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RELATIVE AND POTENTIAL INCOME AND FERTILITY

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Résumé — Cette étude examine en détail les corrélations parmi le revenu potentiel, ses composantes y compris le revenu relatif, et le revenu courant. L'analyse aide à clarifier combien efficacement une mesure de revenu empiriquement disponible tel que le revenu courant agit en mandataire pour des mesures plus appropriées théoriquement dans la relation revenu/fécondité et aussi dans les relations parmi les mesures de revenu théoriques alternatives. Les mesures de revenu se rapportent aussi à trois mesures de fécondité. Ni le revenu potentiel de la famille ou du mari, ni le revenu relatif du mari se rapporte d'une manière significative à soit fécondité courante ou désirée ou la durée de la première naissance; la substitution des mesures du revenu potentiel ou relatif ne change pas les résultats obtenus en utilisant le revenu courant du mari non plus. Cependant, l'analyse démontre l'importance du revenu de l'épouse versus le revenu du mari en ce qui concerne la fécondité.

Abstract — This paper investigates the interrelations among potential income, its components including relative income, and current income. The analysis helps clarify how well an empirically-available income measure, such as current income, proxies for more theoretically-appropriate measures in the income/fertility relationship and also the relations among alternative theoretical measures of income. Income measures are also related to three fertility measures. Neither family or husband's potential income nor husband's relative income is significantly related to either current or desired fertility or the timing of the first birth; nor does the substitution of measures of potential or relative income alter the results obtained using husband's current income. However, the analysis demonstrates the importance to fertility of wife's income versus husband's income.

Key Words — **income, relative income, potential income, fertility**

Introduction

Becker assumed, in his initial socio-economic model of fertility, that the relationship between fertility and income would be positive when fertility came under voluntary control (Becker, 1960). Empirical evidence of this hypothesized relationship has been ambiguous at best. One response to the failure to confirm this positive income/fertility relationship has been to refine the concept of income. Current income, it is argued, is not necessarily the appropriate income measure for household decisions having long-term consequences. Potential income and relative income have been suggested as more appropriate than current income to the household decision making model of fertility (Becker, 1965; Easterlin, 1969; Freedman, 1963).

In this paper, we examine the effects of substituting measures of husband's relative and family potential income for the commonly-used husband's current income. First, we discuss the concepts of potential and relative income and their operationalization. Then we examine the interrelationships between potential income and its components, including relative income. Finally, we use data from a consumer panel study to relate the various measures of income to fertility.

The Concepts of Potential and Relative Income

Potential Income

Becker did not clarify the income concept he felt appropriate to the study of fertility in his early work; however, the examples employed husband's current income (Becker, 1960). In a later analysis, Becker suggested that a family's "full" or potential income was the appropriate concept for household decision making. A family's potential income is simply the income it would earn by devoting all its time and other resources to earning income (Becker, 1965). Since households exchange money income for time spent in other activities, potential income does not equal actual income. Easterlin (1969) noted that potential income includes income foregone in order to engage in other activities. For example, wages foregone by a non-working mother to care for children would be included in potential income; therefore, actual income may be a poor proxy for potential income (Easterlin, 1969).

Potential income has also come to incorporate the idea of permanent income developed by Friedman with reference to consumer behaviour (1957). Some economists have argued that it is not current income that is considered in such long-range decisions as childbearing, but rather, anticipated income over the whole childbearing period (Easterlin, 1969; Turchi, 1975; Willis, 1973). Becker, in fact, mentions in passing that "a more complete analysis would have to take into account the permanent income concept" (1960:227). In fertility analysis, this has usually been operationalized by taking actual current income at an age where income should reflect differences in lifetime earnings. Easterlin has argued that the best income proxy for a man's "lifetime" or permanent income is his income at age 35-44 (1969:155).

Looking at families in which the wives were in this age group, Jacob Mincer found a positive relationship between potential family income and fertility among 400 families selected from the 1950 BLS survey on consumer expenditures (Mincer, 1963). Since the wives in the sample were employed sometime during the year, potential family income was simply the sum of the husband's actual full-time earnings plus the wife's estimated full-time income based on her reported earnings. Mincer noted that the wife's contribution to potential income could also be regarded as an indicator of the cost of children because a woman would have foregone this income by staying out of the labour force to care for children. Decomposing potential income, Mincer reported that husband's income was positively related to fertility, but wife's potential income was negatively related to fertility. Therefore, including only husband's income rather than potential family income in fertility analyses would increase the positive income effect. Selecting only couples in which both members were working and in this specific age group has the advantage of simplifying the operationalization of the concept of potential income for Mincer; however, the evidence is based on a very limited sample. In general, the procedure of examining the relationship between income and fertility for older cohorts whose current income is a good proxy for permanent income has the disadvantage of referring to income after almost all children have been born, which may not actually have been the income expected during the childbearing years. It also limits analysis to cohorts essentially finished childbearing.

In an alternative approach to measuring permanent potential income, Willis estimated the husband's income at age 40, for men aged 35 to 64, based on an individual man's education, occupation, race, residence, labour market experience, and cohort, as reported in the 1960 census (Willis, 1973). After finding a stronger negative relationship between children ever born and estimated income for age 40, than between children ever born and current income, Willis concluded that his results "support the belief that a longer-run, lifetime concept of income is relevant to fertility behaviour" (Willis, 1973:62-63). Instead of including a wage rate for women in potential income, Willis uses the

wife's education as an indicator of her stock of human capital at the time of marriage, and finds that wives with higher education bear fewer children. Willis also includes in his equation a term representing the interaction of the wife's education with husband's lifetime earnings, and this leads him to conclude that the sign of the "lifetime income effect" changes from negative to positive as the wife's education goes from low to high.

Varying the approach to permanent potential income somewhat, Turchi estimated a potential family income consisting of two components. The first was the predicted wage streams for both the husband and the wife over the 30 years following the birth of the first child. For males, the predicted potential wage was based on outside income information within educational, occupational, and age groups on the assumption that men could work 60 hours a week; for women, who were assumed to be able to work 40 hours a week, wage rates were based only on education and age. The second component in Turchi's potential income was based on relative income. We shall discuss the concept of relative income before proceeding to Turchi's findings (Turchi, 1975).

Relative Income

D. Freedman introduced the concept of "relative income" to fertility analysis, and its use developed simultaneously with the potential income concept (Freedman, 1963). Relative income differs from other income concepts in that it combines elements of both income and tastes. Studies employing the relative income concept do not necessarily hypothesize the existence of a relationship between actual income and fertility, but rather, between the ratio of, or differences between, actual income and the income of the appropriate reference group and fertility. Tastes and desires for material goods and children are formed by association with this group. Fertility then depends on one's ability to fulfil these desires with actual income. Families with incomes that are relatively high for their reference groups are expected to have more children. In her analysis of data from the 1955 Growth of American Families (GAF) study, Freedman classified the husband's actual income as high or low relative to the income expected in his age, educational, and occupational reference group and found husband's high relative income was associated with more children.[1]

A number of other researchers have attempted to test the relative income hypothesis. Bahr *et al.* (1975) found relative income related positively to fertility in Seattle. Reed *et al.* (1975) found support for the hypothesis among both blacks and whites. Chaudhury (1977) found that relative income related more to spacing than to cumulative fertility among Canadian women.

Comparison of the approach used by Willis and Turchi to estimate husband's permanent potential income with the relative income approach indicates that Willis's estimate is analogous to a reference group income at the age of 40. Turchi's method estimates the reference group income stream over time. Turchi recognized that his predicted potential wage was not necessarily the individual's expected potential wage, but rather the expected wage of his reference group. To adjust for this, he included a relative income component. Because the analysis was performed on two samples — the 1967 Survey of Economic Opportunity (SEO) sample and the 1960 GAF sample — two different methods of adjusting for relative income were required: relative income was based on a comparison of current family income with the income of the family head's age, occupation, and education peer group for the SEO sample. It was included in regression equations as dummy variables representing the top and bottom quartiles, along with predicted potential wage with children expected as the dependent variable. Predicted potential wage was weakly negatively-related to expected children. Current high relative income was positively related to expected children. For the GAF sample, the relative effect was based on a respondent's subjective assessment of family economic position. Potential incomes were adjusted upward or downward by .25 if the respondent indicated that she felt her economic position was high or low relative to friends and relatives. The resulting potential income was negatively related to expected fertility.

Bean and Wood (1974) also included both the concepts of relative and potential income in their analysis. They found that husband's relative and husband's potential income, which was actual current income because the men were husbands of women 40-49, were highly correlated, making it

difficult to separate their effects. The inclusion of either one of them (but not both) in regressions with children ever born indicated a significant positive effect for Anglos and a significant negative effect for blacks. The above was not true for Mexican Americans, however, among whom higher actual income was accompanied by lower fertility, and higher relative income by higher fertility (Bean and Wood, 1974:634-635).

Theoretical arguments about the income/fertility relationship are well developed and lead to the conclusion that the appropriate income concept for fertility analysis should include both aspects of potential income — full and lifetime — and/or the aspects of relative income. However, it is difficult to conclude from empirical research that the implementation of these theoretical developments has improved our ability to predict fertility. For instance, Mincer and Bean and Wood (for the Anglo population) report a positive relationship between husband's potential income and fertility when they use actual income of older cohorts. Turchi and Willis, with their income estimation procedures, do not find positive effects of potential income on fertility. Of course, Turchi includes the wife's potential income as well as the husband's, and Willis has an interaction term. Do their results differ because of the operationalization of potential income, because of the population studied, or because of other variables included in the equations?

While the relationship between relative income and fertility was positive in all the studies cited, the relationship between relative income and actual income is not clear. If actual and relative income are highly related, it may not be possible to separate the effects of actual income from those of relative income. Freedman reported that relative income had a positive effect on fertility when actual income was controlled (Freedman, 1963). While Bahr *et al.* also reported that relative income still had an effect on fertility when current income was controlled, they noted that the correlation co-efficient between the two income measures was .79 (Bahr *et al.*, 1975). Bean and Wood stated that the correlation between relative and actual income was so high that having both in the equation might be "statistically redundant" for some populations (Bean and Wood , 1974). Reed *et al.* did not report the relationship between relative and current income; they did, however, report that correlations between the two income measures and fertility are about the same when marriage duration is controlled (Reed *et al.*, 1975).

Since refinement of the income concept began because the hypothesized relationship between income and fertility did not appear with the most frequently-used measure, husband's current income, the relationships among the various income measures are of interest. If the refined income measures are highly related to those used originally, replacing one with another is unlikely to explain more of the variation in fertility. If, in order to obtain a theoretically-appropriate measure, income proxies are constructed from other socio-economic characteristics and are not highly related to income, observed effects of these constructed measures may not actually be income effects. In our analysis, we will first decompose potential income into its components, of which relative income is one, and examine the relationships among these components. Then we will proceed to examine the effect of varying the income measure on the income/fertility relationship. The effect of varying the fertility measures and of including control variables will also be examined.

The Subjects

Data for this analysis were collected in a panel study of a marriage cohort conducted by Robert Ferber and Francesco Nicosia. Respondents were married in the summer of 1968 in Peoria and Decatur, Illinois, and resided in the SMSA's of these two cities immediately after marriage. Only couples in which the husband was less than 30 at the time of marriage and in which the combined annual income of both partners was at least $5,000 (unless one or both were students) were eligible for inclusion in the panel. These couples have been interviewed approximately every six months beginning in the fall of 1968. This analysis uses data from the first ten interviews. Much of the income data are taken from the tenth interview which took place in April 1975.[2]

The original panel consisted of 266 couples, in which neither partner was previously married. Of these, 154 non-separated or divorced couples remained in the panel at the tenth wave. Almost half of the loss is due to known separations or divorces (48 couples). The remainder is due to participants' refusal to continue in the panel or inability to be located. Some of these additional losses could also be related to separation or divorce which was not reported before dropping out of the panel. Because some of the couples present on the tenth interview wave were absent on earlier waves or had missing responses on necessary individual variables, the N for this analysis is 133 couples.

Although attrition is admittedly a problem, we feel that the analysis is worth pursuing because the loss of panel members does not appear to have changed the character of the sample too greatly.[3] The sample is unique in that it is a marriage cohort; analysis of the behaviour of a marriage cohort eliminates the need to control for marital duration which has been shown repeatedly to have a strong effect on fertility at any point in the childbearing period. Additionally, because these couples were all married at the same time and are from the same urban area, they have been exposed to identical aggregate economic conditions at a given duration of marriage. Members of the panel included in the analysis are racially homogeneous — white — and none are either extremely poor nor extremely rich.[4] In 1974, one quarter (25 per cent) of the men and 17 per cent of the women included in this analysis reported that their educations had extended at least to a college degree. One third (31 per cent) of the husbands had completed high school or less; one half (50 per cent) of the wives were in this educational category. Just over one half (58 per cent) of the males were employed in blue collar occupations in 1974.

Table 1 indicates the fertility status of the panel in 1975, along with their desired completed family size. Over two thirds (71 per cent) of the respondents want to complete childbearing with a two-child family. In the seventh year of marriage, 92 per cent of the sample had at least one child and over half the panel (62 per cent) already had at least a two-child family. The importance of analyzing the behaviour of couples who plan their fertility and therefore practice contraception to achieve their desired result has been noted (Becker, 1960; Chaudhury, 1977; Freedman, 1963). Virtually all the panel couples included in the analysis are using, or intend to use, contraception.

Measurement of Potential and Relative Income

Potential Income

Potential family income (*Pf*) as operationalized here is the income a family would earn if both spouses worked full time. Potential family income can be separated into two major components: husband's potential income (*Ph*) and wife's potential income (*Pw*).

$$Pf = Ph + Pw \qquad (1)$$

For the sake of comparison, we will operationalize husband's potential income as both current potential income and as potential income when the husband is 40 years old. Since we assume husbands are working as fully as possible, current potential income for the husband is his actual income in 1974 (or the sixth full year of marriage).[5] Husband's potential income at age 40 is estimated by averaging his income over the fourth, fifth, and sixth years of marriage and then inflating this average income up to the age of 40 by applying a yearly percentage increase based on his age, occupation, and education. The estimated rates of increase are derived for 35 occupational and educational groups using Turchi's predicted wage streams for men in their 20s and 30s in major occupational and educational groupings (Turchi, 1975:166-167). With this method, the rate of increase in husband's income rather than the income itself is a function of education and occupation.[6]

A woman's potential income equals her actual income if she works full time. If she is a part time employee or unemployed, her potential income is what she estimated she would make if she worked full time.[7] The subjective nature of this estimate is theoretically defensible since it is the income a

TABLE 1. PERCENT OF FAMILIES WITH SPECIFIED DESIRED FAMILY SIZE AND ACTUAL FAMILY SIZE (1975)

NUMBER OF CHILDREN	FAMILY SIZE	
	DESIRED	ACTUAL
0	2.3	7.5
1	3.8	30.1
2	70.7	57.1
3	19.5	5.3
4	3.8	0.0
TOTAL	100.0	100.0

N = 133

woman thinks she would make that she uses as the basis for decisions about children and working. Almost all of these women have been employed sometime since marriage and should have some realistic idea of the wage they would command. Because of the well known lack of variance in women's incomes with age, and the demonstration by Turchi (1975:169) that women's income streams by age do not differ by education, potential income for wives is not estimated separately for age 40, but is assumed to equal current potential income.

Relative Income

It is possible to decompose the components of potential income to include the concept of relative income within the concept of potential income. Husband's potential income can be decomposed into the income appropriate for his reference group (*Yr*) and a deviation from this reference group income (*Ph* − Yr) which can be regarded as a measure of relative income. These components of the husband's income can be represented as follows:

$$Ph = Yr + (Ph - Yr) \qquad (2)$$

Reference groups are composed of those with similar age, educational attainment, and occupational classification. An individual's relative income is the difference between his actual income and his estimated income based on a regression of actual income on age, occupation, and education. Those who are earning above the estimated income for their reference groups have relative incomes greater than zero; those making less than their reference groups have relative incomes less than zero. Because we are estimating husband's potential income both currently and at age 40, we will estimate relative and reference group income at both times as well.[8]

Means and standard deviations of potential family income are reported in Table 2. Current potential family income averages approximately $23,000 a year. It differs from the average of actual family income ($18,158) because women's average earnings are only $2,278, while their potential incomes average $7,331. Thus, the husband's income provides the major share of both actual and potential income; however, it is a relatively more important share of actual income. The standard deviation of relative income indicates that currently husband's potential income differs on the average from reference group income by $4,174.[9]

TABLE 2. MEANS AND STANDARD DEVIATIONS OF POTENTIAL FAMILY INCOME AND ACTUAL FAMILY INCOME AND THEIR COMPONENTS

	MEAN	STANDARD DEVIATION
CURRENT POTENTIAL INCOME		
Family (P_f)	23,211	5,558
Husband (P_h)	15,880	4,340
Wife (P_w)	7,331	2,820
Husband's Reference Group (Y_r)	15,692	1,327
Husband's Relative ($P_h - Y_r$)	188	4,174
FUTURE (AGE 40) POTENTIAL INCOME		
Family (P_f')	29,199	6,126
Husband (P_h')	21,868	5,082
Wife (P_w')	7,331	2,820
Husband's Reference Group (Y_r')	21,842	1,397
Husband's Relative ($P_h' - Y_r'$)	26	4,872
ACTUAL INCOME IN THE SIXTH YEAR OF OF MARRIAGE (1974)		
Family (Y_f)	18,158	4,953
Husband (Y_h)	15,880	4,340
Wife (Y_w)	2,278	3,327

N = 133

Relations between Components of Potential Family Income

The Pearson correlation co-efficients between the components of potential family income are

TABLE 3. PEARSON CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF POTENTIAL INCOME AND ACTUAL INCOME, CURRENT FERTILITY, DESIRED FAMILY SIZE, TIMING OF FIRST BIRTH

	P_f	P_h	P_w	Y_r	$P-Y_r$	P'_f	P'_h	P'_w	Y'_r	$P'_h-Y'_r$	Y_f	Y_h	Y_w	Current Fertility	Desired Family Size	Timing of First Birth
Current Potential Income																
Family (P_f)	--													-.05	-.12	.06
Husband (P_h)	.87*	--												.05	-.08	-.05
Wife (P_w)	.64*	.17*	--											-.17*	-.11	.18*
Reference Group (Y_r)	.38*	.28*	.33*	--										-.06	-.05	.13
Relative (P_h-Y_r)	.77*	.94*	.07	-.05	--									.07	-.06	-.08
Future Potential Income																
Family (P'_f)	.81*	.66*	.57*	.25*	.61*	--								-.02	-.08	.04
Husband (P'_h)	.62*	.71*	.13	.12	.69*	.89*	--							.07	-.04	-.06
Wife ($P'_w=P_w$)	.64*	.17*	--	.33	.07	.57	.13	--						-.17*	-.11	.17*
Reference Group (Y'_r)	.20*	.09	.24*	.39*	-.03	.35*	.28*	.24*	--					-.01	-.02	.00
Relative ($P'_h-Y'_r$)	.59*	.71*	.07	.02	.73*	.83*	.96*	.07	.02	--				.06	-.02	-.05
Actual Family Income																
Family (Y_f)	.81*	.75*	.44*	.24*	.70*	.65*	.54*	.44*	.18*	.51*	--			-.28*	-.17*	.17*
Husband ($Y_h=P_h$)	.87*	--	.17*	.28*	.94*	.66*	.71*	.17*	.09	.71*	.75*	--		.05	-.08	-.05
Wife (Y_w)	.07	-.19*	.43*	.00	-.19*	.10	-.12	.43*	.15	-.17*	.15*	-.19*	--	-.48*	-.15	.32*

NOTE: -- value is 1.00
* significant at .05 level or below
N = 133

presented in Table 3. The current and future measures of family and husband's potential income are strongly correlated with each other (.81 and .71, respectively), and the relations among the components of potential family income are almost identical with both definitions of husband's potential income. For simplicity, we will discuss only current potential income.

The high correlation (.87) between potential family income and husband's potential income, which is his actual income in this case, indicates that this commonly-used measure of income is very closely related to our concept of potential family income.

Of the two components of potential husband's income — estimated reference group income and relative income — the latter is more strongly related to both family potential income (.77) and husband's potential income (.94). Like Bean and Wood (1974), we would have to conclude that it would be "statistically redundant" to include both husband's potential or actual and relative incomes in the same analysis. The relatively low relationship between reference group income and family potential income (.38) and husband's income (.28) should be noted. The importance of this relationship lies in other researchers' operationalization of potential income by estimating income streams from age, educational, and occupational status (Stafford, 1969; Turchi, 1975; Willis, 1973). At least in our sample, husband's potential income is determined more by other variables than those used to construct reference group income.[10] While this might differ in other samples, it should be noted that their national study, Duncan *et al.* (1972) found that education and occupation explained only a small proportion of the variance in income among men in 10-year age groups.

As expected, the wife's potential income is related to family potential income (.64); however, her actual income is not (.07). The lack of a relationship between wife's actual income and family's potential income seems to result from the fact that wives respond to husband's high absolute and relative incomes by earning lower incomes, as evidenced by the negative relationships (−.19) between these income measures and wife's actual income.

Potential Income and Fertility

Relationships between potential income, its components, and three measures of fertility are also presented in Table 3. Neither husband's current income nor any of the suggested substitutes — potential family income, husband's potential income at age 40, husband's reference group income, and husband's relative income — are significantly related to either current fertility, which is the number of children after approximately seven years of marriage, to desired family size, or to the timing of the first birth. Only wife's potential income, her actual income, and actual family income are significantly related to current fertility. Women with higher actual and potential incomes have fewer children (−.48 and −.17, respectively). Only actual family income in 1974 is significantly related to desired family size (−.17). Since none of the measures of wife's income are significantly related to desired family size, it appears that the relationships to family size after seven years of marriage result from the relationship between the timing of children and wife's working in the early stages of marriage. When the timing of the first birth — or the number of months after marriage the first child is born — is related to the income measures, the correlation co-efficients are very similar (except opposite in sign) to those for current fertility.

Although most of the income measures do not relate significantly to fertility, the signs of the relationships with current fertility are generally in the direction expected from theory and previous research. Husband's potential income is positively related to fertility. This weak positive combined

with the stronger negative relationship between wife's potential income and fertility results in a weak negative relationship between family potential income and fertility. However, the two components of husband's potential income also have opposite signs. Higher reference group income is associated with lower fertility; higher relative income, with higher fertility.

The effects of the various components of potential income on fertility should be examined net of other components and also with controls for other factors which might influence fertility. In order to do this, five measures of husband's or family potential income were created from both husband's current and husband's potential income at age 40 — family potential income, husband's potential income, husband's reference group income, husband's relative income, and husband's relative and reference group income together. These can be regarded as theoretically-appropriate income measures and were included in regression equations with a variety of control variables as independent variables and different measures of fertility as dependent variables. As in the zero-order relationships, results using different definitions of husband's income did not vary significantly, so only representative results are shown. When current fertility is regressed on the wife's potential income and the husband's or family income measures, the wife's potential income has a significant negative effect on current fertility (Table 4, Equations 1 and 8). However, these combinations of income variables explain only three to four per cent of the variance in current fertility. Additional control variables were introduced into equations to determine the effect of the income variables once other factors known to influence fertility were controlled. These factors included the wife's religion (Catholic or not), her number of siblings, her age at marriage and her years of schooling completed. Results are shown in Table 4, Equations 2, 4, 5, 6, and 7, for current income, and Equation 9, for husband's income at age 40. With the introduction of these controls, the significance of the wife's potential income is somewhat reduced and the measures of husband's income remain insignificantly related to fertility. When these other factors are included in the equations, there is a significant increase (six to seven per cent) in the amount of variation in current fertility that can be explained. Among these control variables, religion and the number of siblings have the most influence on current fertility. Other things equal, Catholics have an additional .3 children after seven years of marriage.

In order to examine the role of the wife's education vis-à-vis her potential income, wife's potential income was eliminated from the equations described above (Table 4, Equation 3). When this is done, the R^2 of the equation is reduced and the wife's education does not become an important explanatory variable. These results indicate that the wife's potential income and her education do not account for the same variation in current fertility, and substituting her education for her income does not give the same results. For comparative purposes, the wife's actual income replaces her potential income in Table 4, Equation 10. As in the zero-order relationships, a strong negative relationship appears between the wife's actual income and her current fertility.

In a final step, desired family size and the timing of the first birth were regressed on the control variables, the wife's potential income, and the various measures of husband's and family potential income. Because the explanatory power of wife's potential income, her religion, and her age are all reduced, the amount of variation explained in desired family size is only about half of that in current fertility (Table 5, Equations 1 and 2). The measures of husband's and family income remain unimportant in these equations. Number of siblings in family of origin is most important in explaining desired family size. The results of the analysis of desired family size again lead to the implication that these variables are more important in the timing of fertility than eventual completed family size. When their influence on the timing of the first birth is examined, this appears to be true (Table 5, Equations 3 and 4). While the role of the wife's potential income is greater in explaining timing than in explaining desired family size, the most important influences on timing are religion and age at marriage. Catholics have their first births 10 to 11 months earlier than non-Catholics. An increase of one year in the age of marriage leads to an additional three months after marriage before the first child is born.

TABLE 4. REGRESSION OF CURRENT FERTILITY ON POTENTIAL AND ACTUAL INCOME COMPONENTS AND SELECTED CONTROL VARIABLES: UNSTANDARDIZED REGRESSION COEFFICIENTS[1]

	Independent Variables											
	Components of Current Potential Income[2]					Religion	Number of Siblings	Age at Marriage	Education	R^2	F
	P_f	P_h	P_w	Y_r	$P_h - Y_r$						
1.		.012 (0.86)	-.046 (2.09)			**	**	**	**	.034	2.31
2.		.008 (0.57)	-.046 (1.70)			.286 (2.01)	.061 (1.69)	-.042 (1.27)	.048 (1.09)	.099	2.30
3.		.005 (0.36)	**			.313 (2.20)	.070 (1.94)	-.046 (0.24)	.008 (0.21)	.078	2.14
4.	.008 (0.57)		-.054 (1.69)			.286 (2.01)	.061 (1.69)	-.042 (1.27)	.048 (1.09)	.099	2.30
5.			-.044 (1.63)	-.013 (0.25)		.303 (2.15)	.061 (1.69)	-.039 (1.11)	.050 (1.11)	.097	2.25
6.			-.046 (1.70)		.001 (0.50)	.287 (2.04)	.060 (1.67)	-.040 (1.21)	.049 (1.11)	.099	2.31
7.			-.046 (1.70)	-.011 (0.21)	.001 (0.50)	.290 (2.03)	.060 (1.62)	-.038 (1.09)	.051 (1.11)	.099	1.97
	Components of Potential Income at age 40										
8.		.013 (1.08)	-.045 (2.06)			**	**	**	**	.037	2.53
9.		.012 (1.00)	-.048 (1.78)			.287 (2.05)	.064 (1.78)	-.038 (1.15)	.048 (1.09)	.103	2.42
	Components of Actual Income (1974)										
		$Y_h - P_h$	Y_w								
10.		-.011 (0.85)	-.104 (5.78)			.228 (1.80)	.025 (0.76)	-.055 (1.83)	.063 (1.80)	.278	8.09

N = 133

1. Regression coefficients are presented with t values in parentheses
2. Income components are measured in (000's)
** not included in equation

Summary

Economists have emphasized the theoretical importance of the concepts of potential and relative income in the socio-economic model of fertility. This paper has investigated the empirical interrelations among potential income, defined in two ways, and its components, including relative

income and current income. This analysis helps clarify how well an empirically-available income measure, such as current income, proxies for more theoretically-appropriate measures in the income/fertility relationship and also the relations among alternative theoretical measures of income. Husband's income, for example, is a frequently-used proxy for potential family income or husband's potential at a later age. Our analysis shows that all of these are closely related and hence are reasonable substitutes for each other. However, our results suggest that an estimate of husband's income based upon his age, education, and occupation, which is a frequently-used measure of permanent income, may be a poor approximation of either husband's current and potential income or potential family income. Also, husband's relative income is so closely related to potential family income and to husband's current and potential incomes that it is impossible to separate out the relative income effect. Our review of the literature indicates that this is true in other samples.

TABLE 5. REGRESSION OF DESIRED FAMILY SIZE AND TIMING OF THE FIRST BIRTH ON POTENTIAL INCOME COMPONENTS AND SELECTED CONTROL VARIABLES: UNSTANDARDIZED REGRESSION COEFFICIENTS[1]

	Independent Variables							
	P_h	P_w	Religion	Number of Siblings	Age of Marriage	Education	R^2	F
A. Dependent Variable = Desired Family Size								
1. Current Income	-.011	-.020	.075	.066	-.021	.024	.052	1.15
	(0.79)	(0.77)	(0.55)	(1.89)	(0.66)	(0.56)		
2. Income at age 40	-.003	-.021	.060	.066	-.022	.024	.047	1.04
	(0.25)	(0.81)	(0.44)	(1.89)	(0.69)	(0.56)		
B. Dependent Variable = Timing of First Birth								
3. Current Income	-.356	1.246	-9.349	-1.807	2.792	-1.136	.122	2.91
	(0.74)	(1.36)	(1.93)	(1.46)	(2.47)	(0.75)		
4. Income at age 40	-.289	1.247	-9.645	-1.877	2.685	-1.143	.121	2.90
	(0.71)	(1.36)	(2.01)	(1.51)	(2.36)	(0.76)		

N = 133

1. Regression coefficients are presented with t values in parentheses

Operationalizing the concepts of potential permanent and relative income has not succeeded in producing a significant relationship either positive or negative between income and fertility. Neither potential family or husband's relative income are significantly related to either current or desired fertility or the timing of the first birth; nor does the substitution of measures of potential or relative income alter the results obtained using husband's current income. However, the analysis has demonstrated the importance to fertility of wife's income versus husband's income. Our finding has been that only the wife's potential and actual incomes were strongly related to fertility, and in a negative direction. The wife's religion, her number of siblings and her age at marriage were

important determinants of variation in the fertility measures examined. However, even these background or taste measures were better at explaining the timing of fertility than at explaining desired family size.

The lack of significant relationships between any of these independent variables and desired family size may be a commentary on these times of converging fertility desires. If this group of respondents achieves its fertility desires, there is going to be little variation in fertility to be explained by the socio-economic model or any other theory of fertility behaviour. But, of course, completed fertility may not equal present fertility desires. If children delayed become children permanently foregone, then differences in current fertility may end up as differences in completed fertility rather than mere differences in the timing of childbearing.

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Footnotes

1 Easterlin (1969, 1973) has also emphasized the relative income effect. He, however, emphasizes parents rather than peers as the appropriate reference group. The relationship between fertility and this definition of relative income has been examined in an earlier article (Crimmins-Gardner and Ewer, 1978) and will be ignored here.

2 For a fuller description of the sample and data collected, see Crimmins *et al.*, 1982. Data tapes for this survey are available from the Survey Research Laboratory at the University of Illinois.

3 A comparison of these 133 couples with the other 133 couples eligible for analysis on the first wave indicates that there is a significant difference between the two groups in the husbands' average educational attainment and the average socio-economic status level of the husbands' fathers' occupations. Couples in which the husband had lower educational attainment and a father with a lower status occupation were subsequently more likely to be missing from the panel. There were no significant differences between the two groups in age of the husband or wife, educational attainment of the wife, and the socio-economic ranking of the occupations of the wives' father or of the occupations of the husbands and wives themselves at the first interview.

4 A number of researchers have indicated the positive aspects of such homogeneity for examining the income/fertility relationship. For instance, Bean and Wood (1974) and Reed *et al.* (1975) found that relationships may differ by ethnic group, while Chaudhury (1977) found that the relationship between relative income and fertility is stronger among couples with higher levels of education and occupation.

5 Because this is a marriage cohort, this is not necessarily the same as taking husband's current income in another sample. These men have a relatively narrow range of ages — the average is 28. None of the men are full time students or hold primary jobs that are part time. In an earlier analysis, we examined the relationships among measures of actual income in the first, fourth, fifth, and sixth full years of marriage and expected future income in the seventeenth year of marriage. We found that cross-sectional measures of income obtained after a few years of marriage were better proxies for future expected income than those obtained earlier in marriage (Ewer and Crimmins-Gardner, 1978:298).

6 Reference group and relative incomes at age 40 were also computed using outside income data from a national sample by age, occupation, and education. The results using the third definition of reference group and relative income did not differ markedly from the other two definitions and, thus, are not reported.

7 Women estimate what their yearly income would be if they were full time workers. Therefore, women who are currently part time workers can estimate a yearly income that is not equal to their part time hourly wage rates multiplied by a full time worker's hours.

8 Ratio as well as difference measures of relative income were examined. Results did not differ significantly and the ratio results are not reported.

9 The means of the relative income measures are not equal to 0 because reference group income was collapsed into the same categories as actual income.

10 For current income, reference group income was also estimated using occupation scored on the Duncan index. The results using this coding of occupation did not differ significantly from those using a more aggregated occupational coding.

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