directly or indirectly adversely affects labor use is highly deleterious to employment and earning of low-income households in which women's contribution of income is an important component of household income. Such policies include both the establishment of minimum wage laws as well as subsidization of capital, both of which encourage substitution of capital for labor. Various forms of labor-displacing mechanization associated with technological change in agriculture are frequently a result of factor price distortions introduced by public policy. These policies may be quite independent of technological change in agriculture. Institutional changes in traditional systems of land access and reward are on the other hand frequently encouraged by increased profitability of cultivation made possible by technological change in agriculture. It is important to note however that, due to growing population pressure, 'land grabbing' is also noticeable in Africa despite the absence of a green revolution (Cohen, 1980). In Indonesia the replacement of the ani ani system¹³ by sickles, and the use of contractors in irrigated rice cultivation, reflect such labor-displacing arrangements, both resulting from technological and institutional change (Hart, 1978). They explain the low employment elasticities reported earlier.

There is similar evidence of labor displacement both through mechanization and changes in tenurial arrangements in parts of India. Have such changes had greater adverse effect on low income women than men? And precisely what is its significance for the welfare of women and of their households? These issues need careful distinction between the short and the long run effects, as there may frequently be a conflict between these two time horizons. In the short run to the extent that there is gender oriented division of labor by types of production activities, labor displacement through mechanization or institutional arrangements in certain types of activities is more apt to have a greater or lesser impact on women's employment relative to men's. Evidence for East and South Asian countries is cited in the feminist literature to

¹³ Ani ani, or small finger knife, is used by Indonesian women for harvesting. It is suitable for cutting local rice varieties which mature at different times and have varying stalk length. Ani ani is identified with the traditional harvesting system which requires large number of people (Cain in Dauber and Cain 1981, pp. 127-131; G. Hart, 1978).

suggest that labor displacement in weeding, harvesting or threshing may be hurting low-income women more than men (Beneria, 1982; Agarwal, 1983; G. Sen, 1983). However displacement of labor in land preparation is also known to occur through mechanization adversely affecting male employment (Agarwal, 1983) in South India. There is also evidence that lower paid women take over men's agricultural tasks as male labor market tightens, as Ravinder Kaur observes in the case of Punjab.¹⁴ The net effects on men and women's labor in agriculture are not well established and certainly their significance for women's and family utility and capability in the short and the long run cannot yet be ascertained with confidence for the reasons outlined earlier. Women's literature however argues that even with similar labor displacement, women are the greater losers as a result of their greater difficulty in finding alternative occupations relative to men (G. Sen, 1983). Evidence is cited of women's agricultural activities being taken over by men (i.e. their casual farm labor by permanent hired male labor in South India, and their retailing of milk with large scale wholesaling of milk by men in Uttar Pradesh). However, such evidence is not yet conclusive, as there is also other evidence of women's share increasing in certain occupations, and those occupations thereby being banished to enjoying low status. The problem seems to be more related to women's lesser occupational mobility in the long run than men's, a question to which we now turn.

There is a frequent tendency to view not just direct labor displacement, but even smaller percentage increase in labor share vis-a-vis that going to land and capital following technological change in agriculture as an indicator of the deleterious effects of technological change (Frankel, 1971; Griffin, 1979). Thus the emphasis is on relative income disparities between owners of labor rather than on the improvement in the laboring households' absolute incomes. On the other hand, in the medium to long run the increased incomes of rural households made possible by technological change in the agricultural sector are known to lead to significant multiplier effects on employment as a result of the effective demand for goods and services generated by such income increases (Mellor and Lele, 1973; Lele and Mellor, 1981). Much evidence is accumulating from South and East Asia to suggest that the growth of non-agricultural rural employment through such multipliers may be considerable in areas which have enjoyed high rates of growth of agricultural production. Feminists have argued that women's share in this increase in employment may be insignificant. However, most such agriculturally led growth is in the manufacturing and service activities which in early stages of industrialization (such as food processing, textiles, shoe factories etc.) involve relatively low levels of capitalization, low skills and dispersed location of production. All these features of industrialization would seem to be conducive to increasing demand for women's labor.

Indeed, there is abundant evidence to indicate that women's labor force participation shifts from the low-skill rural to higher-skill, higher-pay urban and semi-urban positions in the course of structural transformation. However, the occupational mobility is significantly more moderate in the women's case than men's, who move into more skill- and

¹⁴ Communications with the author.

management-intensive positions commanding higher wage rates. For instance, in the Korean case substantial increases in female labor force participation in the course of rapid industrialization have continued to reduce the differential between male and female shares in employment since the 1960s.¹⁵ Indeed women's participation in the manufacturing sector has increased more rapidly than men's albeit from a smaller base.¹⁶ This trend is also evident in the service sector. However, women are disproportionately concentrated in the more labor intensive textile and chemical manufacturing sector (Korea Statistical Yearbook, 1983, p.92), and in all industries they generally occupy low paying jobs of "production workers, transportation equipment operators and laborers", followed by "sales workers". (Annual Report on the Economically Active Population Survey 1980, p. 108-111).

In Japan, women play an even more significant role in non-agricultural employment than in Korea with higher growth rates of female employment noted in the 1960-80 period than that experienced by males.¹⁷ Female workers in Japan are also more evenly represented in the industrial sector than in Korea.¹⁸ However once again they are heavily concentrated in the relatively low paying positions (Japan Statistical Yearbook, 1982, p. 61). Average female earnings within the same industries were uniformly less than half the male earnings in 1965, and by 1980, this differential had increased in several industries (Japan Statistical Yearbook, 1982, p. 428-429). Becker reports similar situations for other OECD countries. The fact that women have provided a relatively more flexible industrial labor force free of unionization in low level occupations in many advanced countries is generally well recognized. What is less well documented is the extent to which their wages are significantly lower in relation to men's for similar work and productivity, and the factors which influence their access to family and societal resources, which in turn influences their human capital.

¹⁵ The non-agricultural share of females in total employment was 13% in 1967, 15% in 1970 and 22% in 1980 with a growth rate of 112% for the 1970-80 period vs. 74% for male non-agricultural employment in the same period. (Calculated from National Bureau of Statistics, Economic Planning Board, Republic of Korea, Annual Report on the Economically Active Population Survey, 1980, 1981.)

¹⁶ For the 1970-80 period, the growth rate was 176% for female manufacturing employment and 110% for males. (Annual Report on the Economically Active Population Survey, 1980, op. cit.)

¹⁷ The rate for female workers in non-agricultural sectors was 45% (1960-70) and 20% (1970-80) while that for male workers was 35% and 16% respectively. (Japan Statistical Yearbook, 1960, 1970, 1982)

¹⁸ In 1980, the shares of female and male employment in manufacturing to total employment were 15% and 10% respectively in Japan and 9% and 13% respectively in Korea. (Japanese Statistical Yearbook, op. cit., and Annual Report on the Economically Active Population Survey, 1980, op. cit.)

A more dualistic pattern of economic modernization should of course be expected to provide even fewer opportunities for women to participate in the formal labor force than noted in Japan and Korea, both due to the likely geographical concentration away from rural households as well as by the sharper segmentation of labor markets in the service and manufacturing sectors by skills, in which women may be less able to make the transition than men. The contrasting experiences of women's labor force participation in Korea and Brazil are striking in this regard. While Korean per capita GNP is less than Brazil's (US\$250 vs. in 1970) (World Bank Atlas, 1972), Brazil's female participation was significantly lower than Korea's in 1970 (Brazil Country Demographic Profiles, 1981, p. 19) and had not increased much by 1980 (Tabulacoes Avancadas Do Censo Demografico Resultados Preliminares, 1980, p. 47), (Annual Report on the Economically Active Population Survey 1980). Even more noteworthy is the pattern of female employment; in Brazil in 1970, 75% of non-agricultural women workers were reported to be in the service sector, and only 13% in manufacturing (Brazil Country Demographic Profiles, 1988, p. 19). In 1980, the percentages were 76 for non-agricultural female workers in the service sector and 16 in the manufacturing sector respectively. This is less than one quarter of total manufacturing employees (Tabulacoes Avancadas Do Censo Demografico, Resultados Preliminares, 1980).

We pointed out earlier the dualistic nature of many African countries which similarly discourage women's migration to the urban sector. This is particularly noticeable in Southern Africa i.e. Zimbabwe, Lesotho, Botswana, Swaziland, Zambia, etc. Evidence also suggests that while growth of the formal public sector employment has been rapid in many organized African countries, women may be paid lesser salaries for similar work in the organized public sector in contrast with the private sector where labor markets seem to show less gender discrimination (Sabot, 1983). If this evidence has any general validity in Africa, this may be a reason additional to public sector inefficiencies for cautiousness in getting governments involved in upholding women's rights. At this early stage of development however, the more critical questions with regard to women's participation in the African case relates to the women's ability to mobilize factors of production in agriculture and their access to other technology including extension services, agricultural credit, inputs and marketing facilities for output etc.

Despite African women's rights to the income from their own production described earlier, their actual control of this income may not be as great as appears on the surface. It is also noteworthy that perhaps with a few exceptions, their rights to land are far more subsidiary to those of their husbands and sons who are assigned de facto rights to ownership under the traditional communal land structure. These are passed on from generation to generation among male members. The separation of the responsibility to produce and provide food for the family from that to "own" land is worth noting.

As land becomes scarce and land titles become an important means to secure a guaranteed access to land, increased land titles should be expected to be vested in the male members of the household. Feminist literature expresses considerable concern about the increased proletarianization of women, i.e., women in effect renting land from the

male members or becoming laborers on male farms. This of course assumes perhaps correctly that social norms would not change or change rapidly as regards the responsibility for food cultivation and family provision by women, and that changes in legal and social systems would not equalize land access by genders in the course of modernization. This may be the case in many societies where public policy may not actively encourage equal opportunity even if law may provide women's equal access. While there are hints in the literature that inequality between men and women may be growing due to unequal access to land there is little concrete empirical evidence on this issue (Pala, 1976). The policy implication of this discussion is of course obvious, namely through the legal system to provide equal access to land titles between male and female members of households as land market begins to tighten, to ensure its active implementation and to increase education about the likely adverse effects of unequal access on women. While these policies may help change social norms, they themselves may be influenced by the norms.

Once again, in any empirical work such as that recommended by Pala, the importance of socioeconomic class relative to gender in access to land must however be explored. In Kenya for instance, there is abundant casual evidence to suggest that women of higher income families with close access to political power have been able to mobilize a significant amount of good land.

4.5. Access to Labor

As in the case of land a great deal of labor mobilization in farm households in Africa gets done through non-market mechanisms. Therefore, understanding of the traditional means of labor mobilization is critical of assessing women's ability to effectively participate in production. Depending on the crop involved, it is the woman's (or the man's) responsibility to mobilize the necessary labor for the production of their crops from which they control the income. Thus women may frequently mobilize men's labor or animal draft power for land preparation and sowing of food crops. Men similarly mobilize women's labor for cashcropping. When the cropping cycles of the two overlap, it is by no means certain that the interests of the men and women coincide. Christine Jones in an excellent analysis of the rice production system in SEMRY project in Cameroon documents the implications of the conflicts of interests between the production of rice by men with the women's production of sorghum (Jones, 1983). Because of the small share of rice crop offered to them by men in comparison with their opportunity cost of labor women have been reluctant to work on men's rice plots leading to problems in labor supply, rice production response and the distribution of benefits among the male and female labor force from rice cultivation.

Planners of the SEMRY project allowed women access to rice plots. Nevertheless women responded minimally to growing rice as men control rice income even when the crop is produced by women, unlike in the case of sorghum. The inadequate supply response in SEMRY was attributed to low levels of motivation of rural households and lack of consumer goods on which to spend money. The underlying reasons of social organization affecting labor supply had been mentioned in the project's limited success, but obviously relatively little could be done through direct public action to change the situation, beyond giving women access to land

and rice technology until local customs change. The implication of these social rigidities for short and medium run supply response do not receive much attention in traditional economic analysis.

There are many other examples of poor crop response to donor supported projects in Africa because of inadequate understanding of farm level constraints, including gender roles in traditional agricultural production (G. Sen, 1983; Agarawal, 1983). Spencer and Nyanteng's provide many such instances related to rice cultivation in West Africa and point out the ways in which appropriate project interventions could maintain or increase women's access to factors of production during the course of agricultural development (Spencer and Nyanteng, 1983).

Abundant empirical evidence also exists both in Africa and Asia to suggest that women's access to agricultural services including agricultural extension, production credit, and inputs from the formal official agencies is considerably more constrained than men's, all leading to efficiency losses in production. In addition to improved rules and regulations ensuring women's access to services may necessitate the employment of female extension and credit agents, and organization of special training programs for women farmers, as well as women's more active participation in the organizations which control these resources (Hayami, 1978).¹⁹ Also, to the extent that land is needed as a collateral to obtain credit and/or access of women producers to inputs, their lack of land ownership must adversely affect their access to these services.

4.6. Male-Female Labor Substitution, and Realization of Individual and Family Welfare

The effect on women's welfare through their own, as distinct from their households' economic activity, is inadequately researched. The feminist literature points out the constraints placed on women in mobilizing male labor or animal draft when faced with urban migration of male household members (see Buvinic, 1976). On the other hand, migration studies suggest significant advantage of male migration to households (Van der Wiel, 1977). This includes increased cash income, increased access to subsidized agricultural inputs, consumer goods, and educational facilities for the children. These are all too often in short supply in producing areas. Net effect of male rural-urban migration on women's welfare may thus not necessarily be as negative as is frequently implied by feminists. Also situations in which males migrate need to be compared with situations in which households migrate. Sabot's study of urban migration in Kenya and Tanzania points to greater incidence of male migration in Kenya than in Tanzania where households tend to migrate (Sabot, 1983). Sabot attributes this to greater land scarcity in Kenya implying a choice by Kenyan household members to retain land access, as well as to better access of households to secondary educational facilities in rural Kenya than in rural Tanzania. The inadequacy of

¹⁹ In my paper, "Cooperatives and the Poor" (Lele, 1981), I have pointed out how the disenfranchised groups do not participate effectively when power is decentralized.

consumer goods and the disincentive effects of Ujamaa policies should also not be underrated as push factors in rural Tanzania (Lele, 1984).

Literature also does not reflect other recent changes possibly in favor of women in African agriculture. For instance, do rising food prices and low and officially controlled prices of export crops improve women's income vis-a-vis men?

Gender roles may also not be as rigid in a dynamic context, nor the individual and family interests as exclusive as implied in the feminist literature. There is evidence, albeit preliminary, to suggest that women may be beginning to cultivate and sell cash crops and men have similarly taken to the production of food crops perhaps because of the latter's increasing profitability. Does this suggest greater interchangeability of gender roles over time, leading to equalizing of access to opportunities, or simply additional evidence of female exploitation by males "capturing" the better economic opportunities as some literature would suggest? (See Guyer, 1980).

4.7. Labor/Capital Substitution

The problem of women's work stretching into long hours typically leads to pleas about the need for labor saving devices which would ease women's work. The problem is particularly great in Africa where frequently low densities of populations associated with low and uncertain rainfall mean long walking distances for fetching water and susceptibility to water-borne diseases. Both these affect time allocation to and income from productive work. Low densities on the other hand also lead to higher cost of providing public services such as water points and health care centers, as well as commercial services such as grain milling or retail stores. Besides, current government practices with regard to social and commercial services suggest that government interventions have frequently made services less effective and accessible to rural households than low population densities would warrant. Governments have a frequent tendency to take over provision of services in the public sector which could be more efficiently provided by the private sector and grassroot local organizations which foster institutional pluralism. In Tanzania, for instance, the discouragement of private trade has led to a virtual disappearance of the privately operated hammer mills and retail shops in rural areas. Their partial replacement by relatively centralized public sector flour mills and cooperatives imposed from the top typically lead to an uncertain supply of consumer goods at high costs (Lele, 1984). Similarly, in Malawi, recently shortage of consumer goods has been reported in the countryside due to the government changed policy towards the private sector.

Services such as village access roads and health care centers operated in the public sector also suffer from inadequate recurrent resources and poor maintenance (Lele, 1981a). Thus while Tanzania's record in provision of basic needs has been significantly better than Malawi's in the 1970's (See WDR 1983), p. 192) these gains have been often overstated. In practice about 50% of the rural wells were disfunctional a year after they were established (Tanzania Agricultural Sector Report - hereafter, Tanzania Report, 1983). A critical assessment of macroeconomic policies frequently stresses the need for greater cost

recovery, more restraint on government expenditures, and general realism in the coverage of basic needs. It also suggests that the resource crunch in the rural sector is the result of a combination of external shocks and indiscriminate, mostly urban, industrial-oriented public expenditures, both of a capital and recurrent nature. These expenditure patterns have left many African governments little flexibility in meeting basic needs of their populations in periods of resource crunch (Lele, 1984).

Scope for improving the quantity and quality of public and commercial services of course also exists in many Asian countries. Here the record of different countries has been quite different. Thus while Sri Lanka and Indonesia have impressive social indicators, India's record both in primary education and health has been poorer. The number enrolled in primary school as a percent of age group is 95 and 100% in 1960 and 1980 respectively for Sri Lanka, 71 and 98 respectively for Indonesia, while the corresponding numbers for India are 61 and 76 for the same years. The 1980 adult literacy rate is 85% for Sri Lanka, 62% for Indonesia and 36% for India. Indian life expectancy at birth in 1981 is 52 years, compared with 69 for Sri Lanka and 54 for Indonesia. The rate of infant mortality is also higher in India - 121 per 1,000 in 1981 - than in Sri Lanka with 43 and Indonesia with 105. (WDR 1983, p.192-196.) Even where the physical supply of public services (education, village water supply, and health facilities), consumer goods (kerosene) and commercial services (flour mills, etc) exists, however, the lack of effective demand is a greater constraint to increased access by low-income households, due to their inadequate household incomes.

The feasibility of introducing labor-saving devices in low income women's housework - a plea frequently noted in the feminist literature - seems questionable (Epstein and Watts, 1981). Until unskilled labor markets begin to tighten and substitution of capital for labor becomes profitable at market prices, introduction of labor-saving devices is likely to cause greater hardship on low income women where they do such work for a wage. For instance the replacement of hand pounding by hammer mills in South and East Asia has led to considerable displacement of the lowest income women's employment who traditionally hand-pounded paddy (Timmer, 1975). Increasing their income earning ability would thus seem to be a prerequisite for their being able to enjoy labor saving devices at home, and yet the need for their own and household survival may leave little time for outside activities. It is this vicious circle of poverty which seems to be the crux of the women's problem in many developing countries.

5. CONCLUSION

In this paper, we have illustrated that labor markets ensure women's substantial and frequently growing participation in the course of economic development. Nevertheless many distortions in factor and product markets circumscribe women's participation by limiting the growth of overall employment. These distortionary effects of public interventions in markets are frequently overlooked by those concerned with women's participation. On the contrary, they frequently tend to emphasize the need for direct public intervention to improve women's position.

Women have also been the increasing beneficiaries of many types of social and family expenditures. Nevertheless, there are substantial areas in which non-market factors adversely affect women's ability to mobilize domestic and societal resources, technology and information, thereby adversely affecting their ability to participate in productive processes and affecting social productivity. These various factors have been generally overlooked in the neoclassical approach to female labor markets. To equalize access by gender, a combination of improved public policy, a legal framework and an effective institutional capacity have to be combined with educational programs. These will increase social consciousness about the extensive efficiency and welfare losses implicit in women's unequal access. To what extent these can occur in the short and medium run without women becoming a significant pressure group is questionable however.

Interests of women of different socioeconomic classes and in countries at different stages of economic development are hardly congruent. There are a number of areas outlined in this paper concerning the relationship of women's income earning activity to household and firm decision-making. These require rigorous economic analysis. Particularly in need of serious scholarship is the role of women in low income households. Evidence in hand is not adequate to indicate whether by alleviating poverty of low income households growth processes will automatically address the problem of low income women. Since governments usually have limited capacity to intervene effectively, far more careful identification of critical entry points for public policy is needed than currently exists, if redressal of women's participation is to be achieved.