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Maquila Employment and Fertility in Mexicali, Mexico:

A Study of the Dynamics of Productive and Reproductive Relations*

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Abstract

Maquila Employment and Fertility in Mexicali, Mexico:
A Study of the Dynamics of Productive and Reproductive Relations

Data on 193 women working in Mexicali, Mexico during a period of rapid expansion of female employment in Mexico’s maquila industry in the mid-1980s is used to examine a model of the dynamics of production and reproduction derived from developmental and critical feminist perspectives on gender and development. Analyses confirm most predictions of the model, suggesting the utility of both perspectives. Results indicate that while fertility shapes the type of employment a woman acquires, type of employment has little effect on subsequent fertility. Unanticipated results regarding education point to the importance of considering elements often discussed under the rubric of human agency to more fully understand the dynamics of production and reproduction.
Maquila Employment and Fertility in Mexicali: A Study of the Dynamics of Productive and Reproductive Relations

Since its beginnings in the 1970s, the field of gender and development has focused much discussion on the link between women's productive and reproductive roles (Tinker 1976; Nash 1986). Although production and reproduction occur in both the household and the public sphere (Lamphere 1987), the present research focuses on public production and domestic reproduction. Public production refers to the creation of goods and services for market exchange, while domestic reproduction involves bearing, nurturing, and socializing children, and providing services that ensure the day-to-day maintenance of family members. Early discussions of fertility, many of which reflected modernization theory, and its feminist variant developmentalism (Elliott 1977), viewed biological reproduction as a consequence of productive relations (Boserup 1970; Blumberg 1976), with women's greater involvement in the formal economy having a negative effect on their fertility. In contrast to a developmental approach, work from a critical feminist perspective has presented the view that both fertility and women's activities in paid production reflect relations of reproduction within the domestic sphere (Drori 2000; Safa 1995; Benerí'a and Sen 1986). The most general expression of this view is that women with substantial child care responsibilities have little opportunity to engage in formal employment. A more nuanced view points to the manner in which employers selectively recruit childless women for formal jobs.
This study evaluates the alternative claims of developmentalist and selective recruitment arguments by examining the relation between fertility and type of employment among working women in Mexicali, Mexico during the mid-1980s. This was a period of rapid expansion of the Mexican maquiladora industry, marked by dramatic increases in female employment, a characteristic common to countries utilizing export processing as a mechanism of economic expansion in the world economy (see Standing 1989; Ibrahim 1989; Mills 1999 for summaries). The paper begins with a discussion of productive and reproductive relations, noting how developmentalist perspectives have tended to emphasize the effects of production on reproduction, while critical feminist perspectives have stressed the effects of reproductive relations on productive relations. A formal model reflecting both perspectives is then presented, followed by a review of the data and methodology used to examine the model. Descriptive statistics provide a preliminary assessment of relations in the model. This is followed by multivariate analyses that incorporate time. Results are generally congruent with the reciprocal model in Figure 1, although they more clearly support the selective recruitment argument of critical feminists regarding the effect of fertility on type of employment. Although results provide a theoretically relevant portrait of fertility and type of employment, some unanticipated results also point to the need for social analysts to be alert to the role of human agency in shaping behavior.
Production and Reproduction: Two Theoretical Perspectives

Developmentalist Arguments: The Effects of Productive Relations on Reproductive Relations

Much of the early women-in-development literature focused on the effects of economic development on women's lives, giving much attention to ways that women's participation in the formal economy affect their status in society, their ability to exercise control over fertility, and other aspects of their lives (Tinker 1976; Blumberg 1976; Charlton 1984). Productive roles were thus viewed as having a substantial effect on reproductive roles and activities. According to this perspective, as women become better educated and enter the formal labor force in greater numbers, their fertility levels decline (Blumberg 1976). Not only do they come to value smaller families, but their wage earning employment provides the economic and social autonomy that empowers them to implement their choices, either individually or in concert with other family members. Steady wage employment may offer women an economic alternative to early marriage and childbearing. Even with marriage and motherhood, the employed woman may limit her fertility in order to more easily balance the conflicting demands of her dual roles.

Although the attitudinal and behavioral changes accompanying women's integration into the formal economy occur through various types of employment, participation in modern industry is especially likely to have such transformative effects (see Tiano 1984). Work in large, bureaucratically organized, technologically sophisticated organizations is assumed to inculcate modern values and life styles among both men and women workers (Inkeles and Smith 1974). In industrializing countries, such as Mexico,
transnational corporate subsidiaries are better able than firms representing domestic
capital to absorb workers into modernizing labor processes and productive relations (Lim
1983). Thus, industrial employment, particularly within firms representing transnational
capital, should have more pronounced effects on women's fertility-related decisions than
other types of jobs within the formal economy. Seligson and Williams' (1981)
interpretation of the low fertility they observed among women maquila workers is
consistent with this explanation.

Selective Recruitment Arguments: The Influence of Reproductive Relations on
Productive Relations

Critical feminist scholars provide an alternative focus on productive and reproductive
relations. They are less likely than developmentalist theorists to give analytical primacy
to productive roles and relations, and more likely to see relations of reproduction rooted
in the household as the appropriate starting point for understanding productive relations
in the public sphere (Benería and Sen 1986). The gender-based division of labor
assigning women to the private sphere and men to the public sphere is viewed as shaping
the conditions under which women participate in the labor force (Saffioti 1975;
Bennholdt-Thomsen 1988). The ideology that women are primarily wives and mothers,
and that their wage earning is a secondary and frequently temporary supplement to the
primary (male) breadwinners' household contributions, reinforces women's subordinate
position in the labor force (Eisenstein 1979, Safa 1995). Such an ideology becomes a
justification for confining women to low-status, poorly paid jobs within
gender-segregated labor markets (Beechey 1978, Mies 1994). These jobs are an unlikely
route to either economic independence or personal autonomy, and may increase women's subordination to patriarchal figures within the household and at the workplace (Ferna'ndez-Kelly 1983, Drori, 2000). The continual construction of women’s identities as housewives whose primary obligation is to the home and family (Thorne 1982), promotes an image of waged work as a temporary pastime to occupy young women until they find a husband and begin their families. The significance of this ideology in Mexico is suggested by the fact that women's formal labor force participation peaks between the ages of 20 and 25, and declines with advancing age (Tiano 1987). Women in older age groups often continue to contribute income to their households, but they typically generate these funds in the informal sector (Arizpe 1977). Although the economic crises and subsequent dislocations of the 1980s and 1990s may have forced many partnered women to earn incomes to help their families, they have frequently done so in the informal sector (Benería and Roldán 1987), perhaps because of discriminatory hiring practices that limit older women's access to formal sector jobs (Ferna'ndez-Kelly 1983).

The ideology defining women in terms of their roles as wives and mothers has led to the preferential hiring of young, single, childless women for employment in export processing plants (Fuentes and Ehrenreich 1983; Lim 1983; Deyo 1984; Ong 1987, Drori, 2000). These selective recruitment practices reflect the belief that unmarried, childless women are least likely to be burdened by familial responsibilities that might conflict with their occupational roles (Tiano 1994). In her study of maquila workers in Cd. Juarez, Ferna'ndez-Kelly (1983) found that managers preferred hiring childless women because they believed that motherhood interferes with optimal job performance, contributing to
higher rates of absenteeism and distracting women from their on-the-job tasks. Managers of both electronics and apparel firms expressed the same preference, but because apparel firms' applicant pools were more limited than those in the more prestigious electronics industry, they were not as able as electronics maquilas to recruit a predominantly childless labor force. The selective recruitment argument is consistent with the research of Carrillo and Hernández (1985), who argue that employers attempt to avoid maternity and child care costs by hiring single, childless women.

In short, according to a critical feminist view, employment may not make women more independent, or increase their bargaining power in the household, particularly if they have limited control over the disposition of their wages (Blumberg 1995). If assembly workers have lower fertility than other women, this is not because their formal employment has empowered them to implement their reproductive choices, but rather because low fertility is a precondition for employment in transnational assembly firms. Marriage and fertility, integral components of women's reproductive roles, thus condition their access to jobs in the productive sphere.

Prior Research

Past research has often found a negative relation between fertility and employment, congruent with both developmentalist and critical feminist perspectives. However, as one might anticipate, results vary among countries, with clear differences between developed and developing countries.

Within developed countries most studies have found a negative association between fertility and women's employment, both when fertility is treated as the dependent variable
(e.g., Jones 1981; Reed and Udry 1973) and when employment is the dependent variable (e.g., Felmlee 1984; Glass 1988; Waite 1980). Research examining the simultaneous effects of employment and fertility has found fairly consistent negative effects of fertility on employment, and little or modest short-term negative effects of employment on fertility (Smith-Lovin and Tickameyer 1978; Cramer 1979; Hout 1978; Gurak and Kritz 1982, Lehrer and Nerlove 1986), although there is evidence that the long-term effects of employment on fertility are more substantial than the short-term effects (Cramer 1980). Work by Felmlee (1993), while providing results congruent with past research, attributed the immediate short-term effects of fertility on employment to pregnancy and having young children. Raising school-age children did not appear to decrease a woman’s likelihood of having a job. Employment had a modest negative effect on fertility, with higher wages showing a strong negative effect.

Research in developing countries has also found a negative relation between various measures of employment and fertility (Parrado, 2000; Dharmalingam and Morgan 1996; Quershi and Adamchak 1996; Richter, Podhisita, Chamratrithirong, and Soothorndhada 1997; Isvan 1991), although such results are far from universal (Crenshaw, Christenson, and Oakey, 2000; Riley 1998; Weller 1984; Gurak and Kritz 1982) (for reviews see Standing 1978, and United Nations 1985). Most work treats fertility as the dependent variable, thus confirming developmental hypotheses regarding the negative impact of formal employment on fertility. Little empirical work treats employment as the dependent variable in an effort to examine the selective recruitment arguments of critical feminist scholars (see Tiano 1994 for an exception).
Illustrative of much research on employment and fertility in developing countries is an extensive study by the United Nations (1985). This research used data from the World Fertility Survey (Cleland and Scott 1987) to examine the effect of employment on fertility in each of 31 developing countries. Analyses of each country included controls for marriage, age, education, residence, and husband’s occupation. Results confirmed developmental hypotheses for Latin America, the Caribbean, Asia, and Oceania by showing a statistically significant negative relation between at least one of four employment categories and fertility in 19 of 21 countries (see Table 14, p. 61). However, results failed to confirm developmental hypotheses for many African countries, an outcome that has been observed in other studies of the region (Lewis 1982; Ware 1977). In trying to understand the varying results for Africa, researchers found that the negative effects of employment were generally stronger among developing countries with higher levels of economic development, and for occupations classified as more modern (see Figure X, p. 68). In poorer countries, where women are frequently employed in more traditional occupations that are compatible with child care responsibilities, women’s employment does not consistently reduce their fertility.

In sum, prior work has found the anticipated negative relation between employment and fertility, except within countries at low levels of economic development, and those with more traditional occupational structures. Research within developing countries has focused on the effects of employment on fertility, with little use of multivariate techniques that attempt to examine the reciprocal relation between the two variables. Additionally, there have been few efforts to use quantitative techniques to examine
critical feminist arguments regarding the selective recruitment of women without children into the more modern employment sectors of developing countries.

The present research explores both the critical feminist and developmental arguments by examining the reciprocal effects of employment and fertility for a sample of 193 women working in three occupational sectors in Mexicali, Mexico in the mid-1980s. During the mid-1980s the Mexican maquiladora industry was entering a period of rapid expansion accompanying the government’s adoption of an export promotion development strategy that culminated in the North American Free Trade Agreement (NAFTA) in the subsequent decade. The dramatic growth in maquiladora jobs during the late 1980s and early 1990s drained the pool of young, single, childless women available for industrial employment in many border cities, forcing employers to abandon their pre-expansion hiring practices. In order to recruit a sufficient supply of labor, they were forced to hire more partnered women with children (and more men) for assembly jobs (Brannon and Lucker 1989). The resulting heterogeneity of the female work force is characteristic of “mature” export zones that have been in existence long enough to have depleted the supply of “available” young female labor (Safa 1995; Tiano 2001). By contrast, the maquiladora work force of the mid-1980s took the more homogenous form characteristic of export zones in the first few decades of their existence, with young, single childless women predominating in assembly jobs (Wolf 1992; Hsiung 1996; Peña 1997; Mills 1999; Drori, 2000). Thus, the present analysis is relevant for understanding the role of selective recruitment in the bulk of export zones globally, where the labor force is overwhelmingly composed of young, single “working daughters” (see Lamphere 1987).
Employment and Fertility: A Reciprocal Model

Figure 1 on page eleven depicts a reciprocal model reflecting propositions from both developmentalist and critical feminist views. The model will be examined using data from women working in electronics, apparel, and service industries in Mexicali, Mexico.

The theoretical focus on the reciprocal effects of productive and reproductive relations is illustrated at the top of Figure 1. From the developmentalist perspective comes the image that women's participation in public production shapes their roles in domestic reproduction, while the critical feminist view emphasizes the effect of reproduction on production. Less abstractly these effects are represented in the developmental hypotheses that modern formal employment reduces fertility, and the critical feminist hypotheses that fertility has a negative effect on formal employment in more modern industries.
FIGURE 1
Model of the Reciprocal Effects of Productive and Reproductive Relations

<table>
<thead>
<tr>
<th>PUBLIC PRODUCTION</th>
<th>Central Theoretical Issue</th>
<th>DOMESTIC REPRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODERN FORMAL EMPLOYMENT</td>
<td>&gt;---------------------------</td>
<td>- FERTILITY</td>
</tr>
<tr>
<td>Public Production</td>
<td>&lt;=--------------------------</td>
<td>&lt;=----------------------</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elaborated Empirical Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELECTRONICS EMPLOYMENT</td>
</tr>
<tr>
<td>&gt;---------------------------</td>
</tr>
<tr>
<td>&lt;=--------------------------</td>
</tr>
<tr>
<td>- &lt;=--------EVER-------------</td>
</tr>
<tr>
<td>+ &lt;=--------EDUCATION--------</td>
</tr>
<tr>
<td>- &lt;=--------AGE-------------</td>
</tr>
<tr>
<td>NUMBER OF CHILDREN BEFORE EMPLOYMENT</td>
</tr>
</tbody>
</table>

11
Below the central theoretical propositions, Figure 1 shows the empirical model investigated in the present research. These effects are represented in the empirical focus on the relation between type of employment and fertility. The emphasis on electronics employment in Figure 1 reflects the common view that it is the most desirable, prestigious, and modern form of employment available to working women in northern Mexico (see Fernández-Kelly 1983; Stoddard 1987; Sklair 1989). Electronics employment will be contrasted with service and apparel employment in the current research. Although service jobs vary greatly (see below), many are linked to formal involvement in modern economic exchanges (e.g. clerks and cashiers), and may offer greater opportunities for autonomy, self-direction, and income than maquila jobs, especially employment in apparel maquilas. Apparel firms are more likely than electronics firms to be small domestically-owned enterprises. Jobs in apparel firms tend to be less stable, more strenuous, more prone to recruitment abuses and less likely to offer amenities such as cafeterias. Supervision is often personalistic, with the employer managing workers in a personal and patriarchal manner. Thus, according to developmentalist theory, electronics employment should have a negative effect on fertility compared to apparel employment, and perhaps compared to service employment. However, it is also the case, according to the selective recruitment thesis, that higher fertility should decrease a woman's opportunities for recruitment into the more prestigious bureaucratically organized electronics industry.

Figure 1 includes additional variables that will be considered in the present research. From the selective recruitment argument comes the hypothesis that marriage will have a
negative effect on electronics employment, due to employers’ discriminatory hiring practices which favor single women. The hypothesis of a positive effect of education on electronics employment is consistent with the developmentalist assumption that women with more education should be better received in modern economic enterprises. The prediction that education should have a negative effect on fertility is similarly consistent with the developmentalist perspective. Marriage and age are included as controls to more properly specify analyses. The number of children a woman has prior to current employment is also included as a control when examining subsequent fertility.

Data

Data are from a 1983-84 survey of 193 working women in Mexicali, Mexico. This was the beginning of a major expansion of the maquiladora industry in Mexico, fueled by the peso devaluations of 1982. It was a period in which labor supply was substantial, thus providing an opportunity for selective recruitment practices to be most apparent if they were operating within the industry. As rapid expansion continued through the 1980s and early 1990s, the increased demand for labor lessened the ability of employers to select particular types of workers, and thus limited the process of selective recruitment (Tiano 1994).³

The sample includes women working in the formal economy, and does not contain full-time houseworkers outside the labor force, or women working in the informal sector.⁴ Although the restricted sample does not provide sufficient variation to thoroughly examine developmentalist arguments, it does provide a mechanism to examine the
selective recruitment hypothesis which focuses on hiring practices involving women seeking formal employment. Employers of women in the present sample likely knew if a women had children, since employees had to list their children to be eligible for state medical care (Ferna'ndez-Kelly 1983). However, even if employers did not have reliable information on a woman's family status, selective recruitment of women without children could occur through other mechanisms, including women with children being less likely to apply for electronics employment because of knowledge of employers' preference for women without children.

The sample of electronics workers came from seven firms located within industrial parks in Mexicali. Interviewers chose women to interview by randomly selecting workers within the industrial parks. Only three persons declined the opportunity to be interviewed. All interviews were done in Spanish by trained interviewers. The same procedure was used to obtain interviews with apparel workers. However, unlike electronics firms, apparel firms were located throughout the city, in industrial parks, commercial districts and even in residential areas. Women from six firms were interviewed. Four women declined to be interviewed.

In selecting service workers, an effort was made to obtain women from a variety of mostly nonprofessional service occupations. There were 24 clerks/cashiers, 17 food service workers, 14 workers in home care, 5 other nonprofessional workers, and 9 semiprofessional service workers. The interviewers would choose businesses randomly within commercial districts, walk into the business and ask the person in the establishment for an interview. Many times the worker was the only person in the establishment. If there were
several employees, the interviewer chose one randomly. While some interviews were conducted at the work setting, others were done in women’s homes. There were no refusals.

**Analyses**

*Preliminary Assessment*

Tables 1 and 2 provide information fully congruent with all relationships in Figure 1. Table 1 presents selected descriptive statistics, while Table 2 presents bivariate correlations. As expected, Table 1 shows electronics workers to be less likely to have a child than apparel or service workers. They were also younger and less likely to be married than apparel or service workers. However, while electronics workers had a higher level of education than apparel workers, their educational level was similar to that of service workers.
<table>
<thead>
<tr>
<th></th>
<th>Has Child</th>
<th>Age</th>
<th>Ever Married</th>
<th>Education</th>
<th>Number of Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electronics Workers</strong></td>
<td>.29 (.46)</td>
<td>22.6 (7.0)</td>
<td>.35 (.48)</td>
<td>7.5 (2.7)</td>
<td>66</td>
</tr>
<tr>
<td><strong>Apparel Workers</strong></td>
<td>.60 (.49)</td>
<td>27.9 (9.4)</td>
<td>.48 (.50)</td>
<td>5.2 (2.3)</td>
<td>58</td>
</tr>
<tr>
<td><strong>Service Workers</strong></td>
<td>.58 (.50)</td>
<td>27.2 (8.4)</td>
<td>.54 (.50)</td>
<td>7.6 (2.9)</td>
<td>69</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>.49 (.50)</td>
<td>25.8 (8.6)</td>
<td>.46 (.50)</td>
<td>6.9 (2.9)</td>
<td>193</td>
</tr>
</tbody>
</table>

Notes:
Standard deviations in parentheses.
N on Education is 57 for apparel workers.
N on Education is 192 for full sample.
Looking at the first row of Table 2 on the next page, one finds the expected negative relationship between electronics employment and having a child, age, and having ever been married, along with the anticipated positive relationship with education. The second row shows the anticipated positive relation between having a child and both age and marriage, as well as the expected negative relation to education. As anticipated, the correlations between apparel employment and the other variables are nearly opposite those for electronics employment. Service employment shows modest positive correlations with having a child, age and marriage, and a significant positive association with education. Combined with descriptive statistics on service workers, the data suggest that educated women may find service employment as desirable as electronics employment. If true, this may reflect the greater personal autonomy available in some service work (see Tiano 1994), and the higher median income of service workers, who earned 23% more than electronics and apparel workers.\textsuperscript{6}
## TABLE 2
Correlations Among Selected Variables

<table>
<thead>
<tr>
<th>Has a Child</th>
<th>Age</th>
<th>Ever Married</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics Employment</td>
<td>-.29*</td>
<td>-.27*</td>
<td>-.16*</td>
</tr>
<tr>
<td>Has a Child</td>
<td>---</td>
<td>.58*</td>
<td>.73*</td>
</tr>
<tr>
<td>Apparel Employment</td>
<td>.15*</td>
<td>.16*</td>
<td>.03</td>
</tr>
<tr>
<td>Service Employment</td>
<td>.14*</td>
<td>.12</td>
<td>.11</td>
</tr>
</tbody>
</table>

**Notes:**
- Has Children. 1 = Has children. 0 = No children.
- Ever Married. 1 = Married, widowed, divorced, separated. 0 = Never married.
- Age. In years.
- Education. Scale from 0 (no education) to 12 (three years of preparatory school, approximately equivalent to high school in the U.S., plus some commercial or technical training); 6 = Some secondary; 8 = Finished secondary.

* = p < .05

Results in Tables 1 and 2 provide useful confirmation of the model in Figure 1.

However, a more accurate assessment of the model is found in multivariate analyses that include a temporal dimension.
Multivariate Analyses

To assess the reciprocal effects of employment and fertility we estimate equations that incorporate time into the analysis. In examining the effects of employment on fertility we consider whether type of employment affects the likelihood of a woman having a child after starting her current job. Since women with several children may be less likely to have an additional child than women with fewer children, we include number of children in the analysis as a control. These analyses also include controls for marriage and age. When we examine the effects of fertility on employment, we assess whether or not having a child prior to one's current job has an effect on the type of employment a woman acquires.

Explaining Employment. Table 3 presents results of logistic and multinomial logistic analyses. The logistic analysis in Model 1 examines factors affecting electronics employment. Model 2 presents results of a multinomial logistic model examining the effects on electronics and service employment, using apparel employment as the reference category. Model 3 examines the effects on electronics and apparel employment, using service employment as the reference category. A one tailed test is employed since we anticipate most relations to be in a specified direction.
## TABLE 3
Logistic and Multinomial Logistic Regressions of the Effects of Lagged Independent Variables on Type of Employment

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Model 1</th>
<th></th>
<th></th>
<th></th>
<th>Model 2</th>
<th></th>
<th></th>
<th></th>
<th>Model 3</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Equation 1</td>
<td>Equation 2</td>
<td></td>
<td></td>
<td>Equation 1</td>
<td>Equation 2</td>
<td></td>
<td></td>
<td>Equation 1</td>
<td>Equation 2</td>
</tr>
<tr>
<td>Had Child Before Employment</td>
<td>b (se)</td>
<td>Odds</td>
<td>b (se)</td>
<td>Odds</td>
<td></td>
<td>b (se)</td>
<td>Odds</td>
<td></td>
<td>b (se)</td>
<td>Odds</td>
<td></td>
</tr>
<tr>
<td>-1.01* (.51)</td>
<td>.36</td>
<td>-.87 (.62)</td>
<td>.42 (.54)</td>
<td>.10</td>
<td>1.10</td>
<td>-1.12* (.57)</td>
<td>.32</td>
<td>-.25</td>
<td>.75</td>
<td>(.61)</td>
<td></td>
</tr>
<tr>
<td>Ever Married</td>
<td>.47 (.47)</td>
<td>1.60</td>
<td>.74 (.58)</td>
<td>2.10</td>
<td>-.51</td>
<td>.60</td>
<td>.25 (.55)</td>
<td>1.28</td>
<td>-.51</td>
<td>.60</td>
<td>(.57)</td>
</tr>
<tr>
<td>Age</td>
<td>-.06* (.03)</td>
<td>.94</td>
<td>-.04 (.03)</td>
<td>.96</td>
<td>-.03</td>
<td>.97</td>
<td>-.07** (.03)</td>
<td>.57</td>
<td>-.03</td>
<td>.97</td>
<td>(.02)</td>
</tr>
<tr>
<td>Education</td>
<td>.05 (.06)</td>
<td>1.05</td>
<td>.28** (.08)</td>
<td>1.32</td>
<td>.40**</td>
<td>1.49</td>
<td>-.12* (.08)</td>
<td>.62</td>
<td>-.40**</td>
<td>.67</td>
<td>(.09)</td>
</tr>
<tr>
<td>2 Log L</td>
<td>20.94</td>
<td>Likelihood Ratio</td>
<td>270.49</td>
<td></td>
<td>270.49</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>8</td>
<td></td>
<td>8</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>192</td>
<td>192</td>
<td></td>
<td>192</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Notes: * = p ≤ .05 (one tailed)
** = p ≤ .01
Analyses in Table 3 generally support hypotheses that younger women, and women without children, are more likely to be employed in electronics work. Both age and having a child exhibit significant negative effects on electronics employment in Models 1 and 3, and nonsignificant negative effects on electronics employment in Model 2. The odds of an electronics worker having a child prior to employment are only 36% that of an apparel and service worker in Model 1. For each year of age the odds of a woman obtaining electronics employment are reduced by 6% in Model 1. Similar odds are found in Models 2 and 3.

Education shows a complex relation to employment that is generally congruent with expectations. Model 1 shows that education does not have a significant effect on electronics employment when compared to apparel and service employment. However, Model 2 shows that education has a significant positive effect on both electronics and service employment when compared to apparel employment. The odds of being employed in electronics versus apparel enterprises are increased by 32% (1.32) for each unit increase in education (see Table 2 for a description of the scale). However, the odds of being employed in service versus apparel industries are even greater. For each unit increase in education the odds of being employed in service jobs increase by 49% (1.49). The greater influence of education on service employment is evident in the significant negative effect of education on electronics employment versus service employment found in the first equation of Model 3.

Table 3 suggests marriage may be unrelated to type of employment, as no effects are statistically significant.
Table 4 further illustrates results in Table 3 suggesting that women without children are selectively recruited into the electronics industry. The table presents the proportion of women with children for each transition category between prior employment and current employment.

**TABLE 4**
Proportion of Women With Children Prior to Transition to Current Type of Employment By Prior Employment Status

<table>
<thead>
<tr>
<th>Current Employment Status</th>
<th>Electronics Employment</th>
<th>Apparel Employment</th>
<th>Service Employment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prior Employment Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronics Employment</td>
<td>.50</td>
<td>1.00</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>12% (8)</td>
<td>2% (1)</td>
<td>6% (4)</td>
<td>7% (13)</td>
<td></td>
</tr>
<tr>
<td>Apparel Employment</td>
<td>0</td>
<td>.70</td>
<td>.60</td>
<td></td>
</tr>
<tr>
<td>2% (1)</td>
<td>17% (10)</td>
<td>7% (5)</td>
<td>8% (16)</td>
<td></td>
</tr>
<tr>
<td>Service Employment</td>
<td>.30</td>
<td>.47</td>
<td>.50</td>
<td></td>
</tr>
<tr>
<td>30% (20)</td>
<td>26% (15)</td>
<td>49% (34)</td>
<td>36% (69)</td>
<td></td>
</tr>
<tr>
<td>Outside of Labor Force</td>
<td>.14</td>
<td>.29</td>
<td>.36</td>
<td></td>
</tr>
<tr>
<td>44% (29)</td>
<td>25% (14)</td>
<td>32% (22)</td>
<td>34% (65)</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>.25</td>
<td>.41</td>
<td>.50</td>
<td></td>
</tr>
<tr>
<td>12% (29)</td>
<td>30% (17)</td>
<td>6% (4)</td>
<td>15% (29)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>.24</td>
<td>.45</td>
<td>.48</td>
<td></td>
</tr>
<tr>
<td>100% (66)</td>
<td>100% (57)</td>
<td>100% (69)</td>
<td>100% (192)</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Each cell includes:

- **Proportion with a child**
- **Column % (Number)**
Comparing each column of Table 4 one finds that the percentage of women with children moving into electronics employment is always lower than the percentage of women with children moving into either apparel or service employment. The first row of the first column of Table 4 indicates that half (.50) of the eight electronics workers whose prior job was also in electronics had a child when they entered their current electronics job. This is lower than the 1.00 and .75 figures for women moving from electronics employment into apparel and service employment respectively. The second row of the first column shows that the one woman who went from apparel to electronics employment did not have a child (.00). This is lower than the .70 and .60 figures for apparel workers who went into apparel or service employment. In a like manner 30% of the 20 women moving from service to electronics employment had children, compared with the larger figures of 47% and 50% for service workers moving into apparel and service jobs. Perhaps most important for the selective recruitment argument is the finding that only 25% of the 29 women entering electronics employment from outside the labor force had a child, whereas 41% and 50% of new workers going into apparel and service jobs had children.

Explaining Fertility. Table 5 on page 25 shifts attention to explore whether type of employment has an influence on subsequent fertility. The table presents results of logistic regressions examining the effects of independent variables on whether a woman had a child after starting her current type of employment. If her current employment was her first job then we are examining whether she had a child after starting that job. If she had a prior job of the same type, then we are considering whether she had a child after starting the prior job. If her prior job was different from her current job, then we are examining whether she had a child after starting her current job.
Equation 5a represents appropriate portions of the model in Figure 1. As is clear, type of employment apparently has no effect on whether or not a woman gave birth to a child after she started work at that type of job. The parameter estimate for electronics employment is nonsignificant and opposite from expectations. Service employment is also far from statistical significance. Number of children exhibits the anticipated negative effect, while having ever been married and age show the anticipated positive effects.

A surprising result in equation 5a is the lack of a significant negative effect of education on fertility, an effect found in much research on fertility (Hirschman 1994; Dreze and Murthi, 2001), and reflected in the negative correlation in Table 1 (see Axin and Barber, 2001 for a recent review and analysis). Equation 5b in Table 5 reports an analysis that attempts to clarify this unanticipated outcome. In trying to understand this issue we reasoned that while education should be expected generally to have a negative effect on fertility, it is possible that for some older, educated, childless women, employment could provide helpful resources to start a family. The failure to control for such women could obscure a more general negative effect of education. Equation 4b includes an interaction term estimating the effects of being older, more educated, and without a child. The interaction term shows a significant positive effect on having a child. The parameter estimate for education increases substantially and becomes statistically significant, while parameter estimates for the control variables of number of children and age drop below statistical significance. Collinearity likely does not pose a problem, since the standard errors remain stable and the strongest correlation between the interaction term and other variables is .67. Unreported analyses using two-way interaction terms produced anticipated results, but were less statistically significant. Additionally, these two-way interaction terms exhibited higher correlations with other independent variables (i.e., .80 and .76), posing possible collinearity problems.
**TABLE 5**
Logistic Regression of the Effects of Lagged Independent Variables on Having a Child After Starting Employment

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Had Child After Starting Employment</th>
<th>Equation 5a</th>
<th>Equation 5b</th>
<th>Equation 5c</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>b (se)</td>
<td>b (se)</td>
<td>b (se)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Odds</td>
<td>Odds</td>
<td>Odds</td>
</tr>
<tr>
<td>Electronics Employment</td>
<td>.18 (.66)</td>
<td>1.20 (.67)</td>
<td>.32 (.69)</td>
<td></td>
</tr>
<tr>
<td>Service Employment</td>
<td>.63 (.58)</td>
<td>1.88 (.61)</td>
<td>.88 (.62)</td>
<td></td>
</tr>
<tr>
<td>Ever Married</td>
<td>2.14** (.57)</td>
<td>3.50 (.61)</td>
<td>1.51** (.63)</td>
<td>4.53 (.63)</td>
</tr>
<tr>
<td>Education</td>
<td>-.04 (.09)</td>
<td>.96 (.18)</td>
<td>-.5** (.19)</td>
<td>.64 (.19)</td>
</tr>
<tr>
<td>Number of Children</td>
<td>-.62** (.21)</td>
<td>.54 (.23)</td>
<td>-.30 (.24)</td>
<td>.80 (.24)</td>
</tr>
<tr>
<td>Type of Employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.10** (.03)</td>
<td>1.10 (.04)</td>
<td>.03 (.05)</td>
<td>1.03 (.05)</td>
</tr>
<tr>
<td>Ed. * Age * No children</td>
<td>.012** (.005)</td>
<td>1.13 (.005)</td>
<td>.011* (.005)</td>
<td>1.12 (.005)</td>
</tr>
</tbody>
</table>

-2 Log L: 35.70 44.65 20.27

Notes: * = p ≤ .05 (one tailed)
** = p ≤ .01
One problem with the assessment of older, educated women without children is the possibility that a small number of women in these circumstances might substantially shape results. To control for the influence of a few high scoring women, analyses were redone after eliminating women scoring one standard deviation or more above the mean on the interaction term. The results presented in equation 5c show little change from equation 5b, suggesting the findings are systemic, and not the product of a few substantively important women in the sample.

Conclusion

The current research has used multivariate techniques to examine the reciprocal relation between type of employment and fertility among a sample of women working in Northern Mexico in the mid-1980s, a time at which the composition of the maquila work force was similar to that of export zones in most regions of the world. Drawing on both developmentalist and selective recruitment arguments, analyses found support for hypotheses suggesting that fertility may shape the type of employment a women acquires, yet little evidence that type of employment shapes subsequent fertility. More specifically, results indicate that the present sample of women found their way to their current job in part through a process that disproportionately led younger women, and women without children, into electronics employment. Whether by the conscious design of the employer, the decisions of workers, or some combination of the two, childless women were selectively recruited into electronics employment from a variety of prior employment situations.

Education showed the anticipated effect of lowering fertility, while at the same time leading women into electronics and service employment. Although education’s positive impact on
electronics employment was predicted in the original model, its positive effect on service employment was not anticipated, particularly because the effect appears stronger for service employment than for electronics employment. The greater autonomy and income of jobs in the service sector may be the reason for their appeal for women with sufficient education to enjoy a range of employment options.

This study illustrates the utility of both developmentalist and critical feminist perspectives as orienting strategies that help explain the dynamic interplay of productive and reproductive relations in developing societies (see also Cravey 1998). Although the character of the data and the perspectives did not allow for a definitive test of either view, the effects of education were congruent with a developmentalist approach, while various findings supported the selective recruitment thesis of a critical feminist approach.

Further work within a developmentalist perspective might take note of this study’s confirmation of the often found negative association between more modern employment and fertility, as well as the negative effect of education on fertility. While our data were unable to fully evaluate developmentalist arguments regarding the role of paid employment in lowering fertility, they suggest that continued empirical and theoretical work trying to clarify the effect of type of employment on fertility could be informative. Future work within a critical feminist framework might take note of current findings suggesting that selective recruitment into electronics employment was operating, and direct attention to uncovering the manner in which the process is activated, not only by employers, but also by the choices of potential employees. Relatedly, attention should be directed to assessing the role of child care responsibilities, as well as employment availability, in directing a woman’s efforts to pursue particular types of occupations.
Lastly, the present study illustrates the importance of considering the complexities of human behavior and social action that some analysts place under the rubric of agency (see Fuchs 2001), and that constitutes a central theme of Peña’s (1997) work on Mexico’s maquiladoras. In trying to clarify the effects of education we were led to the interesting finding that older, educated women, with no children, were more likely to have a child after entering their current type of employment. This result was not anticipated in either of the theoretical perspectives that were examined, yet is congruent with unreported data showing that many women in the study viewed themselves as autonomous agents in charge of their own destinies (see Fiala and Tiano 1991).
Notes

1. The Republic of Korea differed somewhat from other countries by showing a significant positive effect of traditional employment on fertility. However, the Republic of Korea still exhibited the pattern of other countries by showing a significant negative relation between fertility and modern, transitional, and mixed occupational employment.

2. Education has also exhibited an unanticipated positive effect on fertility in some developing countries (Gomes 1984; Olusanga 1971; Cleland and Rodríguez 1988). In an informative examination of this issue, Cleland and Rodríguez (1988) found that within predominantly rural countries, a few years of primary schooling has a positive effect on fertility, largely due to its association with a reduction in traditional mechanisms of birth control -- breast feeding and post natal abstinence. However, when primary school is completed, greater use of other mechanisms of birth control comes to override the reductions in traditional means of birth control.

3. Begun in 1965 as part of the Border Industrialization Program, the maquiladora industry increased from 57 plants employing over 4,000 persons in 1966 to 455 plants employing over 90,000 persons in 1974 (Stoddard 1987). Increased costs of labor and economic recession halted growth between 1974 and 1978, yet between 1979 and 1982 there were signs of modest growth. In 1982 there were 585 plants employing over 127,000 workers. The peso devaluations of 1982 provided the impetus for sustained expansion throughout the decade, leading to 1,279 plants employing nearly 330,000 workers in 1988 (Sklair 1989).
4. This sample limitation precludes a thorough analysis of the relationship between labor force participation and fertility, and provides less than optimal variation in many variables. A comprehensive assessment of the developmentalist hypothesis would examine the effects of formal labor force participation, in addition to type of employment, on women's fertility. This would require a sample comprised of informal sector workers, and full-time houseworkers, in addition to women in the formal labor force.

5. All analyses were redone excluding the semi-professionals with no substantive change in results.

6. These income and educational differences remain even with the nine semi-professional workers deleted from the service category. With the semi-professionals deleted, mean education becomes 7.3, while median income becomes 20 percent greater than median income for apparel and electronics workers.

7. Equations were also estimated using a polynomial specification to assess a possible curvilinear relation in which women with few children would be more likely to have a child than women with no children or many children. Results indicated the linear relation was more appropriate.

8. Having a child after current employment was measured by seeing whether the age of a woman's youngest child was less than the length of her current employment. Having a child before current employment was measured by seeing if a women had a child with an age greater than the length of current employment. Since data provided information on the age of a woman's children and length of a woman's employment was recorded only in years, the measures for having a child before or after employment are far from precise. For
example, a woman may have been employed for 3.2 years and have a child 2.8 years old, placing her in the category of women employed before the birth of her child. However, her 2.8 year old child was clearly conceived before she was employed, and it is the decisions around conception that are most relevant to developmentalist arguments. Alternatively, a woman may have been employed 3.9 years, and have had a 3.1 year old child at the time she was interviewed. Clearly, she was not even pregnant when first employed, and selective recruitment of women without children could have helped her obtain her job. To reduce these problems, more conservative measures were created that defined having a child before being employed as having a child with an age at least two years greater than the length of employment, and defined having a child after employment as having a child with an age at least two years less than the amount of time employed. Results of analyses using these more conservative measures differed very little from results in Tables 3 and 4.
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