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ABSTRACT

The quantitative model presented in this paper employs 5 estimated equations involving fertility, female employment, age at marriage, husband's income and family income as endogenous variables. The model features a threshold hypothesis apropos fertility and wife's employment: the marginal effects of income and educational level are positive or negative depending on whether or not these variables fall below certain thresholds.

Empirical verification was focused on a cross section of households drawn from the 1973 National Demographic Survey. Separate parameter estimates were done for an all, rural and urban samples.

The findings for the all and rural cases showed education of the wife as a key factor in lending a negative effect on fertility beyond certain income and education thresholds and a positive effect on the wife's participation in market activities above an income threshold. The findings highlight from a policy viewpoint the need for pushing the education threshold to zero such that more years of schooling will invariably lead to lower family size and increased market participation of the wife. For the urban case, we are led to conjecture that the negative marginal effect of education on fertility is felt at lower years of schooling than in the rural case.

Income, Education, Fertility and Employment:

Philippines 1973* and gatern babbas. doc

by Dante B. Canlas and José Encarnación, Jr.

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. 1. Introduction the same of the second selection of the sel

The aim of this paper is to replicate and extend a previous study (Encarnación 1974) by using a data file from the 1973

National Demographic Survey (NDS). To account for interrelationships

among marital fertility, female employment, family income and

wife's education, we construct a recursive model involving five

estimated equations with a measure of fertility, husband's income

and family income, the wife's age at marriage and her employment

as dependent variables.

In that earlier study of quantifiable determinants of marital fertility and labor force participation in the Philippines, Encarnación (1974) tested the hypothesis that the marginal effects of family income and of educational level on fertility are positive or negative depending on whether or not these variables fall below or above certain thresholds: if we suppose a subsistence level of family income below which the health of the mother must be deemed

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Computations were done at the University of the Philippines Computer Center by Carson Ho. The authors are also grateful to the Council for Asian Manpower Studies for research support.

substandard, rising levels of income and more years of schooling of the wife below an education threshold enable her to gain better health and thus would have positive marginal effects on fertility; beyond the thresholds, higher opportunity cost of the parents time is likely to induce a negative substitution effect which outweighs a positive income effect.

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aginesoi se with regard to labor force participation, the hypothesis was that the marginal effect of education as a proxy for the wife's earning power is negative when the husband's income is below a family income threshold. More hours of work would be supplied on the market by a woman if her earning power is lower, since the family as the decision-making unit would attempt to reach the subsistence level of income. Above the threshold, the marginal effect could well be positive because of a dominant substitution effect રક**ા દે**ણસોડો દેવ in favor of labor supply to the market. Using a sample drawn from olow he will be the 1968 NDS, the empirical results supported the hypothesis. Some aspects of these findings for the Philippines appear to be in con-1 11 11 a ton its . trast to those found in developed countries, but only because in-โทย (ค.ศ.) และเมษาย์กรมที่ การครางเมื่อ comes are higher in the latter. exmostrible of Emiliana care seid for entrolling the walked into a few world.

countries typically point to a negative relationship between family size and income, although Becker (1960) argued that one should expect a positive relationship between income and fertility if the

level of contraceptive knowledge is held constant. 1/Other studies following his have concentrated on explaining the observed negative association (see, e.g., Mincer 1963, Willis 1973, Michael 1973). One finding running through these studies is the presence of a large negative price or cost effect dominating a positive income effect in the demand for children.

The evidence from time series also shows an inverse relationship between fertility and per capita income in the economically developed parts of the world. Since growth in real income is usually accompanied by growth in real wages, this empirical result is interpreted as indicative of a stronger substitution effect against children. Within a demand-analysis context, an increase in wages represents an increase in the opportunity cost of parents' time spent in child rearing (especially the wife's). The negative , แองโล**อศออง** โดย เ นอื่นรุ่นมาสุดมาเอก วันออมร association between income and fertility reflects the presence, it ellown trum crossis argued, of a substitution effect which outweighs the income rodeta belir es in Labinoteld com effect. to killed molitari serise si asserbar melabas maso i kiro a bareri.

wife's education and fertility across households. If household decisions pertinent to fertility can be organized along a time allocation framework, the cost of time hypothesis may appear to be a plausible explanation. This argues that more years of schooling, other things equal, is associated with a higher opportunity cost of

women's time in terms of market earnings foregone. This raises the relative price of children who are assumed to be intensive in the mother's time, thus imparting a substitution effect away from children. (Other hypotheses to explain this negative correlation between fertility and education will be reviewed in section 2.)

These findings for developed countries do not seem to hold when incomes are below subsistence levels. Encarnación's findings for the Philippines (1974) showed support for the hypothesis that below subsistence levels and at a low educational level of the wife, the marginal effects of income and years of schooling on the number of children ever born are positive. The significant and negative influence of education is felt only beyond a certain threshold.

100 1116 Constraint Herman St. P. Regarding the labor force participation of married females of the second problems of the acin modern economies, there was initially an apparent contradiction anterior of the state of ersk oof homen. between the evidence from time series and that shown from cross-The Arma Property Specific Specific Control section data. In the United States for instance, historical evidence showed a continuing secular increase in participation rates of females, including those married, along with a growth in real income (Mincer 1962, p. 640. However, there were cross-section studies involving areal and family income data regressions which showed a negative relationship between income and labor force participation of married females. Mincer's study (1962) was an attempt to uncover the reasons behind the observed negative association in cross-section data and

reconcile the apparent contradiction. By incorporating a price variable in addition to an income variable to capture the opportunity cost of the wife's time spent in nonmarket activities, the empirical results from his cross-section estimation showed a positive price effect on labor supply which outweighed the negative income effect. He also found that the negative relationship was caused mainly by the transitory component of current income and when removed, as in long-run time series estimation, the inverse relationship between income and labor force participation tended to disappear. Other cross-section studies following his also suggest a positive relationship (e.g. Cain 1966, Ashenfelter and Heckman 1974).

For the Philippines, Encarnación (1974) found evidence controva bindo no metallaca san francismo (1974) found evidence controva bindo no metallaca san francismo coda notroma del control de that at low income levels, the marginal effect of more years of control of the marginal effect of more years of schooling of the wife on her labor force participation is negative while the positive price effect (with education as a proxy for of about 1991) access to the effect (with education as a proxy for earning power) is observed only beyond a certain income threshold.

various economic hypotheses regarding fertility and labor force electron related validations in incomparate laterands and labor force participation and draws from other related studies which suggest discussed with the entire that the electron of the elec

the notation used. Section 4 presents a simultaneous equation model the regression results of which are given in section 5. Section 6 makes some concluding remarks and suggests some areas for further research.

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2. Theoretical Considerations

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2.1. Fertility, Income and Education

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The recent economic literature analyzing fertility is an application of the theory of consumer behavior to the demand for children. The point of departure for this approach is the view that the household, as the relevant decision-making unit, maximizes a utility function whose arguments are children or child services and a composite of other goods subject to income and time constraints. This approach, whether formulated in the classical way or in the household production function framework of Becker (1965), leads to a set of testable hypotheses on such variables as fertility, income and education.

This choice-theoretic framework of fertility behavior treats children as economic goods and points to full-income as the relevant income constraint. The latter involves the household's vector of wage and nonwage incomes. Changes in the wage rates of some members of the household, all other things held constant, can affect the

relative price of children. Mincer (1963) and Becker (1965) pointed out that the full price of children entails both direct (such as outlays for childrens's food, clothes, etc.) and indirect costs (e.g. opportunity cost of time involved in child rearing). The direction of the effect of a change in income on child quantity cannot be deduced a priori from this economic framework but would depend on the sources and the relative strengths of certain price and income effects.

The theory predicts that if the compensated change in income emanates from nonwork income, then there will be a pure positive income effect on child numbers. If the change is brought ÷Gagger ⊃ samsμ∐ about by a change in wage rates, price effects are involved and the safe in guilform effect on child numbers would depend on the relative amount of time the parents put into child-related activities. If child rearing is are breating the more time intensive than other activities the parents can engage in, then there will be a substitution effect away from children. It is usually held that the substitution effect induced by an increase a contract the break in the wife's wage rate exceeds the income effect, the assumption being that child rearing is more intensive in the mother's time than her other activities. On the other hand, the substitution effect of an increase in the husband's wage rate is expected to be aunimo il serie die di weaker than the income effect if he puts in less time for child the order by think with the 25th and care than in his other activities. In empirical estimation the

coefficient of the wife's wage rate is expected to be negative, while that of the husband is positive. 2/

Constitution of the second Curry Holder to the To trace the influence of education on fertility within of address a factor of themselves in the masse with carrier as an economic framework, several economists in the last decade have vir. grus Tili - Abd The state of the state of the state of relied on Becker's formal model of time allocation as an analytic one 🕺 est a compete a programme de la compete de la compete de la compete de la mondida framework (see, e.g., Willis 1973, Michael 1973, De Tray 1973 and Ben-Porath 1973). $\frac{3}{}$ There are three prominent hypotheses in this Let to Michigan 1991 a 1995 a 1995 and the regard which carry implications about the possible effect of education on fertility: cost of time, cost of fertility regulation, and child quality-child quantity interaction.

The cost of time hypothesis traces the influence of educaot Paris<mark>oj</mark>e i suka ogaze er for the Marie of the Marie o tion on fertility through the effects of years of schooling on the early to terretory with an increase banquity through a great to value of time of household members. Several studies on human I to the same of the Same of the second of the second capital present evidence that more years of schooling increase 理機能 東京 stroper and the art to be the configuration to one's market productivity, money wage rate and thus money income. 177 and the second of the second 474 1 21 If children are economic goods, then there is an education - induced Sugar Large got described an army of the party of the second of the contract of income effect on the demand for children. However, there is also a na maganish safat yake isi ili maga safa ing lisi sata saga kalabi ili ili sa substitution effect away from children since a higher wage rate is with a made an exist an experience of any of surely of the experience of linked to a higher opportunity cost of one's time. It has been and the literate with committee the second of the control of the c argued that education also raises one's nonmarket productivity (see of it before any origin on a bill a bill. Michael 1972). One expects a reallocation in the time of other before the point exist of home or in home his continued to him household members as a result of a change in the value of time of it access, see this engine a structure soit is signed as some a particular member. This depends, other things equal, on the relative strengths of productivity increases between market and nonmarket activities. Consider the wife as an example. If the effect of more years of schooling is to raise her market more than her nonmarket productivity then she tends to reduce time intensive nonmarket chores. Children are typically assumed to be intensive in the mother's time. If no adequate substitutes can be found for ered on a vice william I am a laborate force? the mother's time in child care, then we expect a substitution effect reactal abreval, a liked quality equantity into secolor or or as per away from children. In empirical verification in the U.S., the rising cost of the mother's time has been the key explanation for notliacar bedget čomatralar 🚉 🥫 the observed negative relationship between education and to the state of th fertility. on the water weesth of the field we to be the

Another channel by which education can possibly affect
fertility is its influence on the cost of fertility regulation. If
fertility control is one of the productive activities of the household then education can affect this activity either by lowering
information cost or by affecting the marginal productivity of
various inputs used to produce a lower probability of conception.

Thus if more educated couples are faced with a lower information
cost and are more efficient in the use of contraceptive techniques,
these mean a lower cost of fertility regulation ceteris paribus.

Faced with this lower cost, more educated couples would choose to
produce a lower probability of conception. Over time, they would
expect lower fertility. Alternatively, if one considers a shadow

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price for fertility regulation and defines the cost of an additional child as equal to the cost of raising the child minus the cost of avoiding a hirth, lower contraception cost raises the cost of an additional birth and would lead to a lower quantity demanded of children.

The link between education and fertility has also been The magnification of the month of the magnification of the magnification and the magnification framework a balan di kacamatan madan. History polytority. (notably Becker and Lewis 1973, De Tray 1973). By introducing a nonlinear budget constraint in a utility-maximizing model, Becker mount of the and Lewis derived shadow prices for child quality and quantity. They show that the shadow price of child quality depends on its own price and monotonically increases with child numbers. Similarly, the shadow price of quantity depends on its own price and is monotonically related in the same direction with the level of child quality. Hence if an increase in the parents' education lowers the price of child quality, 5/more educated couples will choose more child quality (which raises the shadow price of child quantity) and thus less children. Alternatively, if the price of child numbers goes up, then the shadow price of child quantity goes up inducing a price effect away from quantity. This leads to a lower price of child quality and increases the level of quality demanded.

The appeal of this economic theory of fertility behavior worked a construction of the construction of the

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implications which are testable. Its static formulation has its obvious limitations but it has been useful in pinpointing cause and effect relations among different sets of variables. However, the pure utility-based theory of fertility behaviors because of its inherent tendency to ignore health and biological considerations and socio-cultural factors, is unlikely to explain much of the observed variation in fertility especially among less-developed countries. Easterlin (1975) has cited the tendency of economists to ignore natural fertility and has argued that in pre-industrialized societies, it is the factors affecting natural fertility that may explain observed fertility variations within certain ranges and a Encarnación (1974) argued that below subsistence levels of income, rising incomes enable the mother to acquire better health and up to some point may lead to a positive income-fertility relationship. Leibenstein (1974) proposed a broader socio-economic theory of og dalle en le programme e fertility and argued that as development proceeds, "economic changes effects of the web or were of the first of femality: there is are accompanied by other changes which transform the socio-cultural e engles . Ist lev stranger all tel to smeat this contration of props to high fertility" (p. 453). People move out of certain zijast sar istevoi iperiteli i sit da iblodusma modisca a svodo socioeconomic groups into others each with its own consumption is likely to ladeay to the source group over it the works. standards. Leibenstein also noted that "to undertake commitments office and the level are discould real pre-condition of example to support one's family at a certain standard may involve a targetgailochta aon - aitear rober ; lliast ar east dea tract the oriented behavior pattern and a sense of increasing marginal et ebroi masse deserve dire**sto d'Es**e e rottodico tolle utility until the target is achieved" (p. 454).

had a crumal condition of engle of abservable and lagher income

A theory of fertility behavior extended to include supplyrelevant factors and socio-cultural considerations may provide an
analytical base for the hypotheses that we want to test. There is
a threshold level of income such that below it, the effect of rising
incomes on fertility is positive. As living standards improve
below the threshold, the mother has better nutrition thus heightening her natural fertility. Moreover, the probability of stillbirths and miscarriages is relatively high at low income levels and
faced with these prospects a couple tends to have little motivation
to limit births. Above the threshold, the expected effect of
rising incomes could well be negative. Confronted with new consumption standards, there is a tendency to increase expenditures
per child, and the effect of rising income would be to induce a
substitution effect against children.

A corollary hypothesis that we want to test involves the ROBANGE DEGREE - LEED NO DE CAMPAGE DE PROPERTIE DE LE REPUBLIE DE LE REPUBLIE DE LE REPUBLIE DE LE REPUBLIE D effects of the wife's years of schooling on fertility: there is in region-en two to the first residuing the table and the section of the region of the section o a qualitative difference if her educational level falls below or allowers the second of the sec above a certain threshold. At low educational levels, the family this paper but lower the first is no promise rather records a produce of the is likely to belong to a low income group even if the wife works. etrostissio sufative in talt boto: L. director de conference In such an environment, her educational level may have little to suppose one of materies are established the second of the target additional relevance to fertility except insofar as more schooling Interest Caleboar of the Court of Bar on the contract before the has an effect on better health practices which in turn leads to . (we' # The text with the six transfer that Edition grations higher natural fertility. At higher education levels and higher income

In 1990 the ready, we agone paper to desproye to the fire

levels above a subsistence level, we expect that the effect of more years of schooling is a higher opportunity cost of the wife's time in terms of foregone earnings and this should have a negative effect on fertility. In brief, the hypothesis is that there is d'threshold level of the wife's education such that below it the effect of more years of schooling on fertility is positive (or possibly zero) while above it the effect is negative.

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2.2 Labor Force Participation, Income and Education

Hitopropio de real escalo aktilo de la casa de la

An analysis of market labor supply provided by married women which extends the traditional work-leisure dichotomy to WOOD - 35include time for housework may provide possible insights into the The transfer with work-decision of the wife. In this broader framework initially edt to breadh and be we virge a social a section and suggested by Mincer (1962), it was argued that if hours spent in the ernsills . Har market is to be derived in a residual fashion, one has to consider not just "leisure" but hours spent in housework as well. As formulated by Becker (1965), the household maximizes a utility function subject to production and time constraints. The maximization procedure yields as an equilibrium condition the marginal cost of a commodity (which involves time in consumption and production) as the sum of direct outlays (i.e. cost of market goods) and indirect costs (foregone earnings). Indirect cost is further divided into that resulting from the allocation of goods and that resulting

of Nerva al course deserted in the sound of the sound in the sound of the sound of the sound

from the allocation of time. This framework has been used to analyze the possible effects of income or earnings on labor force If the income increase is due solely to an increase participation. in nonwork income, there is no change in relative prices and there will just be a pure income effect on the consumption of all normal commodities. Hours of work would decrease since total hours spent on consumption would increase. On the other hand, a change in the earnings or wage rates would affect relative commodity prices since different commodities would involve different levels of foregone There will be a shift away from time-intensive commodi-医视点 等点 海绵坚护 與一种 ties if there is a compensated rise in earnings. A shift away from 10.41 or grangy, by the shapter from Armon, those commodities would result in a lower amount of time spent in con-STAN STANDARD BEING AND SELECTION ម្រាំ បានសម្រាស់ ម៉ាងរៀបប sumption and thus an increase in the time spent at work. The net and it transformed that each is the contract of the contract o effect of an income change on labor supply would thus depend on the អ្វីដែលមានដែលម្នាក់ សង្គារប្រជាជនជាក់ សង្គារប្រជាជនជាក់ មាន TO TABLE OF TABLE OF SERVE resultant of the two opposing income and substitution effects. Section 18 This

There is an emphasis above on the role played by marginal considerations in determining the allocation of time among various activities. Such considerations would not seem to be unreasonable in the decision-making of families at above-subsistence income levels. However, the situation may be quite different in the case of families at below subsistence levels. We expect that the smaller is the husband's income here the more likely is the wife going to work. Additionally, the wife is more likely to work if her education level is lower (because her wage rate is lower), simply in order to

increase family income towards the subsistence level. Beyond this target level of income, it could well be that the substitution effect induced by an increase in the wife's wage rate against time intensive commodities will outweigh the income effect. Our hypothesis, therefore, is that there is a threshold level of income such that the effect of more years of schooling of the wife (as a proxy for her earning power) on her decision to work is negative when the husband's income is below the threshold. Above the threshold, it could well be positive.

ging and to a will a grown to the limit were a least to a sample of the same and Notation

Our sample is drawn from the 1973 National Demographic

Survey, a nationwide stratified random sample of 8,434 households

which contains economic and demographic information at the household and individual levels.

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To test the hypotheses discussed in the preceding section, our sample is limited to single-family households, consisting of a couple and any unmarried children living with them, possibly including unmarried relatives but excluding parents or grandparents of either spouse. The wife was married only once with husband present and was under 45 years of age at the time of the survey. We included only households which yielded full information on a set

of variables pertinent to the study, e.g. educational levels of the husband and wife, incomes of the husband and wife, age of wife and husband, number of children born alive and work status of the wife. This selection process yielded 2,342 observations of which 682 are urban and 1660 are rural. This sample possibly comes closest to the theoretical constructs of a model of household be havior where decision-making pertaining to family size and labor force participation rests mainly on the couple.

A similar selection process was used in (Encarnación 1974) and Table 1 presents a comparison of the mean values of certain variables. Table 2 gives the wife's age-distribution for the 1968 and 1973 surveys. The distribution shows a lower mean age of the wife for 1973 as compared to 1968. For 1973, the mean age is about 30 and for 1968, it is approximately 34. This age difference partly serves to explain the differences in some of the mean values of certain variables like the number of live births the woman has had.

AM of age of woman when she got married, in years

-CWK = laif the woman belongs to age-cohort K and O otherwise where K is coded as

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4 = age 15-19
                                                                                                                                                                                                                                                                                                                                            Care - P , Chare : 200
                                                                                                                                                                                                                                                                                                                                          5 = age 20-24
                                                                                   6 ∰vage: 25-29 The lower late and Fig. 2 states a redain 11 of
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                                                                                   7 = age 30-34 | safet odd .to) sapia .to ...
                                                                                  tymp:=:age:40-44 -- fg to see -- to lead to the file of the file o
                                            Agricus selection for a first of fixed and a recovery for the contraction
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1. 61
               \{CW\} = (CW5, CW6, CW7, CW8, CW9)
                                                                                                                                el te ku Kaa i meed
                                                                                                                                                                                                                                                                                                                                         The second of the second
             EHK = 1 if the educational level of the husband is K and
                                                                                                                                                                                                                                                                                                                                          arak maka Jasara
                                                                                0 otherwise, where K is coded as: (3.23) \times (3.23) \times (4.23) \times (4.
                                                                                0 = no schooling
             -date of communication of the property of the communication of the property of the communication of the communicat
                                                                                1 = finished 1 to 4 years of grade school
                                          shooms the first one light that throughold
                                                                                                                                                                                                                                                                                                                                                                                             o kwa£ waradaka
                                                                                2 = finished 5 to 7 years of grade school
                          vilue was if it is in a common common this represented the annual
                                                                               3 = finished 1 to 3 years of high school
             aridized bus agen number office out that all modern of the amount agent
                                                                               4 = high school graduate
                           250 loss dorder the year of the paper. It edituated for prince
                                                                              5 = finished 1 to 3 years of college
                          may a series of the first of the series of the series and a series of
                                                                               6 = college graduate
                                                     aft de sans over a transfer of earth of three-oft around odd an
            {EH} = (EH1, EH2, EH3, EH4, EH5, EH6) NHY THE WAR COLDEN
          EWK = 1 if the educational level of the wife is K and O other-
wise, where K is coded as in EHK continues of the continu
       {EW} = (EW1, EW2, EW3, EW4, EW5, EW6)
      EWN = min(0, EW (V) 1.5), or a steady of a steady and the steady of the 
         EWX = max(0, EW - 1.5) bindered a second major example but we
         FY = annual family income, in thousand pesos
```

= min(0, FY - 2.5)FYN

FYX $= \max(0, FY - 2.5)$

= age-cohort number of the husband which takes values 4, 5, KH 6, 7, 8, 9, 10 where 4 is for age 15-19 and 10 is for age 45 and above (cf. the coding for CWK)

= 1 if the wife is working and 0 otherwise LPD

= 1 if location of residence is urban and 0 if rural

= number of children the woman has had (live births only) NB

Control Control (South Control

 \mathcal{A}_{ij}^{ij} . \mathcal{A}_{ij}^{ij} = annual income of the husband, in thousand pesos YH erid 🔐

= min(0, YH - 2.5)

YHX $= \max(0, YH - 2.5)$ (show if A as A . . .)

Bulliou. The income threshold that we assume corresponds to a sub-Committee of the committee of the and Like sistence level of income. In (Encarnación 1974) the threshold Control to the second into a time. value was 1.5 thousand pesos a year. This represented the annual wage income of a worker earning the daily minimum wage and working Carlotte J. Substitution (1997) 250 days during the year. For this paper, we adjusted for price TO IN US OF BUILDING OF THE changes between 1968 and 1973 and used 2.5 thousand pesos a year wastin it lagrickop - 8 as the income threshold. This appears as the constant in the TO BE THE GARAGE THE FALLS. variables FYN, FYX, YHN, YHX.

emonstrate of the District of the large to have an inscriptional contract of the second In the previous paper, the education threshold was obtained by taking the partial derivatives of fertility and labor force participation functions (with a quadratic term for EW) with respect to EW and equaling them to zero. A threshold value of 2.75 resulted.

good for the state and the state of the state of

Initially we tried the same threshold value with the 1973 data but results were not significant. After some experimentation, a threshold value of 1.5 appeared superior. To rationalize this, it can be argued that in the course of economic development there would be a secular rise in the years of schooling—and a movement of households from one socio-economic group to another (Leibenstein 1974), while the consumption standards of one are likely to have demonstration effects on others. The use of contraceptives is a case in point. Over time, knowledge and use of contraception is likely to spread from high-income to low-income groups. With government intervention the process may be speeded up: Between 1968 and 1973, these factors could have contributed to a lowering of the education threshold with regard to fertility.

Tide of but of the emmay med by

4. The Model ebicrosuch a demonstration of the work with a region of with such works.

fertility and work status of the wife we consider a simultaneous equation model involving AM, YH, LPD, FY and NB as endogenous variables. In the absence of an explicit model that yields functional forms, we assume linear functions. The model involves 5 estimated equations and 6 definitional equations, where a variable to the left of a colon is taken to be a linear function of the variables on the right.

- program (1) AM of (EW), LOCAR of the relative of the expension
- - (3) LPD: {CW}, YHN, YHX, EWN, EWX, LOC
- (4) FY: {EH}, KH, LOC, LPD
 - Transport (5) NB : {CW}, AM, FYN, FYX; EWN, EWX, LOC, LPD : AR

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- (post of (6) anything min(0, TH 2:5) when the second relieve

- - = (10) FYN = min(0, FY 2.5)
- gradicys (11) FYX:= max(0, FY 2.5) ds op same all servers

e late to the reserve 1 - 1 - 10 Equation (1) gives a woman's age at marriage as a function 文化 医外侧角囊管 海花 计形态性 of her years of schooling $\frac{10}{}$ and location of residence. More years of schooling is expected to raise a woman's age at marriage while previous studies generally show that women in urban households marry at a later age than those in rural families Table 6

The state of the s In equation (2) education and experience proxied by $age^{\frac{11}{2}}$ ्य द्वारा पर प्राथमी अर्थ के में अधिकार explain the husband's income. There is plenty of evidence in Home to be an in the system of a separa cata a la réside c A human capital studies that years of schooling and experience have \$ 1 Section of \$ 80 Line 10 Li positive effects on earnings. AND THE A DEC. TO CONTROL OF A MARK OF THE PARTY OF A STATE

Equation (3) is the work equation of the wife, where the dependent (dummy) variable LPD takes the value 1 if the wife works and 0 otherwise. The 1973 NDS questionnaire on labor force distinguishes those working from nonworking, but there is no labor force participation variable available. LPD seems appropriate with the model that we want to consider, however, since in the family income equation, the important consideration is whether the wife does market work or not, augmenting the family income if she does.

In line with the hypothesis that we want to test we use YHN, YHX,

EWN, and EWX. Based on the hypothesis we expect that DLPD/DYHN < 0

and DLPD/DEWN < 0. The use of {CW} permits differential effects of age

(and corresponding presence of young children in the household) on

fertility. 12/

Equation (4) gives family income 13/as a function of the husband's age and education, the wife's work status, and location coffresidence. All the included explanatory variables are expected to have positive effects on family income.

The dependent variable in equation (5) is the the number of yairs decided as a second of the second of the births a woman has had. In line with our hypothesis, we expect the coefficient of FYN to be positive and that of EWX to be banegative. The use of (CW) allows for nonlinearity in the effect of (tage, and we include LPD as an explanatory variable.

We note that an objection has been raised against using

.bettermed a "GL come and the state" the wife's labor force participation as an independent variable in a

fertility equation (see Wachter 1975, p. 610). Taking a suggestion from Mircer (1963, pp. 78-79) who dropped such a variable in an estimate of a fertility equation after his empirical tests showed that the variable was not statistically significant, Wachter has argued that in a static one-period utility-maximizing model, fertility and labor force participation are simultaneously determined by the same basic economic variables of price, income and taste.

We do not feel constrained by such an objection, however, since we are looking for empirical relationships and our model is not derived explicitly from an optimizing framework. Also, it is not at all clear that a static one-period utility-maximizing model is an appropriate one to use in regard to fertility behavior.

We also note that we use the same income and education threshold values for both the fertility and employment equations, although there is no intrinsic reason why this should be so. Computational convenience was our consideration here, plus the fact that the previous study using the 1968 NDS data showed that using the same threshold values was empirically not inappropriate.

The model as formulated is recursive. Equations (1) and

(2) are determined by a set of exogenous variables. Equation (3)

is a function of exogenous variables and endogenous variables

already determined. Equation (4) is obtained once LPD is determined.

Finally, NB in equation (5) is determined by exogenous variables and endogenous variables already obtained. Accordingly, we estimate the model using ordinary least squares. In addition, since there are likely to be differences in home production and consumption technology, we estimate separate sets of parameters for the rural and urban subsamples.

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5.1 Fertility of the case of media compact Care of the compact of the second

and a second contract the contract of the cont Table 3 gives the ordinary least squares estimates of the TELEMENTED STEELS TO STOLE THE BOTT OF STEEL sus ar smallameda parameters of the fertility equation. For the sample considered, marks which A ROLL MALE WAS CONTRACTOR NB increases monotonically with increasing age of the wife. A delay CONTROL COLD STATE OF THE STATE OF THE STATE OF Lange Calgrane of one year in the woman's age at marriage decreases a woman's reach agus of a charach in critical representation of the second of the second number of live births by about 0.27. The coefficients of FYN and or of redrawl Clime?. A cartabase Isnoither access to the east of EWN are both positive. The t-value of the FYN coefficient is sig-- Profest emperation - Profestation (特別語)するA agar it has nificant but that of EWN is significant only at the 20 percent level. Nevertheless, we see that below the threshold, income and years of schooling are positively related with a woman's fertility. The estimated coefficient of FYX is not significantly different ... from zero. However, EWX exerts a negative effect on fertility. These results are consistent with our hypothesis. At income levels above the threshold, it is education rather than income that bears

a negative relationship with fertility. A substitution effect against children arising from an increase in the opportunity cost of the wife's time possibly dominates a positive income effect above the threshold. Working mothers for the sample we used have lower fertility as shown by the coefficient of LPD which is negative and significant.

The location of residence dummy did not add to the expla-CHE THE LESS natory power of the fertility regression model that we considered. One infers that the simple rural-urban dichotomy fails to account for fundamental differences in the two environments. However, we Committee of the action of the share the general observation that there is a host of cost-related ឆ្នាំ មានស៊ី±**ស**្គារ ខេត្ត មាន factors which are likely to affect desired family size (see, for . ; 4 10 TOLE 1. 13 200 C. example, Schultz 1969, p. 172). The weakness of the location dummy is a reflection perhaps of its inability to capture all those cost tur ber til her brightigen concepts and to gain additional insights, we found it worthwhile to este es med estimate separate parameter sets for the two settings. Transpared to the first the second of the

monotonically increases with a rise in the age of the wife. There are no large differences in the estimated coefficients of the various age-cohort dummy variables. A one year delay in the age of marriage decreases births by about 0.31 in an urban household as against 0.25 in a rural household.

positive while that of EWN is not significant, as also those for FYX and EWX. Still the coefficient of EWX is negative as expected.

The transfer of the second statement of the explored particles. For the rural case, the signs of the coefficients of FYN, cloretos for the process process of the first expect that becaused all the FYX, EWN and EWX obtained are as expected. We observe, however, cover of the control of the but he will be also and to but the low t-value for FYN. It has been noted that there are several of earliest word which purposes of the income of feety. The said patrent difficulties in coming up with a measure of family income for the is observed for the separate real samps a set the number arban rural case. A majority of the population are engaged in agricultural occupations and transactions in goods and services may not be in cash; if one fails to account for noncash income, a serious Ago at Macriage, Husband a paraco bur og downward bias in the income measure would result. In our estimates, we included both cash and noncash income but the usual problem of recall in data collection may still bias the noncash component. add This problem might be a less serious one for the urban case where out to a switch to built you make the control of income in kind is expected to represent only a small portion of edit to repe a compact of their real reflect a law of recentred quide total family income. In addition to the above, there are informaon the control of the property of the company of the control of th tion limitations due to the nature of the income data available in algano an<mark>das aficilia catatásia</mark>n com en gerestro, en escada catate M the 1973 NDS. Only income brackets are reported rather than income of agods as some frame and the contract the same great and the levels (see Appendix A).

exact 5.2 Work Status of the Wife the value and to who was an exact to by

Table 4 summarizes the regression results of the wife's easing the most of the wife's entry the mosts of the wife's employment function. For the all sample, the estimated coefficients

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of YHN AND EWN are negative and significant. The coefficient of YHX is not significantly different from zero. More years of schooling above the education threshold is positively related with LPD and the t-value of the estimated coefficient is quite significant. The Market and the second for second and a second second It can be inferred that above the threshold, more years of school-Control of Commonweal Control of the Control of Society ing of the wife is likely to produce a substitution effect in favor and the first of the state of t of market work which outweighs the income effect. The same pattern where the constant of the $e^{\sqrt{2}}$, which is the probability of is observed for the separate regressions using the rural and urban on with the contract of the second of the se subsamples. THE THE RESERVE STREET STREET STREET, AND ASSOCIATION OF THE PROPERTY OF THE STREET, AND ASSOCIATION OF THE STREET, AND ASSO

5.3 Age at Marriage, Husband's Income, Family Income e a Philippin de la companya de la c

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Tables 5, 6 and 7 summarize the regression estimates for the AM, YH and FY equations. adoption the distance

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if between

The Middle Committee of the State of the Committee of the For the all sample, one observes a kink in the relationadmir Garren et i Torico del Compunyo de Salvido sul Salvi ship between AM and EW. For our sample of women, we notice the are with the case less than a second of the second of the control coefficients declining from EW1 to EW2 and rising from EW3 to EW6. n in the state of the company of the state o We attribute this simply to sampling variation. The urban sample estrophic approximations of the control of the second approximation of the second and the second and the second of women marry later than those in the rural areas as shown by Charles where I have been been the positive coefficient of the LOC variable.

YH increases monotonically with a rise in the husband's years of schooling and is positively related with his age. Other things ein de est du edition non inquisité assezon. Le gele equal, the income of the husband in the urban areas is about 440 pesos rasionalism numerosum on the community out on the heart from suggestion

a year greater than in the rural and a state ago, broken are table

FY is positively related to EH and KH. If the wife works, family income is augmented by 1.3 thousand pesos a year, ceteris paribus, for the all sample. The urban working wife contributes approximately 2.1 thousand pesos per year as against 973 pesos contributed by the wife who works in the rural area.

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5.4 of Reduced Forms to see a substitution of the seed of the seed of the see

endogenous variables of the model, we obtain the reduced-form equations from the structural equations. These are presented in Tables 8.1, 8.2 and 8.3 for the all sample. Three separate cases were considered for ease of presentation and computational convenience, since the structural equations for NB and LPD involve values of FY, YH and EW lying below and above threshold values and it would be easier to consider different intervals with respect to these trooper newed not begin to the structural equations of the structural equations are thresholds.

There is an increasing recognition lately of indirect policies designed to lower population growth. Outside of the direct policies like improving contraception techniques, it is now recognized that indirect measures aimed at altering the work-family roles of the mother may in certain instances be more effective in

achieving desired population objectives. Hence we focus here on the effects of EW on NB and LPD.

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threshold lowers the probability that the wife works while above the threshold, the likelihood increases. With regard to the reduced-form of NB, the coefficient of EWN ranges from 0.1475 to 0.1657 for the three cases whereas in the structural form it is 0.1434. The coefficient of EWX in the reduced-forms ranges from -0.1248 to -0.1122 compared to -0.1094 for the structural equation. The effects of education are thus more pronounced in the reduced forms.

From these results, given that working mothers are likely to have lower fertility, then efforts should be exerted so that the education threshold is pushed down to zero.

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6. Concluding Remarks and print that the result of the First the First Andrews Concluding Remarks and the second of the First Andrews Concluding Remarks and the second of the First Andrews Concluding Remarks and the second of the First Andrews Concluding Remarks and the second of t

The results of our empirical investigation showed support for the hypothesis that below the income threshold, the marginal effect of income on NB is positive. The marginal effect of years of schooling below the education threshold reinforces the positive effect on NB for the all and rural cases. For the urban case, the estimated coefficient of EWN is negative but is not significantly different from zero. Beyond the income threshold, the coefficient

of FYX is not significant in the different estimates but that of EWX is negative and strongly significant for the all and rural cases. The coefficient of EWX for the urban case is negative but not significant 14/ Beyond the income threshold, the wife's education looms as a key handle in bringing down fertility rates.

for the hypothesis that the lower the husband's income is below a target subsistence level, the greater is the wife's likelihood to engage in market earning activities; beyond the subsistence level more years of schooling and its concomitant rising opportunity cost of time spent in nonmarket activities appear to induce a substitution effect in favor of market work.

Cont. of ring of the cost wary for the configuration is Current population growth rates in the Philippines are of brogeness and the common regarder when the old of low to the contract of already deemed too high as to run counter to public interest and election with a constitution of the constitution of the constitution appears the implications that we get from the results of this study is that own sets and the resulting error throto and this to the . The compares are discuss in the short-run, birth rates are likely to go up before they go ម. មិន ភិព ឧទ្ធាធិធ្យា ៤ វិកិច្ចិស្ប Rebor a dable was bilen was down considering that a majority of families are still below where the income threshold in the december is assumed as poverty levels. Unless massive intervention programs are underthough the greation of when welcome a full conductor in machine and taken, if the crude death rates go down faster than the crude birth the crude of the start of the start and the crude birth the crude of the start of the crude o rates as a result of better nutrition and access to better health es, remessered documentback of page 15. The 25 tento practices the rate of natural increase would increase population growth rates in the short-run. 15/ The results which trace the likely of the self-dairy, maken so with both his school galacebleace was

impact of rising years of schooling on fertility are also worth considering from a policy viewpoint. Indirect measures such as creating better market opportunities for women and enhancing their earnings appear to raise the relative price of children and thus may lead to a lower family size within certain income ranges.

Towns For further research, it might be useful to investigate if there are significant differences between subsets of parameter estimates drawn from the 1968 and 1973 NDS data files. Noncomparability of certain variables prevented us from doing this without re-estimating another 1968 model. (A comparison of the bare outlines of the two studies is shown in Appendix B.) Further, additional work must be done with regard to the rural and urban cases. Considering that cost factors vary for the two environments, it William Strain Strain might be worthwhile to study whether the two cases respond to and the first of the fact of the fact. different thresholds. The problem of bias that results from speci-TERM OF THE PROPERTY OF THE PARTY fication errors, if indeed the thresholds are different for the two cases, requires no elaboration. Also, one could consider a model that is not confirmed by the edition in the property of the confirmed and the confirmed by the confirmed and the confirmed by the confirmed and the confirmed by the confirmed b where the income threshold in the NB equation is endogenous, $\frac{16}{}$ -malace, the empirical endows in the control of th though the question of what variables influence the threshold may ස්කෘතු යාට අතුරේ ලිටිමෙහි රජය අය වියුතුයේ සමුත් වෙන වෙන විසිදු රජයේ ද involve factors varying over the family's life cycle. The present មាន**រស់**មាន ១២៩៩ ១៩២ ២២៤ on the without with the model is not equipped to handle such considerations.

been considering income and education as scalar variables, it is

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clear that these are both multidimensional in character and scope.

Income is not just money income, and education is not just years

of schooling.

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APPENDIX A

Family Income Data

Annual family income was obtained as the sum total of the annual cash and noncash incomes of the parents together with other working members of the family. Annual cash and noncash incomes of each respondent in the 1973 NDS are reported for brackets only, thus:

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Cash Income	Noncash Income
0 - 1 2999	0 - P 500
P1000 - P2999	p 500 - p 999
P 3000 - P 4999	P 1000 - P 1999
P 5000 - P 6999	P2000 - P2999
P 7000 - P 8999	P 3000 - P 3999
1 9000 - 1 9999	P4000 - P4999
#10000 and above	\$5000 and above

If a particular member is reported as working then his income was taken as the mid-value of the income class where he or she belongs. For the two open-ended intervals we assumed the value P11,000 for cash income and P5500 for noncash income.

APPENDIX B

A Comparison of the 1968 and 1973 Models

We present here the structural equations of the two with requirement and processes with the second of the seco studies using the 1968 and 1973 NDS data files and discuss some IALof the changes made for the 1973 model.

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	1968			id i	1973			
	(1)	AM e	oxe	genous	AM	:	{EW},	LOC
	(2)	YH	:	EW, KW, LOC	YH	:	{EH},	KH, LOC
	(3)	LPW	:	{CW}, YHN, YHX, EWN, EWX, RUR	LPD	:		YHN, YHX, EWX, LOC
	(4)	FY	:	EW, KW, LPW, LOC	FY	:	{EH},	KH, LPD, LOC
(J))		NB	····•	{CW}, AM, FYN, FYX EWN, EWX, LPW, LOC		:	-	AM, FYN, FYX, EWX, LPD, LOC

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AM is rendered endogenous in the 1973 model. In the YH equation, variables pertinent to the husband, i.e. {EH}, KH replaced those of the wife in the present study. This holds also for the FY equation. The regional unemployment rate RUR has been replaced by LOC in the equivalent labor force participation equation for 1973. LPD which defines the work status of the wife replaced the labor force participation dummy variable LPW. threshold value FY# was adjusted from 1.5 thousand pesos to 2.5 thousand pesos per annum. EW* was lowered from 2.75 to 1.5.

Table 1. Means of Variables

Sample	Size		EW	FY	YH Marong Ja	LPW	NB
A11	√ car⊖il 3629	ar #* 19.8	2.38	0.00	a edt sais ag 1		11 61
Urban	1953	20.4	3.04	3.20	1.86 2.54		4.60
Rural	1676	19.1	1.60	1.24	1.08***	. 49 8 M2 (.)	4.69
		· · · · · · · · · · · · · · · · · · ·	* 4		. 4 . E :	1 HY (1)	**************************************
	. 4. ^{8.8}	jan jan		SAN SAN	3 (1947) 3 (1947)		
	·	*** **********************************	1973	w	, · · .	y () ()	
Sample	Size	AWIT	EW :	FY		LPD	NB
All ⁹⁹	2342	20.06			2.16	.17	3.71
Urban						.19	3.49
		Ybera tali 19.59 Litaayolqaba					3.80

Note: See footnote 8.

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Table 2. Age Distribution of Wife

	an Hittle		1 9 6 8		· .	1 9 7 3	
Age	F	requen	су	Relati freque		Frequency	rrequency
	- 1873년 (박왕(의)		- 100 100	~			
15-19	1.0985.5	48	6001.2	0.013		78	0.032
20-24	(22.22) (22.23)	381	(29.7) (4.79)	0.105	****	465	0.199
25-29	CO SE.	770	(6.000)	0.212		656	0.281
30-34		8 7 7	100 July 100	0.242		640	ି\ି 0 .273
35-39	Year.V	861	20xf. (0.12)	0.237	·. ·	368	0.157
40-44	· Anjon . N= (3 VI=)	692	2002 04 (421,00)	0.191		135	0.058
TOTAL	entra ()	3629	(29) (29) (2)	1.000	es Egyptote	2342	1.000
			ing mengalah Kabupatèn		7. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		XXX
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Table 3. NB Equations

and the second s		All	Rural	Urban
Coest.		5.5760	- ัฐาสธมภ - ว.3296	6.3331
CW5		1.5174 (7.68)	1.4744 (6.32)	1.5736 (4.24)
CW6	** **	3.2430 (16.6)	3.1693 (13.7)	3.3895 (9.22)
CW7		4.7257 (23.8)	4.6792 (19.9)	4.8253
CW8		5.7782 (26.9)	5.7978 (22.9)	5 7706
CW9	- B‡	6.3873 (25.8)	6.1208 (21.0)	7.1497 (15.1)
AM _{(*, ()}	2 £	-0.2692 (-27.5)	-0.2542 (-21.7)	$r = r^{r}$
FYN	XP.	0.1204 (2.29)	0.0958 (1.545)	0.1977 M TC (1.971)
FYX		0.0018	-0.0430 (-0.848)	0.0775
LPD	· · · · · · ·	-0.1947 (-2.10)	-0.2449 (-2.16)	-0.0392 (-0.248)
,ewn		0.1434 (1.580)	0.2023 (1.969)	-0.2139 -zr+(-0.938) r ==
EWX		-0.1094 (-3.15)	-0.1264 (-2.54)	-0.0597 (-1.245)
LOC		0.0455 (0.576)	·	
$\bar{\mathtt{R}}^{2}$		0.457	0.455	0.471
Sample siz	ze	2342	1660	682
s.e.e.		1.587	1.622	1.487
s.d. (NB))	2.153	2.190	2.044

Table 4. LPD Equations

	10 11 ° 1	, seem All	Rural	Urban	
	The second terms of the second terms	e constitue a service and a se	AND THE STATE OF T	and the market of the second s	
const	• Veller	-0.0056	0.0405	-0.1550	
CW5	6488 J (503 J)	-0.0278 (-0.620)	-0.0568 (T.(-1.110)	0.0644 (0.702)	ंह्य
CW6	2189.((880.1)	0.0501 (1.142)	0.0140 (0.278)	0.1641 (1.838)	SWO
CW7	Z+LT.	0.0576 (1.310)	0.0282 (0.558)	0.1535 (1.719)	EWE:
CW8	(4.055) 2.85 7 2	0.0893 (1.946)	0.0287 (0.544)	0.2531 (2.73))	HWI
CW9	((Ar.J)	0.1096 (2.10)	(0.0554 (0.926)	0.2709 (2.56)	
YHN	· Settler · Settler · Settler	-0.0349 ्८-3.04)	-0.0311 (-2.36)	-0.0458 (-1.950)	dW3
YHX	edd Cyll Polyfol di y	(-0.706	ი: -0.0023 ((-0. 1 99)	-0.0108 (-0.701)	. + .₫ **
EWN		-0.1159 (-5.64)	-0.1127 (-5.01)	-0.1347 (-2.38)	. * * *
EWX	₹ ø	0.0803 (10.7)	0.0748 (7.06)	0.0843 (7.59)	. ** *
LOC	e _{st}	-0.0176 (20.985)	र अहाद	.	- Int
₹ ²	34.3 · s	√ ∂ √067	0.042	0.114	2
Sample	size	_{0.3.1.} 2342	1660	682 :16.1	t i i
s.e.e		0.361	0.357	0.370	
s.d.	(LPD)	0.374	0.365	0.393	

arching of the second

Table 5. AM Equations

	4.4 C • A11	Rural	Urban	saga - si - O - e
const. %I.	20.0034	20.2153	19.1187	5 \$5564
EW1 4476 : (07.0)	-0.5424 (-1.517)		1.8949 (1.727)	BWU
EW2 (968):	⊕40 € 68 ₹0.8329 (−2.42)	-1.0588 (-2.90)	1.0615 (1.036)	 Ç₩
.045.0 EW3 (050.1) 1000.0	-0.5407 (-1.327)	-0.5938 (-1.263)	1.1147 (1.055)	
EW4 ((60.%)	0.9170 (2.04)	1.0207 (1.757)	2.5572 (2.40))	en e
(3/4 4) EW5 3/2-1 (3-4) 4/03/2 (1-4)	(1.2829 (2.27)		3.2742 (2.90)	, salvi
EW6 %0.11 ***	3.8230 (7.64)	3.2404 (4.67)	5.8949 (5.37)	a 15 di 11
LOC (8-(1) **)	0.9666 (4.82)	STEELE Kristoffe		\$111 AA.1
₹2	0.088	0.036	0.117	<i>₽.1</i> °.
Sample size	2342	1660	682	•
s.e.e.	<u>.</u> 4.056	γ 4.043	4.080	3 × 21
s.d. (AM)&J	ेल्पः 247° ११७६	(45118 .£.0.+0 . 47 7 .⊄	4.343	u kajita Dubijita Sulana

Table 6. YH Equations

garantee de la companya de la compa	A11	Rural	Urban
. `.	- 12 · ·	* x * .	
const.	1.7305	2.2908	1.1108
EH1	-0.7954 -853(- 5.27)	-0.8515 (+5.67)	-0.2550 (-0.45 7)
EH2 0101.0- (185.0-)	4.48-0:5111 48. (-3.42)	-0.6165 (-4.10)	0.3792 AAR (0.718)
EH3 5707.0	-0.2741 (-1.578)	(-1.471)	0.4352 (0.800)
UMBALO EH4 (980 1) DRGSUL	(0.360)	20)2944 (₇ 1.453)	1.1822 (2.22) page
EH5 (14 11 11 11 11 11 11 11 11 11 11 11 11	(845 00)6793 _{(27/6} (3.19)	(1.818)	1.5961 (2.90)
C. 30 7 C. 30 7 C. 30. 7	2.5029 Hita(11.3)	1.6680 (5.33)	3.6909 (6.66)
KH 3244 1	0.0762 (3.72)	0.0274 (08(0.886)	0.2230 (3.70)
LOC STATE	7070 0,4435 (%(5)00)	9838.1 1 9.849	#35 \$ 1
$\mathbf{\bar{R}^2}$	0.17	0.065	0.25
Sample size	2342	1660	682
s.e.e.	94. 7 1.774	1.682	1.954
s.d.(YH)	1.952	1.740	2.256

(x,y) = (x,y) + (x,y) = (x,y

Table 7. FY Equations

1.3.3.5.2	i generalij	jul 2x	
	All	Rural	Urban
100 m			c)
const:	1.6428	2.2883	0.7946
EH1 Nete ()	-0.7572 (-4.53)	-0.8370 (-5.21)	-0.1815 (-0.281)
EH2	-0.4472 (-2.70)	-0.5790 (-3.60)	0.5076 (0.830)
ЕН3	-0.1400 (-0.728)	-0.1934 (-0.977)	0.6833 (1.084)
EH4	0.2260 (1.156)	-0.1389 (-0.643)	1.4281 (2.31)
cna	1.1273 (4.79)	1.2475 (4.03)	1.9150 (3.01)
EH6 (08,9)	3.8059 (15.5)	(8.41)	4.9011 (7.66)
KH (((4) (6))	0.0716 (2.30)	0.0136 (0.412)	0.2470 (3.55)
LPD	1.3236 (11.9)	0.9727 (7.95)	2.1276 (9.30)
LOC	0.5105 660(5.21)	:	v'.
$\mathbf{\bar{R}^2}$	· · · · · · · · · · · · · · · · · · ·	········· 0.146	0.397 B
Sample size	2342	₃₃ V ⁴	682
s.e.e.	1.960	1.794	2.255
s.d. (FY)	2.332	1.942	2.903

Table 8.1 Reduced Form Equations: YH > 2.5 and FY > 2.5

7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	AM	YH	LPD	FY	NB
const.	o-20.0034	1.7305	-0.70006	1.6420	0.1897
EW1 parties	-0.5424				0.1460
EW2	-0.8329			* + \$ *	0.2242
EW3	-0.5407			3 ()	0.1456
EW4	0.9170				-0.2468
EW5 ARREST	1.2828				-0.3453
EW6 (13 % 1.2.2)	3.8230				-1.0291
EH1	des es	-0.7954	0.0052	-0.7503	-0.0024
EH2 of age .	N. 87	-0.5111	0.0033	-0.4428	-0.0014
EH3 () () ()	1.	-0.2741	0.0018	-0.1376	-0.0006
EH4		0.0636	-0.0004	0.2255	0.0005
ЕН5 Дала до го	· 100	0.6793	-0.0044	1.1215	0.0028
ЕН6	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	2.5029	-0.016 3	3.7843	0.0100
CW5	t with . The		-0.0278	-0.0368	1.5227
CW6	14. ()		0.0501	0.0663	3.2333
CW7	* 1 p.		0.0576	0.0762	4.7146
CW8	1477,4	•	0.0893	0.1182	5.7610
CW9 (1794) 4	Part of	$\alpha_{ij} = t$	0.1096	0.1451	6.3663
EWN ARREST	•		-0.1159	-0.1534	0.1657
EWX - CARRELL CO	Karaman and American		0.0803	0.1063	-0.1248
KH 1990.7	Maria Salah Baran	0.0762	-0.0005	0.0709	0.0002
LOC (2881.0-	0.9666	0.4435	3 -0.020 5	0.4834	-0.2098

Table 8.2 Reduced Form Equations: YH < 2.5 and FY < 2.5

15.63	AM	Y H	LPD	IV FY	NB	
const.	20.0034		0 0010		0.0050	
EW1	-0.5424		0.0212	** (1.6709	0.0872	
EW2	-0.8329				0.1460	
EW3	-0.5407				0.2242	
EMIF	0.9170				0.1455	
EW5	1.2828				-0.2468	
EW6	3.8230			19086.1	-0.3453	
EH1			·· 0 0070	77,887.6 0.700#	-1.0292	
ЕҢ2		-0.5111	0.0278	-0.7204	-0.0921	·
EH3	The Catherine See	-0.2741	0,0178	-0.4236	0.0545	٠
EH4	er e	0.0636	0.0096	-0.1273	-0.0172	
EH5		,	-0,0022	0.2231	0.0273	. !
EH6		0.6793	元元 <mark>0: 0237</mark>	1.0959	0.1365	
CW5	toga i	£3 ;2. 5029	0. 0874	3.6902	0.4613	
CW6	.47.1 F8	3450 C+	-0.0278	-0.0368	1.5184	
CW7	, V %	¥969.0	0.0501	0.0663	3.2412	* 1
₩8	* · .	에 전환 (취	0.0576	0.0762	4.7237	,
	CSI.	1 5 5 6 7	0.0892	0.1182	5.7750	
CW9	The set of the set	prima ,	0.1096	0.1451	6.3835	9
EWN	1. 1. J. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	14°11 (4-	-0.1159	-0.1534	0.1475	9
EWX	Page 6 Control	1080.0	0.0803	0.1063	-0.1122	٠
KH Startenti	Parried	0.0762	-0.0027	0.0680	0.0087	
roc .	_{ուն છે} . 0 . 9666	0.4435	-0. 0155	0.4900	-0.1527	

Table 8.3 Reduced Form Equations: YH < 2.5 and FY > 2.5

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EW3	State State Control	AM THE STATE OF	YH HERE	LPD	The first FY	rent on the contract render NB
EW1	(2.2.2.2)	repart Market		doughts of	zalýlet v	TO A BORESSE
EW2	Covidia Con		a service a feet	his add to b	Constitution /	Set 10 th base of
EW3 -0.5407	1985年 -	-0.5424	of craw ser	soni e mird	ger od nada Grana	0.1460
EW4 0.9170 -0.2468 EW5 1.2828 -0.3453 EW6 3.8230 -1.0292 EH1 -0.7954 0.0278 -0.7204 -0.0067 EH2 -0.5111 0.0178 -0.4236 -0.0043 EH3 -0.2741 0.0096 -0.1273 -0.0021 EH4 0.0636 -0.0022 0.2231 0.0008 EH5 0.6793 -0.0237 -1.0959 0.0066 EH6 2.5029 -0.0874 3.6902 0.0236 CW5 -0.0278 -0.0368 1.5227 CW6 0.0501 0.0663 3.2333 CW7 0.0576 0.0762 4.7146 CW8 0.0893 0.1182 5.7610 CW9 0.1096 0.1451 6.3663 EWX 0.0966 0.0966 0.0962 -0.0027 0.0680 0.0066 LOC 0.9666 0.4435 -0.0155 0.4900 -0.2108						nown edu od
EW5						
EW6 3.8230 -1.0292 EH1 -0.7954 0.0278 -0.7204 -0.0067 EH2 -0.5111 0.0178 -0.4236 -0.0043 EH3 -0.2741 0.0096 -0.1273 -0.0021 EH4 0.0636 -0.0022 0.2231 0.9008 EH5 0.6793 -0.0237 1.0959 0.0056 EH6 2.5029 -0.0874 3.6902 0.0236 CW5 -0.0278 -0.0368 1.5227 CW6 0.0501 0.0663 3.2333 CW7 0.0576 0.0762 4.7146 CW8 0.0893 0.1182 5.7610 CW9 0.1096 0.1451 6.3663 EWN -0.1159 -0.1534 0.1657 EWX 0.0762 -0.0027 0.0680 0.0006 LOC 0.9666 0.4435 -0.0155 0.4900 -0.2108						-0.2468
EW6 3.8230 -1.0292 EH1 -0.7954 0.0278 -0.7204 -0.0067 EH2 -0.5111 0.0178 -0.4236 -0.0043 EH3 -0.2741 0.0096 -0.1273 -0.0021 EH4 0.0636 -0.0022 0.2231 0.0008 EH5 0.6793 -0.0237 1.0959 0.0066 EH6 2.5029 -0.0874 3.6902 0.0236 CW5 -0.0278 -0.0368 1.5227 CW6 0.0501 0.0663 3.2333 CW7 0.0576 0.0762 4.7146 CW8 0.0893 0.1182 5.7610 CW9 0.1096 0.1451 6.3663 EWX 0.0893 0.1182 5.7610 CW9 0.1096 0.1063 -0.1248 KH 0.0762 -0.0027 0.0680 0.0006 LOC 0.9666 0.4435 -0.0155 0.4900 -0.2108	1 di escribis sustantes a	43.4. 1.7.				
EH1	EW6	3.8230				
EH2	EH1 / 5 / 2 / 3 / 3 / 3 / 3 / 3 / 3 / 3 / 3 / 3	SPS OF	-0.7954			
EH3	TUO .		-0.5111			
EH4 CH5 CH6 CW5 CW7 CW8 CW8 CW8 CW8 CW8 CW8 CW9 CW9	EH3 CMg bein a	i generativisti				-0.0021
EH5	run	••	0,0636	-0.0022		0.0008
EH6 2.5029 -0.0874 3.6902 0.0236 CW5 -0.0278 -0.0368 1.5227 CW6 0.0501 0.0663 3.2333 CW7 0.0576 0.0762 4.7146 CW8 0.0893 0.1182 5.7610 CW9 0 0.1096 0.1451 6.3663 EWN -0.1159 -0.1534 0.1657 EWX 0.0762 -0.0027 0.0680 0.0006 LOC 0.9666 0.4435 -0.0155 0.4900 -0.2108			0.6793	-0.0237	-1:0959	0.0066
CW6 CW7 0.0576 0.0762 4.7146 CW8 0.0893 0.1182 5.7610 CW900 0.1096 0.1096 0.1451 6.3663 EWN -0.1159 -0.1534 0.1657 EWX CW8 0.0762 -0.0027 0.0680 0.0006 LOC 0.9666 0.4435 -0.0155 0.4900 -0.2108	ЕН6	TATE OF STATE	2.5029	-0.0874	3.6902	0.0236
CW7	CW5			-0.0278	-0.0368	1.5227
CW7 CW8 0.0576 0.0762 4.7146 CW90 0.1096	CW6 2779673	1. 1/2.2	wait to ea	0.0501	0.0663	3.2333
CW8 0.0893 0.1182 5.7610 CW900 0.1096 0.1451 6.3663 EWN -0.1159 -0.1534 0.1657 EWX KH 0.0762 -0.0027 0.0680 0.0006 LOC 0.9666 0.4435 -0.0155 0.4900 -0.2108	CW7			0.0576	0.0762	vikyidoubod - 4.7146 .
CW9 10	CW8	\$ *	41 827 1		The state of the state of	
EWN -0.1159 -0.1534 0.1657 EWX -0.0762 -0.0027 0.0680 0.0006 LOC 0.9666 0.4435 -0.0155 0.4900 -0.2108	CW9ac 1.dd		e safo necesi.			
EWX 0.0762 -0.0027 0.0680 0.0006 LOC 0.9666 0.4435 -0.0155 0.4900 -0.2108	TO THE SECOND			-0.1159	+ 57 - 51 - 51 - 51 - 51 - 51 - 51 - 51 -	. Patrick
KH 0.0762 -0.0027 0.0680 0.0006 LOC 0.9666 0.4435 -0.0155 0.4900 -0.2108			organisma organisma	20 0000000 11 2000000 000	811 - YAZEZZA 2000-1063	5,581741
LOC						T. Chawo. 3
e de la companya de La companya de la co		0 0666				
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<u>F O O T N O T E S</u>

head theory to fertility behavior. Being normal goods, he argues that an increase in income leads to a higher number of children demanded under a ceteris paribus assumption, i.e., tastes, costs and knowledge of contraception remaining constant.

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2/By relying on an economic framework, Mincer's (1963) empirical verification with cross-section data in the U.S. showed a negative coefficient for the wife's wage rate and a positive coefficient for the husband's income with the absolute value of the former exceeding the latter. This is partly relied on to explain the U.S.

In Becker's (1965) formulation of a theory of consumer behavior, goods and services do not enter directly as arguments in the utility function. Rather, the household is assumed to produce basic commodities using inputs of time and market goods with the technology embodied in a household production function. It is these commodities which are assumed to yield utility to the household. He emphasized that the effect of a change in the price of time on the relative prices of a commodity would depend on its time intensity in production and consumption. The impact of an environmental variable like education can be traced through its effects on the marginal productivity of various inputs in the production of child services.

4/For a detailed exposition of how education affects one's productivity in nonmarket activities such as those related to fertility regulation, see (Michael 1972, 1973).

5/This assumption follows from the observation that more educated couples tend to spend more on goods and services all other things being equal. These become public goods in the household and children are necessarily exposed to them. This has the effect of lowering the marginal cost of child quality.

6/More years of schooling is frequently assumed to make parents more efficient in the use of contraceptive techniques which lowers the cost of fertility regulation to them and, as has been argued, leads to a higher marginal cost of a child.

- This is following Easterlin's (1975) arguments that "the potential output of and demand for children jointly determine the motivation for fertility regulation. If the potential output falls short of demand, there is no desire to limit fertility" (p. 56),
- This urban-rural ratio reflects the true population ratio accurately. In contrast, the sampling proportions in the 1968 NDS were 1:400 and 1:1200 for rural and urban, respectively, so that the unweighted regression results and other statistical estimates reported in (Encarnación:1974) are possibly misleading.
- 9/See Table 1 for rural averages for EW; the difference between the urban figures is probably not significant.
- $\frac{10}{\text{EW}}$ is a 6-element vector at most one of whose elements corresponding to the wife's educational level takes the value 1. Thus if she is a college graduate, K = 6 and $\{EW\} = (0, 0, 0, 0, 0, 1)$.
- $\frac{11}{\text{EH}}$ applies to the husband's educational attainment and is formulated as in {EW}.
- $\frac{12}{\text{CW}}$ is a 5-element vector which applies to the age-cohort to which the wife belongs. If the wife belongs to the 20-24 age-cohort, CW5 = 1 and {CW} = (1, 0, 0, 0, 0).
- $\frac{13}{}$ The estimation of family income data is discussed in Appendix A.
- $\frac{14}{}$ It is reasonable to conjecture that for the urban case, in view perhaps of better access to information regarding family planning, the education threshold is lower compared to the rural and the negative marginal effect of the wife's education on NB is felt at lower years of schooling.
- 15/Policies that improve health conditions are expected to lead to lower fertility rates in the long-run. It is argued as in (DaVanzo 1972) that when "the probability of survival to older ages increases, individuals will become more 'future oriented,' longer-term investments will be relatively more attractive than

they were before the mortality decline. Parents will tend to invest more in themselves and in their children than they did before. Increased investments in themselves will enhance the attractiveness of alternatives to having children; increased investments in their children will tend to bring about a substitution of quality for quantity of children" (pp. 89-90).

This has been suggested by Bryan Boulier in a private communication which pointed out the existence of a possible downward bias in the estimate of the coefficient measuring the effect of income on fertility if the threshold is not adjusted to changes in family size.

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positive while that of EWN is not significant, as also those for FYX and EWX. Still the coefficient of EWX is negative as expected.

The transfer of the second statement of the explored particles. For the rural case, the signs of the coefficients of FYN, cloretos for the process process of the commission of the beautiful and the FYX, EWN and EWX obtained are as expected. We observe, however, cover of the control of the but he will be also and to but the low t-value for FYN. It has been noted that there are several of earliest word which purposes of the income of feety. The said patrent difficulties in coming up with a measure of family income for the is observed for the separate real samps a set the number arban rural case. A majority of the population are engaged in agricultural occupations and transactions in goods and services may not be in cash; if one fails to account for noncash income, a serious Ago at Macriage, Husband a paraco tom cy downward bias in the income measure would result. In our estimates, we included both cash and noncash income but the usual problem of recall in data collection may still bias the noncash component. add This problem might be a less serious one for the urban case where out to a switch to built you make the control of income in kind is expected to represent only a small portion of edit to repe a compact of their real reflect a law of recentred quide total family income. In addition to the above, there are informaon the control of the property of the company of the control of th tion limitations due to the nature of the income data available in algano an<mark>das</mark> a**d**icio acadesias de la gelectora en el sobre V the 1973 NDS. Only income brackets are reported rather than income of agods as some frame and the contract the same great and the levels (see Appendix A).

exact 5.2 Work Status of the Wife the value and to who was an at MY

Table 4 summarizes the regression results of the wife's easing the models of the wife's easing the models of the summarizes the regression results of the wife's easing the models of the party of the sample, the estimated coefficients

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