CHANGES IN FEMALE EMPLOYMENT IN THE DOMINICAN REPUBLIC FROM THE 1960s TO THE 1970s

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INTRODUCTION

Since the late 1960s, the Dominican Republic has experienced considerable real economic growth. This growth has produced an expanding pool of clerical, service, professional and light industrial jobs, many of which are filled by women. During this same period, this island Republic's population, which now numbers approximately five million, has become increasingly urban. Approximately one-fifth of the population lives in Santo Domingo, and one-half in other urban places. Levels of educational attainment among both males and females have increased dramatically, and Dominicans have become part of an international network as large numbers have migrated to the United States, Puerto Rico, and Venezuela -- with many of these migrants returning to the Dominican Republic. Succinctly, the social and economic context of Dominicans has changed considerably in the past decade. Female labor force participation has been rising (Ramirez, 1974) and the high fertility rates have begun to fall (Bartlema, 1978). The conjunction of these trends raises questions about the transformations in social behavior which are occurring. The precise nature of shifts in female employment remain only vaguely specified, and the impact of these shifts on family formation and fertility has received very little attention. This last lacunae results, in large part, from the conceptual complexity of the relationship between female employment and fertility.

Using retrospective data from a 1978 survey of women living in Santo Domingo, this paper provides a description of changes in the degree and nature of female participation: more specifically, the employment and family formation experiences of two female cohorts prior to age 25 are examined. The cohorts -- women aged 25-29 and 35-39 in 1978 — lived

these early experiences in two distinct periods: the older cohort in the late 1950s and 1960s, the younger cohort in the late 1960s and 1970s. In addition to providing a description of changes in the labor force experiences of Dominican women, the paper presents an analysis of the interrelations of female labor force participation, marriage, and fertility for each cohort.

BACKGROUND

At present, our understanding of the relationship of female labor force participation and fertility is restricted to solid indications of a strong negative relationship in developed countries, inconsistent indications on this relationship for developing countries, and a conceptual and methodological debate on the causal nature of the negative relationship wherever it is found. The list of studies demonstrating a negative relationship between various indicators of female employment and fertility is impressive: Freedman, et. al. (1966); Miro, (1966); Collver (1968); Gille, (1971); Reed and Udry (1973); Waite and Stolzenberg (1976); and Gurak (1977). However, studies conducted in developing countries have led many to doubt that female employment makes any significant contribution to fertility reduction. Stycos and Weller (1967) argue that unless the roles of worker and mother are incompatible, employment status will not affect fertility. Jaffe and Azumi (1960) found that unless employment requires the women to work away from the home, fertility remains substantially unaffected. Miro and Mertens (1968) found that for rural and small urban areas in Chile, Colombia, and Mexico no clear-cut relationship between female employment and fertility exists. However, several studies of developing countries

have found substantial negative associations between fertility and female employment in large urban centers (Miro and Rath, 1965; Gendell, et. al., 1970). This set of findings leads some to conclude that the negative relationship may be spurious and that a more fundamental social force -- such as urbanization or modernization -- may be influencing both female employment and fertility (Goldstein, 1972; Pinnelli, 1971; Bindary, et. al., 1973).

Despite such inconsistencies, most researchers continue to consider that a negative relationship exists between female employment and fertility, but debate the causal structure of this relationship. While there is a possibility that both factors are caused by some other factor, the major debate has focussed on the direction of causality between female employment and fertility. Little agreement exists on whether reduced fertility is a consequence or a determinant of female employment, or whether both variables are simultaneously related. Reed and Udry (1973) argue that part of the fertility differential between employed and unemployed women may be due to self-selection of less fecund women into the labor force since they could find little evidence of differentials in contraceptive use for employed and nonemployed women. Smith-Lovin and Tickamyer (1978), using a nonrecursive model, argue that the apparent effect of employment on fertility results from the actions of prior determinants of employment and not from the employment situation itself. On the other hand, Waite and Stolzenberg (1976), using two-stage-least-squares estimation procedures, determined that the direct influence of employment on fertility is considerably more substantial than that of fertility on employment.

In developed countries, substantial evidence exists linking increases in female employment to a complex set of changes in marital norms

and female role expectations (Mason, 1976; Waite, 1976; Hoffman and Nye, 1974; Gurak, 1977). Thus female employment probably does not cause fluctuations in fertility without responding to and influencing many other social processes. At issue is not the identification of the primary cause, but rather the specification of the nature of the causal mechanisms, if any, which operate to reduce the fertility of working women.

There are numerous factors which may mediate the influence of female employment on fertility, including: job commitment (Safilios-Rothschild, 1972, 1977; Pinnelli, 1971; Haas, 1972); education, provisions for child care, and cultural milieu (Piepmeier and Adkins, 1973; Dixon, 1975); role extensiveness (Birdsall, 1976; Safilios-Rothschild, 1977); type of employment and its stability (Stycos, 1965; Weller, 1968; Anicic, 1971; Reed and Udry, 1973). How these factors influence fertility is poorly understood in developed countries and largely unstudied in developing countries. In order to understand the nature of the causal relationship between female employment and fertility, the operation of this matrix of factors must be carefully examined.

Reviewing existing research on female employment and fertility in developing countries, Fong (1976) concludes that weak and inconsistent research findings have been produced because of fundamental inadequacies in research methodology. Many of these inadequacies were avoidable and could easily be remedied in future studies with only relatively minor modifications. In particular, more careful attention should be given to: 1) appropriate interpretation of ecological and individual levels of analysis; 2) the life cycle aspects of fertility and labor force participation; 3) more complete measures of fertility taking into account spacing as well

as number of children; 4) more relevant measures of labor force participation which separate underemployment from employment; and 5) the distinctions between current and cumulative indicators of fertility.

The methodological issues discussed by Fong (1976) and the inherent complexity of the employment-fertility relationship place significant barriers in the path of assessing the theoretical and practical importance, for family formation, of changes in female labor force participation. In addition to these methodological concerns, the relationships between employment variables, elegantly measured, and appropriate indicators of fertility may simply differ from one society to another, or from one period to another within a single society.

The issue of the causal role of female employment in the reduction of fertility in developed and developing countries remains unsettled. In developing countries, data restrictions have limited our ability to do much more than check correlations of current employment status to cumulative fertility. Valid generalizations cannot be made from analyses that examine events occurring at different times and that ignore the possibility of reciprocal causation. This analysis will increase our understanding of the nature and effects of changes in female employment since it examines data collected specifically for that purpose. However, the results will provide only one segment of a broader picture inasmuch as the Dominican Republic of the 1960s and 1970s represents only one country at a particular stage of economic change. Many replications or quasi-replications, covering a range of societies characterized by differing structural patterns (Cutright, et. al., 1976; Chaplin, 1971; Recchini de Lattes, 1979; Recchini de Lattes and Wainerman, 1977), will be needed before sound generalizations can be specified.

THE DATA AND RESEARCH SITE

The data for this study were collected in the fall of 1978 as part of a broader investigation of female status and family formation in the Dominican Republic. A complex, highly structured questionnaire was administered to a multi-stage, stratified probability sample of all women aged 20 to 39 who were residing in the urbanized areas of the Dominican Republic's two largest cities -- Santo Domingo and Santiago de Los Caballeros. These two cities contain approximately one-quarter of the country's five million people, and roughly one-half of its urban population.[1] Women working for pay in some capacity other than domestic service were oversampled. The analysis employs weights to compensate for this oversampling which was carried out in order to insure reliable numbers of cases in particular employment categories. The final samples consisted of 1,050 women in Santo Domingo and 248 in Santiago. With an average completion rate of 80 percent, actual unweighted samples include 867 women in Santo Domingo and 189 in Santiago (Santana, 1979; Gurak, 1979).[2]

While the questionnaire yielded considerable information on attitudes and perceptions of women's roles, employment and child care issues, and contraceptive practices, in this paper only the detailed life history tables on marital unions, pregnancies, and employment will be examined. The marital and fertility history models were modeled closely after those used in the Dominican National Fertility Survey. Though the employment history data are rich and will permit an analysis of the relations between actual employment and fertility patterns, they have several weaknesses. The major problem with life histories gathered retrospectively is data reliability: respondents may have forgotten certain events or recall incorrectly their timing. To insure accuracy in the life history schedules, the data collection procedures included several

double-checks. First, a chronology of occupations was obtained that was then used to select jobs about which more detailed data were to be collected (first job, last or current job, and any job of at least 12-months duration). During the process of collecting the more detailed information, the interviewers were trained to look for inconsistencies in dates and in the basic job descriptions, and to seek clarification when discrepancies were noted.

Several characteristics of the Dominican Republic render it a valuable research site. In the past ten to fifteen years, the country has experienced considerable economic, political and social change. When the Trujillo regime ended in 1961 the Dominican Republic was a predominately rural, agricultural country. By the mid-1960s, massive population shifts were underway, from small towns and rural areas to Santo Domingo and other urban centers, as well as to Puerto Rico and the United States. At the same time the crude birth rate in the 1960s and early 1970s was in the mid-40s per thousand, yielding a 25 percent increase in population between 1960 and 1970 (Weil, 1973; Ramirez, 1974:29). Awareness at the governmental level of population problems led to the initiation of fairly strong population policy measures in 1968 (Weil, 1973).

Changes in female labor force participation have also been substantial since the early 1960s (Ramirez, 1974:18-19). From 1960 to 1970, the crude rate of female economic activity almost tripled, going from 6.1 to 16.4 percent. Economic activity rates for women ten years of age or older in 1970 were 25 percent and 27 percent for the urban women. The increase in participation affected all age groups, but particularly young urban women aged 20-39 whose rates increased to about 35 percent (Ramirez, 1974; Najera, 1979). A closer examination of the areas of female economic activity reveals high levels of concentration in services and high levels of unemployment and underemployment. In 1970, 58 percent of the eco-

nomically active women were employed, but 53 percent of the unemployed had worked before. Of those women with employment experience, five percent were in agriculture, 24 percent in services, nine percent in the modern sector, and 62 percent in activities that were not adequately described. While some in this last category may have been in modern sector employment, the category also includes a large percentage of underemployed women.[3]

The joint effect of the above factors produces a research setting that is well-suited for examining the interaction of female employment and fertility, and in which research findings can be profitably used by policymakers. However, systematic data on the complex changes in the status of women in the Dominican Republic have been lacking. Ortega (1976) argues that very little is known about the relationship between the socioeconomic characteristics of females and fertility in the Dominican Republic. His extensive bibliography of research on population in the Dominican Republic (1977) found that only 5 of 228 studies focussed on women.

TWO COHORTS: BACKGROUND AND EMPLOYMENT SHIFTS

As was mentioned previously, this paper examines the employment, family formation, and fertility histories between the ages of 15 and 25 of two cohorts of women. The two cohorts include women aged 25-29 and 35-39 in 1978 at the time of the survey. By comparing life cycle events at two differing points in time among two cohorts of women of comparable ages, the extent of social change can be observed. The older cohort consists of women aged 35-39 in 1978 whose employment and family status prior to age 25 would have occurred during the late 1950s and 1960s - including the peak years of change in the post-Trujillo period. The younger cohort consists of women aged 25-29 in 1978 and whose employment and family status from the late 1960s to 1978 is examined.

Within the brief span of a decade, the typical social background and employment experience of women in Santo Domingo changed significantly. Tables 1 through 3 provide a descriptive profile of these shifts: Table 1 focussing on general background, marital, fertility, and employment factors, and Tables 2 and 3 on more detailed employment experiences. In all cases, the data describe experiences only up to the age of 25.

[TABLE 1 about here]

While the average age at first marriage of those who are married in the two cohorts is similar (18.8 years of age), the typical marital experiences differ markedly. Only 77 percent of the younger women had entered a marital union prior to the age of 25; whereas 86 percent of the older women had (Table 1). Of those who had entered a union, 43 percent of the younger women had been legally married -- compared to 48 percent for the older women. The younger women were somewhat more likely to have terminated their first union prior to the age of 25 (28 percent versus 26 percent). Besides describing a marked shift away from early family formation, these and other data that are used to analyze marital fertility have to be properly interpreted since different proportions of the cohorts fall into the marital category. For example, the structural equation model summarized in Table 5 uses the data only for women who had married prior to the age of 25 and who were still in their first union at that time. This includes only 55 percent of the younger cohort and 64 percent of the older cohort. Clearly, more attention will have to be given to the causes of the observed delay in family formation and the effects of this delay on fertility.

Table 1

Descriptive Statistics for Selected Variables for Two Cohorts of Women: Aged 25-29 and 35-39 in 1978.

		Cohort 25-29	Cohort 35-39
1.	Age at First Marriage	18.8	18.8
2.	Number of Women in Cohort	503	251
3.	% Married by Age of 25	77	86
4.	% In First Union at Age 25	55	64
5.	% In First Union at Age 25 of Those Married	71	74
6.	% of First Unions That Were Legal Marriages	43	48
7.	% of First Unions Which Ended Prior to Age 25	28	26
8.	Number of Live Births Prior to Age 25	1.43	2.24
9.	Number of Live Births Prior to Age 25 for Those Married by 25	1.87	2.51
10.	% Employed Prior to Age 25	67	42
11.	% Employed Prior to First Marriage	48	26
12.	Total Months Worked Prior to Age 25	28	16
13.	% Employed After Marriage But Before Any Termination or Age 25	43	32
14.	Total Months Employed:		
	After Marriage Till Age 25	13	9
	Before Marriage	9	4
15.	% Months Since Age 25 Employed	35	30
16.	Years Education of R	7.6	5.6
17.	Years Education R's Father	3.7	2.4
18.	Years Education R's Mother	3.4	2.1
19.	% With Rural Childhoods	46	66
20.	% Whose Mothers Were Employed When R Was 5-15	28	19
21.	% Whose Father's Had Farm Occupations	13	13
22.	Number of Siblings	7.9	8.1
23.	% Who Discussed Having Children With Mother When Growing Up	26	11

Table 1 provides strong evidence that the recently observed fertility decline in the Dominican Republic (Bartlema, 1978) is very real. The younger women had an average of 1.43 children by the age of 25; the older women, 2.24. Some of this reduction results from the declines in first marriages but the average fertility once a marital union has been entered is also declining. The younger women who were in a marital union had .64 fewer children than the older women (1.87 versus 2.51). Since the marital durations of those who are married are similar for the two cohorts, it appears that most of the marital fertility reduction results from delays in first birth and longer birth intervals.

The general social backgrounds of the two cohorts differ in several interesting ways. The younger women have higher levels of educational attainment (7.6 versus 5.6 years), just as their mothers had higher levels than the mothers of the older cohort (3.4 versus 2.1). The maturation of the urbanization process can be observed by noting the sharp drop in the proportion of women who spent their childhoods (5-15 years of age) in rural areas or small villages: 46 percent of the younger women and 66 percent of the older women. Similarly, the mothers of the younger women were more likely to have been employed when they were growing up than were the mothers of the older women (28 percent versus 19 percent).

The typical employment experiences of women in Santo Domingo has also shifted. The younger women were more likely than the older women to be employed prior to age 25, to have worked longer on average by that time, to have been employed prior to the first marital union, and to have worked between and after their first marital union (see Table 1). Among the younger cohort, 67 percent of the women had been employed at least once prior to age 25, while only 42 percent of the older cohort had a similar experience. These statistics depict dramatic and rapid changes between cohorts separated only by ten years of age.

The occupational distributions for employed women in the two cohorts also differ significantly. While the largest proportion of women in both cohorts in first and last jobs are found in domestic work, the younger cohort has a lower concentration: 38.4 percent of the last jobs of older women were in domestic service versus 30.0 percent of the younger women (see Table 2). The younger women have a slightly lower proportion in professional/managerial and educational occupations than the older cohort, but this may not reflect an actual decline since increasing levels of educational attainment may have postponed entry into these occupations more for the younger cohort. In any case, the decline is relative, not absolute. The most significant shifts have occurred in clerical work, sales, and service -- occupations in which the younger women are much more likely to be employed than the older women in both first and last jobs.

[TABLE 2 about here]

These occupational shifts reflect the economy's movement toward a consumer-service orientation. In general, more women are working and they are filling a more diverse mix of jobs. At the same time, the average duration of jobs for the younger women is considerably shorter than that for the older women (23.8 and 28.6 months as compared to 41.2 and 47.4 months). Considering that the younger women were employed on the average for more months than were the older women, this probably reflects an expansion of market opportunities for women and less rigidity in the jobs available to women. The higher educational levels of the younger cohort also would increase the probability of locating alternative jobs.

Table 2

Collapsed Occupational Distributions for Two Cohorts of Women: First and Last Jobs Prior to the Age of 25[a]

	Cohort			
	25-29		35-39	
Occupation	First Job	Last Job	First Job	Last Job
Professional/Managerial	4.3	5.8	6.8	7.7
Educator	9.8	10.3	13.5	13.5
Clerical Worker	19.2	20.8	11.6	14.5
Salesworker	9.2	8.9	1.0	0.0
Factory Operative	12.0	10.2	20.3	17.4
Service	12.8	14.0	7.6	8.7
Domestic	32.8	30.0	39.4	38.4
Total (%)	100.1	100.0	100.2	100.2
(N)	327	327	104	104
Duration in Months	23.8	28.6	41.2	47.4

a. If R had only one job prior to the age of 25, that job is considered to be both the first and last job. Either may extend beyond the age of 25.

Other changes also characterize women who were employed prior to the age of 25 (see Table 3). The younger women are more likely than the older women to be holding a secondary job in addition to the primary occupations already described; to be employed outside of their residence; to work at sites with larger numbers of co-workers; and to have at least some supervisory responsibilities. In addition, the younger women work fewer hours on the average (49 versus 53.8) per week, and are more likely to be working less than 25 hours per week. Whether this last datum indicates more underemployment or more intentional part-time work cannot be ascertained from the data, however, the former option appears more likely. The general thrust of changes in work conditions indicates that Dominican women are increasingly working in structured settings rather than at home or as independent operatives.

[TABLE 3 about here]

EMPLOYMENT AND FAMILY FORMATION

Using multiple regression, the following analysis focusses initially on correlates of early family formation events and, subsequently, on the complex relationship between marital employment and fertility. The subsample employed in the analysis includes women who 1) had married by age 25, and 2) were still in their first union when they became 25. The study population is restricted in this manner in order to maximize comparability with other studies, and because broadening the population would require the addition of complex sets of controls and would complicate greatly the measurements of life history variables. This limitation does not mean that earlier family formation events are of only tangential interest. In fact, these must be examined much more carefully than has been done in previous research.

TABLE 3

Characteristics of Last Job Begun Prior to Age 25 for Women Who Were Employed for Two Cohorts of Women

	Cohort 25-29	35-39
1. % Holding a Secondary Job	4.8	1.0
2. % Working Away From Home	69.6	63.8
3. Median Number of Co-Workers	8.3	3.5
4. % Who Supervised Others	11.9	6.7
5. Average Hours/Week	49.0	53.8
6. % Working More Than 50 Hours	34	39
7. % Working Less Than 25 Hours	19	13
8. Median Monthly Pay in Pesos[a]	75	60

a. Pesos have officially been on a one-to-one par with U.S. dollars for decades though amounts are not comparable for several reasons. Comparisons across cohorts may not be meaningful in view of changes in the real value of the peso.

Table 4 presents ordinary-least-squares (OLS) estimates of the relationship of several background and employment variables to three indicators of marital events: 1) whether or not a woman ever entered a marital union by age 25; 2) the average age of marriage for those who did so, and 3) whether the first marital union had ended before the respondent became 25. The data contained in Table 4 are intended only to illustrate the need for more thorough analysis of life cycle events. The abbreviations used for all variables are defined in Appendix A.

The variables which are significantly related to marriage by age 25 (MAR25) differ for each cohort. Relative economic status while growing up (RELECST), mother's employment (MEMP), and white collar first job (FJ25WC) are significantly and negatively related to the probability of marriage for the older women, while rural background is positively related. Of these four variables, only mother's employment is significant for the younger cohort. Other significant variables for the younger cohort are respondent's education (RED) and father's occupation as farmer (POCFARM), which are positively related to marriage. The strongest relationship, and the only one consistent across both cohorts, is whether the respondent worked prior to marriage (or prior to age 25 if never married by that age). Work experience prior to marriage had the effect of delaying first marriage. This negative relationship shows a sharp increase in magnitude for the younger women; those who worked had a probability of marriage 27.4 percentage points lower than those who did not.

Of course, this level of analysis says nothing about causal relationships. Increasing employment levels may be causing postponed marriages; or women may be postponing marriages for an array of reasons, and getting jobs as a time-filling alternative or means of survival; or employment and postponed marriage may both be responses to economic pressures brought on by the rapid growth of a cash-oriented economy. While these relationships cannot be sorted out with OLS techniques, there

is a clear trend toward marriage postponement and increasing employment prior to marriage.

[TABLE 4 about here]

The relationship between age at first marriage (AGEFM) and background and employment variables also displays variability between the two cohorts. Three variables (number of siblings of respondent; respondent's relative economic status when growing up; and mother's work status) are significantly related to age at first marriage (AGEFM) for the older cohort only; and three others [father's education (PED); mother's education (MED); and white collar status of respondent's first job (FJ25WC)] are significant only for the younger cohort. Only rural background (YRURAL) and employment before marriage (WKBFM) are strongly related to AGEFM for both cohorts. The net effects of rural background and employment before marriage are to increase the average age at marriage. While the positive effect of rural background was not anticipated, this relationship may result from migration-related disruptions. The employment relationship is again the strongest relationship, and summarizes in slightly different form the basic descriptive fact: employment before marriage is associated with marriage postponement. For the younger cohort, the relationship between respondent's education (RED) and postponed marriage is also quite strong; just as it is for marital status by age 25 (MAR25). Thus, the dramatic increases in educational attainment levels in the Dominican Republic are leading to other changes in life cycle events (Gurak, et. al., 1979).

Given the strong association between employment and marriage postponement, one could hypothesize that the net effect of employment on marital disruption would be to increase the probability of its occurrence. However, the regression analysis of marital disruption (MARDIS25) immediately calls such a conclusion

Table 4

egression of Three Marital Indicators[a] on Background and Employment Variables for Two Cohorts

Independent Variables[b]	Cohort 25-29			Cohort 35-39		
	MAR25	AGEFM	MARDIS25	MAR25	AGEFM	MARDIS25
RED	.033*	5.28*	.005	-.003	.24	.002
PED	-.004	-.01	-.005	-.008	-.27	-.008
MED	.004	-1.73*	.024*	.008	.96	-.006
SIBLINGS	-.003	-.24	-.005	.003	1.46*	-.030*
RELECST	.025	-5.14	.108*	-.097*	6.18*	-.028
MEMP	.076*	2.31	.063	-.108*	-10.68*	-.103
POCFARM	.140*	-5.64	-.044	-.007	6.44	-.045
YRURAL	.017	8.74*	-.022	.081*	11.78*	.107*
FJ25WC	.014	-17.64*	-.010	-.147*	3.80	-.038
WKBFM	-.274*	33.20*	.141*	-.101*	27.69*	.303*
WKAMAR	-	-	-.158*	-	-	-.112*
FMARL	-	-	-.364*	-	-	-.344*
AGEFM	-	-	-.003*	-	-	-.004*
Constant	.114	196.99	.98	.92	176.24	1.34
R^2	.32*	.39*	.32*	.14*	.26*	.34*

a. The MAR25 equation is computed for all women; those for the other two dependent variables are computed for all women who had entered a marital union prior to the age of 25. Variable abbreviations are explained in Appendix A.

b. * indicates that the unstandardized regression coefficient is at least twice its standard error (for R^2 it indicates significance at .05 level).

into question (See Table 4). While employment prior to first marriage (WKBFM) increases the probability of marital disruption, for the younger women that positive association is less than half what it is for the older women. Perhaps of greater significance, employment during first marriage but prior to age 25 (WKAMAR) is negatively related to disruption; and that relationship is strong and increasing in magnitude.

Several other relationships are of interest. For both cohorts, older age at first marriage (AGEFM), legal marriage (FMARL), and work after marriage (WKAMAR) are strongly and negatively related to disruption. Women who marry at older ages probably form more stable unions; and, in any case, have less time to terminate a union prior to the age of 25. Legal marital unions, not surprisingly, represent stronger commitments between spouses.

The regression analysis presents a preliminary scenario of major life-cycle shifts for women in Santo Domingo. As employment experiences have become more common, marriages have been increasingly postponed. This increase in female employment, however, cannot be interpreted as a force which is disrupting marital relationships since employment after marriage is negatively related to marital disruption. In reality, two-worker households may be proving to be the most adaptive family structure in the growing economy of Santo Domingo.

MARITAL EMPLOYMENT AND FERTILITY

The numerous empirical studies of the relationship between female employment and fertility, including several using sophisticated structural equation models, have established only that the relationship is extremely complex and that it may vary from one social and economic context to another. On a theoretical level, the possible broad types of relationships include: 1) employment experience may have a direct (positive or negative) effect on fertility; 2)

fertility may, similarly, influence employment experiences directly; 3) the relationship may be simultaneous or at least reciprocal; and 4) the relationship may be spurious with both factors responding to changes in background factors rather than to each other in a direct manner.

This analysis utilizes a multivariate procedure which allows reasonable conclusions to be reached concerning which of the above four patterns is most appropriate. The procedure -- a nonrecursive regression model which employs two-stage-least-squares rather than ordinary least squares estimation -- is relatively common among econometricians (Johnston, 1972; Goldberger, 1964; Heise, 1975; Duncan, 1975) and is being used increasingly by sociologists attempting to sort out the complex employment and fertility relationship (Waite and Stolzenberg, 1976; Smith-Lovin and Tickamyer, 1978). The procedure provides an unbiased estimation of coefficients between two factors, such as employment and fertility that may be related in a reciprocal or simultaneous fashion. A detailed explanation of the model used in this procedure can be found in a more extensive version of this paper (Gurak, et. al., 1980).[4]

The variables utilized in the multivariate analysis summarized in Table 5 were selected because of their substantive importance for the analysis of fertility and employment. In addition, they parallel measures used in two recent studies of employment and fertility in the United States (Smith-Lovin and Tickamyer 1978; Waite and Stolzenberg, 1976) in order to compare findings between two differing social, cultural, demographic, and economic contexts.

This analysis differs from the United States studies in several identifiable and significant ways. The Smith-Lovin and Tickamyer (1978) study focusses on a single-birth-cohort -- women who were 30 years of age in 1970. Smith-Lovin and Tickamyer acknowledge the dangers that the lack of variation in period effects may cause, but argue that the data provide better measurement of employment and

fertility than the measures used by Waite and Stolzenberg (1976). These latter authors used projected employment behavior and fertility expectations of a sample of women who were in their early twenties, while the former authors used cumulative indicators of both fertility and employment (years worked since marriage). Cumulative indicators of fertility and employment are also used in this study. Fong (1976) has presented a strong case for the need to examine the relationship between employment and fertility utilizing cumulative measures that permit comparisons at the point the events actually occurred. Studies which rely on cumulative fertility and current employment status will, of necessity, produce biased results. Measures of projected behaviors, such as those used by Waite and Stolzenberg (1976) may be adequate, but they appear less grounded in the real lives of individuals than do reliable retrospective indicators of actual behavior. Since this analysis utilizes cumulative measures, it approximates that of Smith-Lovin and Tickamyer (1978) more than that of Waite and Stolzenberg (1976).

The present study, however, differs from the Smith-Lovin and Tickamyer study in a very important way. Whereas that study was limited to a single one-year cohort, this one studies two five-year cohorts: women aged 25-29 and women aged 35-39 in 1978. Consequently, it will be possible to specify whether changes in contextual social conditions have produced changes in basic structural relationships. By focussing on behavior up to the age of 25, the early years of employment and family formation for both the older and the younger women can be compared in a social change context. Though the early years provide no direct and overall picture of life-time careers and completed fertility, Easterlin (1973) has argued convincingly for their primal importance in setting the tone for later life-cycle stages.

The causal direction of the relationship between fertility and employment can be sorted out by utilizing regression procedures that permit simultaneous controls for background variables and for the effects of the two dependent variables on each other. Fertility is measured as the number of live births prior to age 25 (TLB25), while employment is measured as the number of months the respondent worked between the time of her marriage and age 25 (DUR25PM). The analysis is restricted to married women in the two cohorts and the findings are presented in Table 5.

This analysis strongly indicates that employment has a stronger effect on fertility than fertility does on employment. The number of months a woman works after entering a marital union up to the age of 25 significantly reduces the number of children she has by that age. Each additional month of employment since the beginning of the respondent's marriage until the age of 25 has, on the average, the effect of reducing the number of births prior to the age of 25 by .061. One year of employment, then, is associated with a reduction of .73 children; and two years, with 1.46 fewer children. The parameter for the older cohort is identical to that for the younger women; however, the smaller sample size and the larger standard error render it insignificant statistically in that cohort.

The effects of fertility on employment are statistically insignificant among both cohorts. For the older women, each additional birth reduces the number of months worked by just under three, but this relationship is insignificant since the coefficient is smaller than its standard error. For the younger women, the coefficient is positive and larger, but is still statistically insignificant.

Thus, the effect in the Dominican Republic of additional births does not seem to be a reduction in female labor force participation.

[TABLE 5 about here]

For Santo Domingo the evidence supports the position that marital employment does reduce the number of children a woman has. This reduction occurs, and is of significant proportions, after controlling for important background factors which influence both employment and fertility. The negative correlation between employment and fertility, then, results not from the self-selection of less fecund women (or women who simply desire fewer children independent of their employment situation) into the labor force, nor from the impact of background factors such as education or delayed marriage. Rather, employment itself has the direct effect of reducing fertility.

It has been argued that such negative correlations result from complex life cycle patterns rather than from the direct impact of marital employment. For example, women who stay in school longer, or who work prior to their first marital union, or who do both, will enter that first union at an older age. If they then go on to be employed during their marriage, it will appear that such employment is producing a situation which results in their giving birth to fewer children. Researchers who question the importance of marital employment argue that it is the later age at marriage and not marital employment which is responsible for the lower fertility. They also argue that the positive correlation between employment prior to marriage and during marriage creates the mistaken impression that marital employment reduces fertility (Smith-Lovin and Tickamyer, 1978; Eckland and Fried, 1975). The point deserving emphasis is not that this line of reasoning is wrong,

Table 5

Determinants of Marital Employment and Fertility: Results of Two-Stage Least Squares Regressions for Two Cohorts of Dominican Women

	COHORT			
	25-29 (N=289)		35-39 (N=160)	
Dependent Variables	TLB25	DUR25PM	TLB25	DUR25PM
DUR25PM	-.061**	--	-.065	--
TLB25	--	11.738	--	-2.993
SPINC	.001	-.014	.001	-.017**
RED	.029	2.613**	-.166*	1.021
PED	-.008	.124	-.048	-.580
MED	.101**	-.224	.037	.944
RELECST	.136	-6.076	.363	-3.283
POCFARM	.285	1.708	1.051*	-9.657*
YRURAL	-.189	-10.355**	.329	-9.202*
AGEFM	-.039**	-.033	-.025	-.089
FMARL	-.039	-3.870	.130	2.871
DURBM	--	.184**	--	.132
MEMP	--	4.500	--	-2.296
MTALK	-.287	--	.257	--
SIBLINGS	-.019	--	.116**	--
R^2 b	.44	.21	.48	.12

a. Regressions are computed only for women who had married prior to the age of 25 and were still in their first union at age 25. DUR25PM is the predicted number of months R worked between the time of her marriage and the age of 25. TLB25 is the predicted number of live births by the age of 25. The two-stage-least-squared-procedure utilizes ordinary-least squares in two steps. Dashes indicate that corresponding variable was not entered in the equation.

b. The definition of R^2 is problematic for TSLS. It is given only to indicate the relative order of magnitude of the relationships.

* Significant at .05 level.

** Significant at .01 level.

but rather that the present analysis demonstrates a strong negative impact of employment during marriage on the number of births a woman has in addition to describing the potentially strong fertility reduction effect that education and premarital employment have on fertility by delaying the age of the first marital union. To conclude, marital employment does exert a strong, net, negative effect on marital fertility in Santo Domingo.

The relationships described in Tables 4 and 5 are "net" relationships; that is, they are estimates of the impact of particular factors once the effects of other variables have been controlled. This does not mean that educational attainment or age at marriage are unimportant, but rather this analysis has focussed on the impact of employment. However, some of the other relationships deserve some attention.

Relatively few background factors exert a strong net influence on either employment or fertility and almost all of these relationships fluctuate between cohorts. For the younger women, age at first marriage (AGEFM) exhibits a strong negative relationship to TLB25. Each delay of marriage by one month reduces the number of births by .039; a two-year delay means one less child. Mother's education (MED) is positively related to fertility in the younger but not the older cohort. Respondent's education exhibits no net relationship to fertility for the younger women, but a strong negative one for the older women. For the older cohort, both father's occupation (POCFARM) and the number of brothers and sisters (SIBLINGS) show strong positive associations with fertility. However, it would appear that structural background conditions are becoming less important since none of these factors (RED, POCFARM, SIBLINGS) exhibits a significant relationship to fertility for the younger cohort.

Similar variability across cohorts characterizes the relationships of background factors to cumulative employment experience (DUR25PM). For the younger women, respondent's education (RED), the number of months employed prior to marriage (DURBM), and rural childhood (YRURAL) are significantly related to the number of months employed after marriage. Each year of additional education (RED) is associated with an additional 2.613 months of postmarital employment and each month respondent worked prior to marriage (DURBM) with .184 months of postmarital employment. A rural childhood (YRURAL), however, means 10.355 fewer months of postmarital employment.

While spouse's income (SPINC) is negatively associated with DUR25PM for both cohorts, only for the older cohort is the relationship significant. YRURAL's impact is essentially the same for both cohorts, but for the older cohort an additional background factor, father's occupation as farmer (POCFARM) exerts a strong negative impact on postmarital employment. The changes between the two cohorts can be summarized as indicating that the recent trends towards higher educational attainment and increased levels of premarital employment are emerging as new and powerful determinants of postmarital employment.

CONCLUSIONS

This paper has examined the potential impact of increasing levels of female employment in Santo Domingo on family formation and fertility. We have sought to clarify a complex relationship by carefully examining the relationship in a setting where such attention has not previously been given. In the spirit of replication, the present analysis adheres closely to similar analyses of United States data, but emphasizes the differences as well as the similarities in data, models, and social and economic contexts. The results clearly indicate that dra-

matic shifts in the levels and the nature of female employment in Santo Domingo are exercising strong influences over both marital events and early fertility. Before examining some of the caveats of this analysis and its comparison to earlier studies, the major findings are reviewed.

First, along with rapid increases in urbanization and educational attainment, a significant increase in early female employment has occurred over the last decade. This increase in employment levels is taking place both prior to and after marriage. Employed women are filling a broader range of occupations and experiencing more formalized working arrangements. For example, there has been a significant increase in the proportion of women employed in clerical, sales, and nondomestic services; the average number of co-workers has increased; and the proportion of women exercising supervisory responsibilities has increased.

Accompanying these changes, there is a trend toward marriage postponement. Among women married prior to the age of 25, the average age of marriage has remained between 18 and 19; however, the proportion not entering a marital union by that age increased from 14 to 23 percent. Employment before marriage is strongly related to postponed marriage, but less so to marital disruptions. One finding deserving attention is the clear indication that postmarital employment is negatively related to marital disruption. In general, the type of modeling employed to examine the relationship between marital fertility and employment still needs to be done for the earlier life-cycle stages.

The nonrecursive model estimated in this paper strongly indicates that cumulative employment experiences of Dominican women exert a strong negative impact on fertility. Fertility, however, exerts no significant effect on employment. While the effect of unemployment on fertility is consistent for both cohorts, the fertility parameter is inconsistent, changing from negative to positive in

the younger cohort. In addition to the strong negative impact of marital employment on fertility, employment prior to marriage is strongly associated with the postponement of marital unions. Consequently, early employment of women reduces fertility in two stages: first, by postponing the age at marriage; and second, by reducing fertility after a marital union has been entered. The cohort comparison indicates that these effects are becoming stronger; and that the increasing levels of early employment among women in Santo Domingo is contributing strongly to the dramatic declines in fertility experienced in the Dominican Republic in the 1970s.

The nonrecursive model of the relationship of fertility and employment employed in this analysis was designed to replicate those of two other analyses (Smith-Lovin and Tickamyer, 1978; Waite and Stolzenberg, 1976). The model very closely approximates the Smith-Lovin and Tickamyer model in that it uses similar instrumental and background variables, and cumulative indicators of both fertility and employment. Consequently, the present analysis is considerably more sensitive to changing period effects. This may not, however, be the reason for the dramatically opposed results of the two studies. Smith-Lovin and Tickamyer found that fertility had a significant effect on employment in the United States and concluded that "the presence of children may have constrained work much more than work constrained the number of children", and "that the worker and mother roles were to some extent incompatible for these young married women" (1978:555). The results of this study indicate that a similar effect has not occurred in the Dominican Republic. Dominican women are working, in increasing numbers, and that work is constraining the number of children they elect to have. While the causal dynamic differs between the two societies, the end result is remarkably similar in that a high degree of role incompatibility exists between the worker and the

mother role for women. Since the Dominican sample analyzed in this paper is limited to Santo Domingo -- the most modern social and economic site in the country -- the trends toward increasing female employment, leading to a smaller number of children, can be expected to continue as other sectors of the country shift from traditional to modern forms of social organization.

To have observed different findings from those of a study on the United States is not necessarily surprising. The situation in the United States, which is highly industrialized, has been so for a long time, and has been experiencing a long-term fertility decline from only moderate levels, may lead to very different relationships than that of a rapidly developing country which has only recently begun to experience large increases in female employment and fertility declines from levels that were among the highest in the world. None of this means that such comparisons should not be made; rather, a much broader range of comparisons across different social contexts need to be carried out. Such comparisons must seek to examine the micro-level relationships within culturally and institutionally distinct settings, and to interpret the observed variations in relationships within those settings.

This analysis emphasizes the apparent value of focussing on shifts in the current economic status of women in developing countries. Of greatest impact is the need to measure and analyze properly the relationship between economic changes and life-cycle events. This is particularly important in view of the increasing tendency to advocate, as a population policy measure, the expansion of employment opportunities for women. While this analysis indicates that female labor expansion in the modern sector in Santo Domingo has had a strong negative effect on fertility, it should not necessarily be generalized that the same effect would occur in other settings. No previous study of female employment in Latin America

has documented such strong relationships between employment and family formation. In part this results from the failure of earlier studies to measure employment adequately or to use optimal analytic procedures. But differences in social and economic structures and in cultural patterns may also account for differences among this and previous studies. It should also be noted that this study should be extended to examine the relationship between fertility and employment in rural areas and small towns in the Dominican Republic to determine whether and how the relationship differs in a traditional context.

FOOTNOTES

1. The first stage of the sampling procedure involved the selection of 67 blocks in Santo Domingo and 25 in Santiago. Household censuses were conducted, and this information was used to select the final sample.

2. Interviewing was conducted by a team of 15 interviewers who were supervised by three field supervisors, the field director (Vivien Mota), and Gurak. All interviewing was done during the fall of 1978. Many of the interviewers had significant prior experience, including the 1975 World Fertility Survey. Two weeks of interviewer-training were conducted in July and August, and a pretest was administered. A 90-page interviewer's manual provided further guidance (Mota and Gurak, 1978). In its final form, the questionnaire required an average of one hour to administer -- varying in relation to the complexity of a women's employment, fertility, marital, and migration histories. It required six months to develop and benefited greatly from numerous sources, such as the Malaysian Family Life Survey (Butz, et. al., 1978) and the Multi-Purpose Household Questionnaire (Freedman and Mueller, 1977). Because this study's substantive focus and resource restrictions were far more severe than those of the Malaysian study, the instrument emerged with its own distinct identity (Gurak and Mota, 1978). The field supervisors were: Radhamés Piña, Miriam Mejía, and Andrea Soriano. The interviewers were: Elsa Alvino Gomera, Bethania Mariano del Rosario, Zorayda Apolinario, María Apolinario, Ramona Martínez Durán, Berenice Tejeda Ortiz, Elsa Dionis Santos, Dulce Antigua de Lora, Graciela de la Cruz Bourdier, Venecia Pineda Blanco, Yanet Pineda Blanco, Sonia Díaz Pérez, María Ramona de la Cruz Bourdier, Elsa López Hernández, and Paula Silvia Vargas.

3. For an overview of the entire sample, and a detailed look at the current occupations of women in Santo Domingo, see Gurak, Kritz, Ortega and Mota (1979; 1980)

4. The nonrecursive model summarized in Table 5 is the result of several analytic stages. First of all, there are three categories of variables: 1) the two dependent (or endogenous) variables -- DUR25PM and TLB25; 2) general background (or predetermined) variables; and 3) instrumental variables. In order to estimate the relationship between the two dependent variables, two computational steps are necessary. In the first stage, predicted values of DUR25PM and TLB25 are computed using the background variables and a set of instrumental variables. The instruments for DUR25PM are whether or not Respondent's (R) mother was employed when R was growing up (MEMP) and the number of months R was employed prior to marriage (DURBM). The instruments for TLB25 are whether R and her mother talked about family size regularly when R was growing up (MTALK) and the number of brothers and sisters R had (SIBLINGS). Each set of instruments is used in only the indicated equation in order to satisfy the identification requirements of the nonrecursive model. The predicted values of DUR25PM and TLB25 are then used in second-stage equations, each to predict the other. The rules governing the selection of instruments are discussed in Gurak, Kritz, Earley, and Ortega (1980).

APPENDIX A

VARIABLE MEASUREMENT AND DEFINITION

MEMP = R's mother's work status. A dichotomous variable coded '1' if mother was employed while R was between the ages of 5 and 15.

DURBM = Months R worked prior to marriage. This variable was computed from century months data generated from detailed life history tables for employment and family events.

MED = Mother's education; father's education (FED), and respondent's education (RED) give the number of years of schooling of each.

POCFARM = Father's employment status. A dichotomous variable coded '1' if father's principal occupation when R was growing up involved working on a farm.

YRURAL = R's childhood residence. A dichotomous variable which is coded '1' if R lived most of her years prior to age 15 in a rural or small village setting (as opposed to Santo Domingo or some other city).

RELECST = R's relative economic status when growing up. A three-value measure in which '1' indicates that household economic conditions when R was 5-15 were better than others in general; '2' indicates equal; '3' indicates worse.

SPINC = Spouse's monthly income. Measured in pesos-per-month as ascertained from a direct question.

AGEFM = R's age at first marriage in months. Derived from detailed life history tables. Since this analysis only covers events up to the age of 25, AGEFM effectively controls for marital duration.

SIBLINGS = Number of siblings of R. The total number of live births which R says her mother had.

Appendix A
(Continued)

MTALK = R's early concern with family size. A dichotomous variable coded '1' if R indicated that R had conversed regularly with her mother about the number of children R wanted to have.

FMARL = Whether first union was a legal or consensual union. A dichotomous variable which is coded '1' if the first marriage was a legal marriage as opposed to a consensual union. Unless otherwise stated, marriage refers to any union claimed by respondent.

TLB25 = Number of live births R had had by the age of 25. An actual count of births derived from detailed table of all pregnancies.

DUR25PM = Cumulative employment experience since marital union began. The number of months a respondent was employed since her first marital union began and until the age of 25.

MAR25 = Whether R had ever married by the age of 25. A dichotomous variable coded '1' if R had married.

MARDIS25 = Whether marriage had been disrupted prior to age 25. A dichotomous variable coded '1' if a marriage had been disrupted prior to age 25.

WKBFM = Whether R worked prior to first marriage. A dichotomous variable coded '1' if R had ever worked prior to first marriage or if she had worked and never married by age of 25.

WKAMAR = Respondent's employment status after her first marital union. Coded '1' if R was employed after the start of her first marital union but before the age of 25 or the termination of that union, if it terminated prior to the age of 25.

Appendix A
(Continued)

FJ25WC = Whether R's first job was white collar - or professional, administrative, educational, or clerical. Variable is coded '1' if any of the above conditions hold.

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