Assortative Mating and Income Inequality in Taiwan: A Quantile Regression Approach

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Abstract

Sociologists are inclined to predict that increases in homogamy may increase inequality among families, but the existing literature is short on such empirical evidence. Using quantile regression, which allows us to detect if effects of income determinants may vary across different economic strata, we examine whether, how, and to what extent "like marrying like" may lead to the increased inequality in Taiwan's income stratification. Our findings indicate that homogamy – be it on educational attainment or on occupational status – exerts positive effects upon family income. The marginal effects of occupational homogamy are significantly higher at higher quantitles of the income distribution, whereas the differentials between lower and upper economic strata are negligible in the case of educational homogamy.

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Introduction

Sociologists and economists share a common interest in the study of social inequality such as income determination, which is a core issue everywhere in the world. Traditionally, sociologists' major concern is on the openness and closure of the society, using the association between the socioeconomic positions of fathers and sons as an indicative measure. Over the past decades, stratification research has progressed considerably; not only women and gender, but also marriage and family have been absorbed into the research endeavor. Attention has been paid to the husband-wife association, with a recent debate on "temporal and regional variation in the strength of educational homogamy" (Raymo and Xie 2000; Smiths et al. 1998; 2000). Using log-linear and log-multiplicative models as the primary tool to capture the pattern and extent of intergenerational and marital mobility, sociologists are particularly specialized in measuring the rigidity of the status hierarchy and the salience of class boundaries. By contrast, economists have raised concerns over the possibility that increased sorting may lead to greater inequality in income distribution, with controversies in simulation results (e.g., Fernandez and Rogerson 2001; Kremer 1997). Despite that sociologists are also inclined to predict that increases in homogamy may increase inequality among families (e.g., Hout 1982; Mare 1991), the existing literature is short on such empirical evidence and efforts.

This paper reports our first endeavor in testing whether, how, and to what extent "like marrying like" may lead to the increased inequality in income stratification, using a rapidly developing econometric technique, namely, quantile regression. Most of the analysis of income determination employed conventional least squares regression methods. However, it is well known that the resulting estimates of various effects on the conditional mean of variable of interest are not necessarily indicative of the magnitude

and nature of these effects on the two tails (or different quantiles) of its distribution (Koenker and Hallock 2001). While quantile regression enables one to detect if effects of income determinants may vary across different economic strata, the application of quantile regression in the sociological investigation of income inequality is nil, to the best of our knowledge.

Our analysis extends the literature on status attainment research in two important respects. First, while the status attainment model has long been criticized as an "individualistic" approach, we postulate a model of income determination using family as a unit of analysis, rather than individual characteristics. We thus shift the focus of research from the fashionable gender inequality in income to the consequences of educational and martial selection in earlier stage of life cycle for later economic success. Second, we estimate our model within the framework of quantile regression. As a result, we are able to measure the direct impacts of status consistency between husbands and wives, net of the effects of income determinants most prominent in the literature of labor processes and rewards. Our findings indicate that both educational and occupational homogamy exert significant positive influences upon family income. The marginal effects of occupational homogamy are significantly higher at higher quantiles of the income distribution, whereas the differentials between lower and upper economic strata are negligible in the case of educational homogamy.

The remainder of the paper is organized as follows. We first discuss characteristics of Taiwan's political-economy context to provide understanding of the setting analyzed here. Following a theoretical framework that integrates relevant economics and sociological theories, the analytical model is presented. Then, we illustrate the "why" and "how" of applying quantile regressions in the analysis of income determination, using data from the Panel Study of Family Dynamics in Taiwan (PSFD). And finally,

we discuss the results of a cross-section analysis of Taiwan's income inequality in 2000.

Taiwan's Context

It is constructive to begin our discussion of assortative mating and income inequality by sketching structural changes in Taiwan. During the second half of the twentieth century, Taiwan was in a transition from an agrarian society to an industrial one. Land reform policy, import-substitution and export-oriented industrialization delineated the historical stages of state development strategies (Gold 1986; Hsiao 1986). Following the land reforms (1949-1953), the agrarian class structure was transformed. Since 1960 Taiwan has been open to the world market. The state-led "dependent development" transformed further the content of class relations. The decline of farming as a way of life and the rise of operatives and kindred workers characterized the major changes in the occupational structures, reflecting the shrinking agricultural sector and the growing manufacturing one.

As Taiwan changed from a domestic market-directed, imported-substitution industrial program to a labor-intensive, export-oriented manufacturing policy in the mid-1960s, success for this development strategy depended on a marriage of cheap, disciplined local labor with international technology, capital, and market (Deyo 1987; Bello and Rosenfeld 1990). To meet the growing demand for skilled workers generated by industrialization, the state had expanded compulsory education from six to nine year since 1968, when cohort born in 1956 was about to enter junior high school. In addition, since 1966 the state had encouraged expansion of the vocational sector while limiting the expansion of academic institutions. Since the early 1980s, however, the demand for engineers had increased with Taiwan's industrial upgrading. Consequently, the policy changed in the 1990s. In short, the number of tertiary education institutions increased

rapidly from 7 in 1950 to 27 in 1960, 92 in 1970, 104 in 1980, 121 in 1990, and finally to 150 in 2000 (ROC Ministry of Education 2001), as a response to the demand for a pool of labor force whose skills enabled the state to advance economically and become modernized.

Over the years of industrialization, new technology has been introduced into Taiwan and the economic structure has begun to change as a result. Because uncertainty is a constant feature in Taiwan' political and economic environment, flexibility is the basic ingredient of all vitality in Taiwan's economy. The ability to respond to the economic opportunities on the world market is essential to entrepreneurial success (Cheng 2001; Hamilton and Biggart 1988; Ka 1993; Shieh 1992). And hence, the state has promoted virtually free trade conditions and made planning within the context of a free economy (Little 1979; Myers 1984). Free markets are also the basis of employment policy so that "the labor market in Taiwan is as close to a textbook model of a competitive labor market as one is likely to find", according to Wade (1990: 55). Not only is the price of labor adjusted passively to market conditions of price and productivity, but institutional factors which intervene bargains between buyers and sellers of labor are limited. Prior to 1987, strikes were illegal under martial laws, and even today labor unions and other conventional methods of collective bargaining are still week. In other words, Taiwan's labor control remains enterprise centered, although it initially had political rather than economic-strategic roots (Deyo 1987; Haggard 1990).

The state still owns and manages a range of public enterprises, but the public sector has steadily decreased in importance. The family firm and the business groups are the dominant organizational forms throughout the economy, especially in the export sector. Currently, the small-to-medium size, single-unit, family-run firms comprise 95 percent

of the total industrial enterprises, while about 69 percent of the total labor force being employed in the small or medium size firms (Lu 2001). In short, in the past four decades Taiwan has moved away from the strong state model to the strong society model of state/business relations. Besides, according to Hamilton and Biggart (1988), state planning has "no" importance in determining economic behavior of people on Taiwan.

The state, nevertheless, has shaped the structural conditions for social mobility through its educational policies. The most pronounced state influence on the regulation of the individual life course is the introduction of compulsory schooling and optional further education. In Taiwan, making the grade involves some easy transitions across major institutional divisions and some dramatic educational watersheds. To be more precise, following the extension of compulsory education to nine years, students who complete elementary schools are assigned to a local junior high school on the basis of their official residence. Beyond compulsory education, transitions to advanced levels are controlled by rigid entrance examination systems. As a result of excess demand for post-compulsory education, early social selection in schools characterizes Taiwan's stratification processes of socioeconomic achievements. Prior research has shown that despite trends toward a reduction in variations in schooling, significant inequalities of educational opportunity appeared in attaining the middle level of the educational hierarchy (e.g., Hsieh 1987; Tsai and Chiu 1993; Tsai et al. 1994; Hsueh 1996). Among cohorts born between 1945 and 1963, whose life experience will be empirically examined in the present analysis, the most egregious restrictions on educational opportunities had been those associated with gender, ethnicity, and class.

While girls and boys get more equal schooling, significant gender inequality in educational opportunities remained in cohorts of the 1960s, with girls of lower

socioeconomic origins losing out to daughters of more privileged fathers. Tsai et al. (1994) suggested that Taiwan's uneven pattern of educational attainment among women had been conditioned by their experience in a changing marriage market situated in a complex and unusual political-economic context. Therefore, Tsai (1996) applied multiplicative loglinear models to examine the relative importance of education and ethnicity in Taiwan's marriage market. Her findings indicate dual homogamy on ethnicity and education, with a decline in the strength of ethnic endogamy over time. It is evident that education serves as a salient factor in mate selection; marriage becomes less frequent as distance in schooling increases. What kinds of impact may educational assortative mating exert upon Taiwan's income stratification? This is an important empirical question in search of substantive answers.

A Theoretical Review of the Literature

To examine the effects of assortative mating on income stratification requires a theoretical framework that incorporates marriage into models of the determination of income. A wide variety of factors combined to create income discrepancies among married couples. Six major determinants of income have been well acknowledged in the literature: human capital accumulation, occupational status, labor market sector, labor force participation, the extent of work, and deterrents of labor supply to the market within the family context – primarily marriage and the traditional division of labor between husband and wife. In this section, we first discuss theories of income determination which are most prominent among the hypotheses proposed in the literature of labor processes and rewards. We then move to theories of assortative mating as they are related to income inequality among families.

First of all, human capital theory offers an economic conceptual apparatus (Becker

1957; 1964; 1965). The resources of an individual are regarded as a stock of capital that determines the individual's productivity and hence his/her earnings. Differential wages are assumed to result in large part from differences in the levels of human capital resulting from investment in education and training. Investment in human capital increases productivity and hence earnings, while the earnings increase constitutes a return on the investments. Thus, human capital theory explains income inequality by looking at individual differences in human capital accumulated over the life cycle.

On the other hand, most sociological research on the determination of income adheres to the status attainment or/and emerging structuralist perspectives. Conceptually, the status attainment perspective of income inequality is grounded in theories about the achievement process in which pursuit of an occupation leads to remuneration in the form of earnings (Duncan et al. 1972; Sewell and Hauser 1975). Using prestige or socioeconomic index to assess the hierarchical ordering of occupations, status attainment research highlights the centrality of educational attainment in the process of socioeconomic achievements (see Warren et al. [2002] for very recent developments). In contrast, segmented labor market theories emphasize that structural barriers are more important in perpetuating the disadvantaged status of secondary sector workers than are individual attributes such as educational attainment (see Berg and Kellenberg [2001] for a recent review). Labor market theories often divide the labor market into a topology of distinct sectors with little mobility between them. Sectors may be defined by occupations, industries, and classes. With regard to the latter, neo-Marxist views of stratification (e.g., Wright 1979; 1985) claim that income inequality that can not be explained by differences in the productivity endowments of workers is rooted in the location of jobs within the system of ownership and domination relations that make up workplace hierarchies.

Despite that the institutional complexity of income determination has led to its examination within a number of different paradigms, there is a common consensus: gender differences in income can not be explained solely in terms of the operation of labor markets. Such is the case because historically and universally speaking, women do have an alternative route to rewards through the marriage market, other than through the occupational-economic routes. Nevertheless, women's need to derive their status vicariously often has led to their adoption of a vicarious achievement pattern. Not only women's skill acquisition and occupational choice, but their quantitative dimensions of labor supply are apparently dominated by the traditional division of labor within the family context. Family formation processes thus supplement the influence of general stratification processes in determining the extent of income discrepancy between the two sexes.

The quantitative dimensions of women's supply of labor are summarized by the "new home economics" in two ways: labor force participation and hours of work (e.g., Mincer and Polackeh 1974). It has been well established that marriage, childbearing, and childrearing affect women's decisions about labor force participation not only in the dichotomous decision to participate in the market labor force, but also in decisions involving the extent of work, given participation. For example, Heckman (1974) integrates women's decisions regarding labor force participation, hours of work, and wages into one consistent framework. He provides an innovative method of estimating women's wage and labor supply functions that are free of selectivity bias.

Meanwhile, Becker's economics theory of marriage (1973; 1974) postulates that the marriage market is in equilibrium and that persons marrying expect to raise their utility level above what it would be were they to remain single. In his view, love and desire to have one's own children are two major motivations for marriage. Thus, each

marriage partner gains by teaming up with the other. Against the gain must be set the costs of marriage, such as loss of independence, the costs of searching further for an appropriate mate, or of learning more about existing candidates. The larger the net gain, the larger the fraction of people who marry. In short, Becker's exploration demonstrates that the net gain to a man and woman from marrying compared to remaining single depends positively on their income, human capital, and relative difference in wage rates.

In this context, it is worth comparing Becker's neo-classical theory of marriage with Blau's (1964) social exchange theory. Balu emphasizes the "emergent" properties of social structure. By this, he means characteristics that belong only to social institutions and not to individuals. To be more precise, Blau assumes that people are rational value maximizers, and that they value commonly recognized attributes such as status. This, he argues, implies that marriage generally occurs among those whose social standing is roughly equal. While Blau emphasizes that equality of status is important to love relationships, exchange theories have frequently been used not only to account for homogamy, but also to explain the departures from it (Schoen and Wooldredge 1989). For instance, exchange theories can be extended by recognizing exchanges between different attributes relevant to marriage choice. Along this line, Becker (1981) maintains that marriage "bargain" might result from a balance of pluses and minuses in different characteristics, such as a female emphasis on male economic characteristics and a male emphasis on female non-economic characteristics. As a result, a negative assortative mating on economic status prevails over a positive one. Similarly, according to Blau (1964), in the marriage market it is successful and wealthy men who on average have the prettiest wives. In his discussion of the effect on love relationship of an imbalance such that one partner contributes more than he/she receives, Blau concludes that the relationship must be less important and valuable for one than the other. And he connects

an exchange imbalance of this type to the essence of power.

Such unequal exchanges are to be expected because husbands and wives have traditionally different sex roles, most notably in Parsons' (1949) "asymmetry" hypothesis of the articulation of the family and the stratification system. The asymmetry hypothesis maintains that the traditional sexual division of labor is important for the stability of the family and even for the society itself, because the nuclear family is a unit of diffuse solidarity. Therefore, the members of a given family must share a common status in the system of stratification. A dual linkage with the labor market on the part of both spouses is detrimental to the marital relationship due to the introduction of competition in an expressive relationship. This competition is introduced because the spouses will probably have unequal income, prestige, and power. And hence disruptive effects would result from comparing each other's status. Similarly, according to anthropologist Levi-Strauss (1969: 240), hypogamy is a sign of instability in a patrilineal system, while hypergamy is stable. Nevertheless, a "stable" partrilineal system tends to be the one that advantages men over women in educational attainment and in other aspects of socioeconomic arrangements as well. Therefore, in our view, it is more interesting to look at the "unstable" side, such as how women's rising level of education influences their marriage behavior and pattern of labor force participation.

Hout (1982) demonstrates that in the United States, the association between husband's and wives' occupations in two-earner families is "symmetrical" – it does not matter whether husband or wife is taken as referent when assessing the association. Besides, most of the association is due to status consistency between husbands and wives. What is the theoretical implication of a close association between husbands' and wives' occupations for status inequality among families? Hout suggests that this issue be approached by assuming the status of two-earner families as the sum of husband's

and wife's characteristics. Then, in its simplified form, family status is given by: $S_f = a + b_1 S_h + b_2 S_w$, where S is status and f, h, and w are subscripts for family, husband, and wife, respectively. The variance of S_f is: $\mathrm{Var}(S_f) = b_1^2 \mathrm{Var}(S_h) + b_2^2 \mathrm{Var}(S_w) + 2\mathrm{Cov}(S_h, S_w)$. According to this specification, the variance in family status among two-earner families is a positive function of the association between husband's and wife's status. Therefore, a large and positive association between husband's and wife's occupational status implies that "inequality among families is greater than it would be if the association were weak", suggests Hout (1982: 408).

Recently, Fernandez and Rogerson (2001) constructed a simulation model of intergenerational educational acquisition and marital sorting; their findings indicate that increased sorting can significantly increase income inequality. This conclusion of economics is different from the earlier one reached by Kremer (1997), whose article demonstrates that even very large increases in marital sorting are likely to have negligible effects on the distribution of income and education.

To summarize the preceding discussion of relevant theories, two general hypotheses guide the literature on mate selection. They are: (1) the "matching" hypothesis which holds that persons tend to marry those of similar social standing; and (2) the "competition" hypothesis which postulates that persons tend to marry those of a somewhat higher socioeconomic status than themselves. While several theories provide distinct explanations for marriage into an equal or higher social status group, prior research has repeatedly shown that in industrialized societies, individuals tend to marry at the same educational level. Mare (1991), Kalmijn (1991a, 1991b, 1994), and Qian and Preston (1993) observed such a tendency to educational homogamy in the United States, as did Ultee and Luijkx (1990) in the Netherlands, Shavit and Stier (1994) in Israel, and Tsai (1994, 1996) in Taiwan. In what follows, we formulate an analytical

model to analyze the consequences of educational and marital selections in earlier stage of life cycle for later economic success.

The Rationale for Model Specification

Inspired by Hout's (1982) suggestion, we define the economic status of families as the sum of husband's and wife's income, which is determined by husband's and wife's characteristics. Three types of individual characteristics most prominent in the literature on labor market processes and rewards are considered. They are: (1) human capital, obviously indicated by educational attainment, (2) labor supply, readily measured by labor force participation and hours of work, and (3) location in the labor market, multi-dimensionally revealed by occupational status, labor market sector, and class position. Accordingly, a general model of the determination of income among married couples can be specified as follows:

$$Ln(INC_f) = g\,(ED_h, ED_w, LFP_h, LFP_w, HW_h, HW_w, OCC_h, OCC_w, LMS_h, LMS_w, SE_h, SE_w) \quad (1)$$

where *INC* is the total income of married couple, *ED* is educational attainment, *LFP* is labor force participation, *HW* is hours of work, *OCC* is occupational status, *LMS* is labor market sector, *SE* is self employment, and *f, h,* and *w* are subscripts for family, husband, and wife, respectively.

This is an one-period cross-section model, which is intended to explain Taiwan's income inequality among families in 2000. Nevertheless, information on hours of work and location in the labor market is missing for those who did not participate in the labor force. Therefore, when estimating the relative importance of the variables considered in the equation, one either employs an OLS regression with extra dummy variables controlling for missing data, or applies a two-stage selection model of Heckman (1974) style to correct for the potential bias caused by the selection into the job market. Since

the focus of this analysis is on the link between educational attainment and income inequality through marriage, rather than the endogeneity (self-selection) problems, we try a third alternative. That is, we transform husband's and wife's characteristics into family's characteristics under the assumption that the marriage market exists. In other words, equation (1) is transformed into equation (2), shown as follows.

$$Ln(INC_f) = g\,(ED_f, EDMAT_f, OCC_f, OCCMAT_f, LFP_f, HW_f, LMS_f, SE_f) \qquad (2)$$

To be more precise, we think that the status of families in social stratification can be indicated by the higher educational and occupational status of husband and wife. Take education for instance here. We include in the model a variable (ED_f) indicating the higher number of years of schooling attained by the couple, instead of the husband's and wife's respective years of schooling. In addition, dummy variables are used to capture the effect of educational assortative mating ($EDMAT_f$). There are three types of assortative mating by education: (1) homogamy: husband and wife attained the same level of education; (2) hypergamy: husband attained a higher level of education than did wife; and (3) hypogamy: wife attained a higher level of education than did husband. The traditional type of marriage (that is, hypergamy) is used as a reference category in the analysis.

Similar to the case of family's educational status, family's occupational status (OCC_f) is indicated by the higher of husband's and wives' ISEI score, ranging from 10 to 88 (Ganzeboom et al. 1992). If one of the two is missing, then the variable measures the ISEI score of the couple for which data are available; if neither of them had an identifiable occupation, then a zero score is assigned to the couple. In the analysis, missing data are identified by dummy variables. Besides, to capture the effects of occupational assortative mating ($OCCMAT_f$) on income inequality, we employ two dummy variables contrasting hypergamy with the other types of marriage.

In addition, the couples are sorted into three groups according to their joint pattern of labor force participation (i.e., LFP_f): (1) dual-income family in 2000; (2) only husband had an income; and (3) only wife had an income. Meanwhile, we include in the model a variable (HW_f) measuring the differential extent of work supplied by the family as a whole, which is the sum of husband's and wife's hours of work per week.

Finally, to control for the effects of labor market sector (LMS_f) and class position (SE_f) on income inequality, three dummy variables are employed. They measure if the family (i.e., at least one of the couple) was engaged in the agricultural sector, if it was affiliated with the public sector, and if it was self-employed, respectively.

Methodology

In empirical studies, it is typical to analyze the relationship between the dependent variable Y given the information contained in the explanatory variables X. A standard approach to this analysis is to specify a linear regression model and estimate its unknown parameters. Two leading estimation methods are ordinary least squares (OLS) and least absolute deviation (LAD). It is well known that the regression model estimated by former (latter) is an approximation to the conditional mean (median) function of Y given X. Although conditional mean and median are two important location measures, they can not fully characterize a conditional distribution. A breakthrough in the regression analysis is quantile regression originally proposed by Koenker and Bassett (1978); see Koenker (2000) and Koenker and Hallock (2001) for recent reviews. Here, we briefly illustrate the model specification of quantile regression.

Let Y be the random variable with the distribution function F_Y. The θ–th quantile, denoted as $b(\theta)$, is such that $F_Y(b(\theta)) = \theta$, i.e.,

$$b(\theta) := F_Y^{-1}(\theta) = \inf\{y : F_Y(y) \geq \theta\}.$$

Thus, 100θ% (100(1-θ)%) of the probability mass of Y locates below (above) the q-th quantile, $b(\theta)$. More generally, assume that Y is continuously distributed with the conditional distribution $F_{Y|X}(y)$. The θ–th quantile function conditional on $X = x$ is $Q(x; \theta) := F^{-1}_{Y|X=x}(\theta)$.

This approach allows us to estimate various quantile functions of the conditional distribution of Y given X. While the conditional mean (median) function represents an "averaging" (or "central") behavior of a random variable, the conditional quantile function is able to describe not only central but also tail behaviors of the underlying conditional distribution. Thus, quantile regressions provide much more information regarding the conditional behavior of Y. Since the introduction of "regression quantiles" by Koenker and Bassett (1978) in *Econometrica*, quantile regression has been used in economics to study determinants of wage or trends in income inequality (Buchinsky 1994; 1998; Garcia et al. 2001).

Data and Descriptive Statistics

This analysis is based on data from the PSFD, which is an on-going survey project designed to collect data sets on family dynamics in Taiwan, under the directorship of Cyrus Chu, a vice president with Academia Sinica and a professor in economics (see http://psfd.sinica.edu.tw for detailed information on the project). The PSFD started with a pilot survey in 1999, based on island-wide samples representative of cohorts born between 1953 and 1963; in total, 994 respondents (450 males and 544 females) were interviewed face to face (hereafter, the 1999 sample). After the pilot survey, the PSFD continued to undertake a new wave of social surveys using the same questionnaire scheme, but based on different island-wide representative samples of cohorts born

between 1934 and 1954; 1,959 new respondents (923 males and 1,036 females) were interviewed (hereafter, the 2000 sample). Meanwhile, a second follow-up survey of the 1999 sample was carried out, with 802 cases being successfully located in 2000.

For the present purpose of analysis, we pool the 1999 and 2000 samples together and use information obtained from the above three surveys regarding the respondent's and his/her spouse's educational attainment, income in 2000, and other variables of interest. Among the total 2,761 samples, 2,322 respondents were married when the 2000 surveys were conducted; among them, 1,529 cases (718 males and 811 females) were born in or after 1945, the year when Taiwan was retroceded to China after fifty years of Japanese colonial rule (1895-1945). Among these representative samples of post-war cohorts, 600 male and 614 female respondents reported available information on self's and spouse's education as well as a non-zero family income.

Thus, we focus on a sample of 1,214 matched husband-wife pairs where the primary respondent – be it he or she – was born between 1945 and 1963, where he/she provided information on self's and spouse's education, and where the couple had a non-zero income in 2000. As a result, the husbands in our analysis sample range from 31 to 77 years of age, averaging 47.7 years old. By contrast, the age range of wives in the analysis sample is smaller (from 21 to 56 years of age), with a lower average of age (43.9). With respect to socioeconomic achievements, not only is the husbands' mean years of schooling (10.75) significantly higher than that of the wives (9.98), but the husbands' average monthly income in 2000 (nt$49,762, equivalent to us$1,508 at then currency rate of 33:1) is more than double of that of the wives (nt$20,667, equivalent to us$626).

Table 1 presents means and standard deviations of the variables considered in the model, along with a short description of each variable. As we can see in the table, in

2000 Taiwan's average family income per month was nt$70,430 (equivalent to us$2,134), with a standard deviation (76,467) larger than the mean. With respect to patterns of assortative mating, women tended to married men who attained same educational levels (49% of the analysis sample), and they also tended to married men who had occupational status higher than themselves (55%). Besides, two-earner families prevailed in Taiwan (51%), while over 40% of the total families analyzed here were self-employed.

(Table 1 about here)

In order to detect the potential impacts of educational expansion, we report descriptive statistics of variables by respondent's birth cohort in Table 2. Inspection of the table reveals that the average income of the families in which the primary respondent was born between 1945-55 (67,852) is lower than the average family income of younger cohorts (75,338), but the standard deviation of the former (80,636) is much larger than that of the latter (67,643). In other words, the degree of income inequality is less profound among the families of those younger respondents whose compulsory education had been extended to nine years, and whose families – accordingly – attained a higher mean level of education (12.3 years) than did their older counterpart (10.7 years). Does this finding imply that the extension of education exert an important negative influence on income inequality, as Alderson and Nielsen (2002) suggest? Since a variety of factors combined to create income inequality among married couple, it is necessary to carry out a careful causal analysis before a firm conclusion can be made.

(Table 2 about here)

Results

1. Pattern of Income Determination

We start the causal analysis by estimating the model first by OLS and then at five

different quantiles. The OLS results are presented in Table 3. First note the estimated coefficients of the first model (long regression) shown in the table. The independent variables considered – all together – can explain almost half of the income variation among families (R^2 = .49). However, not every variable included in the OLS regression exerts a significant effect on family income, and hence in the second model (short regression) of the table a few variables with negligible direct effects are excluded.

(Table 3 about here)

As we move from Model 1 to Model 2, we can see that when all the significant determinants of income are considered simultaneously, the direct influence of educational attainment remains salient. Nevertheless, it is occupational status of the family that appears to be the most important predictor of familial income, explaining 22 percent of variance alone, as reflected in the stepwise OLS regressions (not shown in the table). Besides, differential patterns of labor force participation among married couples help explain another 18 percent of their variance in income. The estimated coefficient of the parameter capturing wife's economic contribution is positive for dual-income family, whereas it is negative in the absence of husband's income. It is evident that when other things being equal, two-earner family attained a higher level of income than did the traditional type of family in which husband was the sole bread-earner. In contrast, families supported by wives alone were at disadvantages. In other words, wife's income played an important role in generating the observed levels of inequality among families in 2000, but how it played the role depends on whether or not husband had his own source of income. Besides, as expected, families engaging in the agricultural sector were handicapped in the economic race, while working hard via increasing hours of work was an effective way to improve the economic condition of the family. Finally, both educational and occupational homogamy could lead the couple

to a higher level of family income than that attained by families in other types of marriage, namely, hypergamy and hypogamy. The OLS results thus reveal significant positive effects of "like marrying like" on family income, net of the effects of other income determinants considered.

While the pattern of income determination discussed above is interesting and convincing, it is a fact that regression functions estimated from survey data are typically not homoskedastic. As a way of assessing the heteroskedasticity in the conditional distribution of variable of interest, quantile regression estimates will often have better properties than OLS. Besides, quantile regression enables one to describe the entire income distribution, parsimoniously. In short, Koenker and Bassett (1978) suggest estimating conditional quantiles, instead of estimating the mean conditional on the values of the explanatory variables. If the conditional median is estimated, the method is equivalent to LAD. Comparisons across OLS results (Model 2 in Table 3) and the corresponding LAD results (Model 3 in the same table) reveal that in all cases, these significant coefficients have the expected signs. This is not surprising at all. What single out among the comparisons are the sharp contrasts in magnitude between these two kinds of estimates in three cases: educational homogamy, occupational homogamy, and agricultural sector. While this finding is worthy of notice, the varying nature of the estimates at the five quantiles provides a more complete picture of how the income distribution depends on the covariates.

2. Parameter Estimates for Different Economic Strata

In this section we present results obtained from estimating the (full) model at the 0.10, 0.25, 0.50, 0.75, and 0.90 quantiles, simultaneously. The estimated coefficients are presented in Table 4. It has to be noted that the estimated standard errors in parentheses

are obtained using the bootstrap method; bootstrapped standard errors are the "default" standard errors that a software package like Stata would output.

(Table 4 about here)

Figure 1 depicts the estimated quantile coefficients for eight variables of interest, together with their 90% confidence intervals (in shadow). These eight variables are the ones whose OLS estimates turn out to be significant at the level of $\alpha = .05$ in the preceding section. The corresponding OLS results for each variable are also depicted in the figure; see the three horizontal dash-lines, with the middle one indicating the magnitude of OLS estimate and the other two indicating the range of 90% confidence interval.

(Figure 1 bout here)

Notice first that the magnitude of the estimates for some of the variables (years of schooling, ISEI scores, and occupational homogamy) increase monotonically when moving from a lower quantile to a higher quantile; the marginal effects of these variables are larger (in magnitude) for upper economic strata. OLS overestimates the magnitude of these effects at the 10% quantile and underestimates the magnitude of these effects at the 90% quantile. As we can see in Figure 1c, quantile estimates of ISEI effects for lower economic strata exceed the 90% confidence interval of OLS, and so is the case of occupational homogamy at two tails (See Figure 1d).

In contrast, the differentials in income between two-earner and traditional families decrease monotonically from the lower quantiles to the higher quantiles. Similarly, the economic hardships suffered by families associated with the agricultural sector appear larger in magnitude at the lower quantiles than at the higher quantiles (i.e., larger marginal effects for lower economic strata). OLS underestimates the magnitude of these effects at the 10% quantile and overestimates the magnitude of these effects at the 90%

quantile. This phenomenon is most notable in the case of agricultural sector, where almost all the quantile estimates exceed the 90% confidence interval of OLS (See Figure 1g).

Interquantile models are applied to estimate the differentials in parameter coefficients between the two tails of the income distribution, such as at 10% and 90% quantiles. Results (shown in Table 5) indicate that the interquantile differences turn out to be statistically significant on occupational status, occupational homogamy, and the agricultural sector, but not on years of schooling and educational homogamy. With respect to the latter, we find their marginal effects constant across the distribution of family income, although they are all significant at a variety of quantiles estimated. In other words, while effects of occupational status and occupational homogamy differ over different economic strata, returns to education are equally important for families located at different positions of the income distribution, and so are the salient effects of educational homogamy.

(Table 5 about here)

3. Potential Impacts of Educational Extension

Our final task is to detect the potential influences of educational extension in 1968 upon the determination of family income in 2000. Results of cohort-specific quantile regressions are presented in Tables 6 and 7, while Figure 2 depicts the estimates obtained for four variables of special concern, namely, educational attainment, educational homogamy, occcupational status, and occupational homogamy.

(Tables 6 and 7 about here)

Figure 2 consists of eight graphs. The four graphs on the left give the OLS and the 0.10, 0.25, 0.50, 0.75, and 0.90 quantile estimates obtained among Group I (i.e., those

families in which the primary respondent was born in the period of 1945-55); the right ones give the corresponding results for Group II (1956-63 cohorts).

(Figure 2 about here)

Cross-cohort comparisons reveal similarities and differences in the patterns and effects of these four variables. First, returns of education are significant, irrespective of location in the distribution of income, whereas the differential between the two tails of the income distribution is not. This is true for both groups. Second, effects of educational homogamy are statistically significant for locations at the 25%, 50%, and 90% quantiles, but not at the 10% and 75% quantiles. This pattern holds for both groups. And, again, the differential between the two tails of the income distribution is not significant for both groups. Third, the shapes of the quantile estimates on occupational status or occupational homogamy are similar across groups. In both cases, the corresponding marginal effects increase monotonically when moving from a lower quantile to a higher quantile. Meanwhile, quantile estimates of the occupational variables at the two extremes of income stratification are likely to exceed the 90% confidence interval of OLS.

Meanwhile, there are some differences between the two groups. First note that effects of educational attainment and educational homogamy increase after the extension of education; this increase is larger (in magnitude) at the lower tail of the income distribution than at the higher one. In contrast to the increasing effects of educational variables across cohorts, the effects of occupational status and occupational homogamy are more important for the older group. As a matter of fact, the effects of occupational homogamy are not statistically significant at every quantile among the younger group.

Besides, results obtained from estimating interquantile models (shown in Table 8)

indicate that among the older cohorts examined, effects of occupational status are all significant at every quantile, with a salient differential between the two tails of the income distribution. By contrast, the corresponding differential between 10% and 90% quantiles is not statistically significant among the younger cohorts examined. Besides, occupational homogamy exerts no significant effects among them, whereas for their older counterpart, it is an important determinant of family income for the middle and upper economic classes. These findings are the major differences between these two groups.

(Table 8 about here)

Conclusions

At the turn of the twentieth-first century, there was a rising concern about the recent upswing in income inequality in Taiwan, a phenomenon similar to the "great U-turn" phenomenon experienced by some OECD countries (see Alderson and Nielsen 2002). The recent upswing in inequality in industrial societies has been attributed to diverse causes, including the impacts of globalization and the major features of post-industrial development, such as the spread of education. In this paper, we explicate the like between educational attainment and income inequality through marriage, with a focus on the role played by "like marrying like" in generating the observed levels of income inequality in Taiwan.

Using quantile regression, we are able to detect not only if the positive association between husband's and wife's status may lead to an increase in income inequality among families, but if the effects of homogamy – in whatever form – may vary across different locations in the income stratification. While the conventional OLS methods help establish the traditional wisdom regarding the determination of income, quantile

regression can provide much more information on "who gets what and why", a central issue of concern for students of social stratification.

We can draw three main conclusions from this analysis. First, both educational and occupational homogamy exert positive effects upon family income. Second, the marginal effects of occupational status and occupational homogamy are significantly higher at higher quantitles, while the differential between the two tails of the income distribution is negligible in the case of educational attainment or educational homogamy. Third, there are some evidence indicating that after the extension of education, the effects of educational attainment and educational homogamy increase for families in lower income strata. By contrast, these effects remain approximately constant for the upper economic class.

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Table 1. Descriptive Statistics of Variables Included in the Model (N=1,214)

Variable	Description	Mean	S.D
INC	sum of husband's and wife's income per month in 2000	70,429.736	76,466.765
LNINC	log of family income (INC)	10.867	0.767
ED	the higher of husband's and wife's years of schooling	11.257	3.487
EDMAT	pattern of mating on education		
Hypergamy	1 if husband's education is higher	0.370	0.483
Homogamy	1 if husband and wife attained an equal education	0.490	0.500
Hypogamy	1 if wife's education is higher	0.140	0.347
OCC	the higher of husband's and wife's ISEI score	47.600	15.625
OCCMAT	pattern of mating on occupation		
Hypergamy	1 if husband's ISEI score is higher	0.553	0.497
Homogamy	1 if husband and wife had an equal ISEI score	0.163	0.370
Hypogamy	1 if wife's ISEI score is higher	0.284	0.451
LFP	joint pattern of labor force participation		
2INC	1 if dual-income family	0.513	0.500
1HINC	1 if only husband had income	0.386	0.487
1WINC	1 if only wife had income	0.100	0.301
HW	sum of husband's and wife's hours of work per week	75.860	34.665
LMS	labor market sector		
AGR	1 if husband and/or wife were in the agricultural sector	0.064	0.245
PUB	1 if husband and/or wife were in the public sector	0.204	0.403
SE	1 if husband and/or wife were self-employed	0.414	0.493
Missing Data			
Husband	1 if any of husband's data are missing	0.138	0.345
Wife	1 if any of wife's data are missing	0.357	0.479

Table 2. Descriptive Statistics by Respondent's Birth Cohort

Variable	1945-1955 (N=796)		1956-1963 (N=418)	
	Mean	S.D	Mean	S.D
Family income	67852.136	80636.101	75338.278	67643.073
LN (income)	10.800	0.805	10.994	0.671
Years of schooling	10.686	3.630	12.345	1.906
Educational mating				
Hypergamy	0.377	0.485	0.356	0.479
Homogamy	0.495	0.500	0.481	0.500
Hypogamy	0.128	0.334	0.163	0.369
ISEI score	46.077	15.307	50.500	15.832
Occupational mating				
Hypergamy	0.562	0.497	0.536	0.499
Homogamy	0.173	0.379	0.143	0.351
Hypogamy	0.265	0.442	0.321	0.467
Labor force participation				
2INC	0.475	0.500	0.586	0.493
1HINC	0.408	0.492	0.345	0.476
1WINC	0.117	0.321	0.069	0.254
Hours of work	73.149	33.618	81.021	36.059
Labor market sector				
Agricultural	0.079	0.270	0.036	0.186
Public	0.210	0.407	0.194	0.396
Self-employment	0.423	0.494	0.397	0.490
Missing Data				
Husband	0.155	0.362	0.108	0.310
Wife	0.372	0.484	0.301	0.471

Table 3. Estimated Coefficients for Income Equations (N=1,214)

Independent Variable	OLS (1)	OLS (2)	LAD
Education			
Years of schooling	0 .061*	0 .063*	0 .072*
	(0 .006)	(0 .006)	(0 .006)
Mating (in contrast with Hypergamy)			
Homogamy	0 .148*	0 .153*	0 .191*
	(0 .039)	(0 .036)	(0 .034)
Hypogamy	-0 .014	-	-
	(0 .050)		
Occupation			
ISEI	0 .010*	0 .010*	0 .009*
	(0 .001)	(0 .001)	(0 .001)
Mating (in contrast with Hypergamy)			
Homogamy	0 .170*	0 .180*	0 .128*
	(0 .051)	(0 .046)	(0 .048)
Hypogamy	-0 .049	-	-
	(0 .046)		
Labor force participation (in contrast with 1HINC)			
2-Income	0 .332*	0 .264*	0 .279*
	(0 .053)	(0 .039)	(0 .029)
1-wife-Income	-0 .519*	-0 .645*	-0 .612*
	(0 .085)	(0 .056)	(0 .044)
Hours of Work	0 .003*	0 .003*	0 .002*
	(0 .001)	(0 .001)	(0 .001)
Agricultural sector	-0 .521*	-0 .533*	-0 .305*
	(0 .069)	(0 .067)	(0 .107)
Public sector	0 .053	-	-
	(0 .043)		
Self-employment	0 .0002	-	-
	(0 .036)		
Dummy for missing data			
Husband	-0 .024	-	-
	(0 .063)		
Wife	0 .093	-	-
	(0 .061)		
Intercept	9 .247*	9 .334*	9 .282*
	(0 .114)	(0 .081)	(0 .072)
R^2	0 .491	0 .488	0 .349

* Significant at the significant level of α=0.05 ; numbers in parentheses are standard error.

Table 4. Quantile Estimates for Income Equation (N=1,214)

Independent Variable	Quantile at 0.10	0.25	0.50	0.75	0.90
Education					
Years of schooling	0.055*	0.066*	0.069*	0.068*	0.069*
	(0.006)	(0.006)	(0.005)	(0.006)	(0.008)
Mating (in contrast with Hypergamy)					
Homogamy	0.153*	0.156*	0.165*	0.140*	0.158*
	(0.049)	(0.034)	(0.039)	(0.039)	(0.055)
Hypogamy	0.070	0.020	-0.017	-0.035	-0.015
	(0.080)	(0.041)	(0.045)	(0.052)	(0.071)
Occupation					
ISEI	0.005*	0.005*	0.008*	0.010*	0.011*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002
Mating (in contrast with Hypergamy)					
Homogamy	-0.017	0.095	0.126*	0.191*	0.294*
	(0.089)	(0.064)	(0.043)	(0.065)	(0.108)
Hypogamy	-0.121	-0.057	-0.030	-0.015	-0.026
	(0.049)	(0.046)	(0.042)	(0.054)	(0.076)
Labor force participation (in contrast with 1HINC)					
2-Income	0.417*	0.354*	0.315*	0.309*	0.228*
	(0.128)	(0.062)	(0.068)	(0.079)	(0.086)
1-wife-Income	-0.554*	-0.523*	-0.531*	-0.495*	-0.475*
	(0.177)	(0.100)	(0.086)	(0.109)	(0.173)
Hours of Work	0.003*	0.002*	0.003*	0.002*	0.003*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Agriculture sector	-1.142*	-0.689*	-0.318*	-0.237*	-0.220*
	(0.203)	(0.109)	(0.105)	(0.089)	(0.103)
Public sector	0.094*	0.061	0.050	-0.002	-0.068
	(0.039)	(0.042)	(0.031)	(0.046)	(0.046)
Self-employment	-0.277*	-0.097	-0.051	0.085	0.261*
	(0.081)	(0.051)	(0.036)	(0.063)	(0.108)
Dummy for missing data					
Husband	-0.022	-0.068	-0.006	-0.011	-0.115
	(0.113)	(0.071)	(0.051)	(0.085)	(0.182)
Wife	-0.023	-0.067	0.044	0.125	0.167
	(0.135)	(0.060)	(0.079)	(0.088)	(0.115)
Intercept	9.157*	9.313*	9.292*	9.441*	9.625*
	(0.197)	(0.115)	(0.115)	(0.123)	(0.177)
R^2	0.351	0.369	0.352	0.324	0.282

* Significant at the significant level of α=0.05 ; numbers in parentheses are standard error.

Table 5. Significant Test for Interquantile Model (N=1,214)

Independent Variable	Difference between Two Tails		Difference Compared with the Median			
	0.10/0.90	0.25/0.75	0.10	0.25	0.75	0.90
Education						
Years of schooling	-	-	-	-	-	-
Mating (in contrast with Hypergamy)						
Homogamy	-	-	-	-	-	-
Hypogamy	-	-	-	-	-	-
Occupation						
ISEI	*	*	*	*	-	-
Mating (in contrast with Hypergamy)						
Homogamy	*	-	*	-	-	-
Hypogamy	-	-	-	-	-	-
Labor force participation (in contrast with 1HINC)						
2-Income	-	-	-	-	-	-
1-wife-Income	-	-	-	-	-	-
Hours of Work	-	-	-	-	-	-
Agriculture sector	*	*	*	*	-	-
Public sector	*	-	-	-	-	*
Self-employment	*	*	*	-	*	*
Dummy for missing data						
Husband	-	-	-	-	-	-
Wife	-	*	-	-	-	-
Intercept	-	-	-	-	-	*

* Significant at the significant level of α=0.05

Table 6. Estimated Coefficients for Group I (N=796)

Independent Variable	Quantile at 0.10	0.25	0.50	0.75	0.90	OLS
Education						
Years of schooling	0 .053*	0 .062*	0 .064*	0 .067*	0 .065*	0 .052*
	(0 .012)	(0 .009)	(0 .007)	(0 .015)	(0 .015)	(0 .008)
Mating (in contrast with Hypergamy)						
Homogamy	0 .146	0 .138*	0 .129*	0 .093	0 .145*	0 .103
	(0 .085)	(0 .047)	(0 .031)	(0 .069)	(0 .072)	(0 .052)
Hypogamy	0 .049	-0 .039	0 .019	-0 .071	-0 .116	-0 .041
	(0 .074)	(0 .075)	(0 .061)	(0 .080)	(0 .091)	(0 .068)
Occupation						
ISEI	0 .005*	0 .007*	0 .010*	0 .010*	0 .012*	0 .011*
	(0 .002)	(0 .002)	(0 .001)	(0 .002)	(0 .003)	(0 .002)
Mating (in contrast with Hypergamy)						
Homogamy	-0 .007	0 .107	0 .144*	0 .222*	0 .367*	0 .196*
	(0 .123)	(0 .068)	(0 .038)	(0 .070)	(0 .148)	(0 .066)
Hypogamy	-0 .138	-0 .077	-0 .011	0 .046	-0 .018	-0 .055
	(0 .082)	(0 .079)	(0 .067)	(0 .061)	(0 .091)	(0 .064)
Labor force participation (in contrast with 1HINC)						
2-Income	0 .423*	0 .377*	0 .313*	0 .331*	0 .334*	0 .365*
	(0 .183)	(0 .114)	(0 .079)	(0 .097)	(0 .118)	(0 .001)
1-wife-Income	-0 .553*	-0 .462*	-0 .540*	-0 .417*	-0 .395	-0 .487*
	(0 .278)	(0 .176)	(0 .152)	(0 .186)	(0 .287)	(0 .071)
Hours of Work	0 .003*	0 .003*	0 .002*	0 .001	0 .002	0 .004*
	(0 .001)	(0 .001)	(0 .001)	(0 .001)	(0 .002)	(0 .112)
Agriculture sector	-1 .154*	-0 .701*	-0 .290*	-0 .284*	-0 .289	-0 .556*
	(0 .454)	(0 .154)	(0 .133)	(0 .132)	(0 .195)	(0 .083)
Public sector	0 .113*	0 .105	0 .058	0 .048	-0 .091	0 .099
	(0 .050)	(0 .059)	(0 .059)	(0 .075)	(0 .117)	(0 .057)
Self-employment	-0 .301*	-0 .132*	-0 .088	0 .123	0 .261*	-0 .027
	(0 .082)	(0 .043)	(0 .050)	(0 .064)	(0 .113)	(0 .047)
Dummy for missing data						
Husband	-0 .037	-0 .025	-0 .013	-0 .140	-0 .195	-0 .004
	(0 .134)	(0 .134)	(0 .121)	(0 .112)	(0 .231)	(0 .082)
Wife	0 .204	-0 .014	0 .061	0 .186	0 .124	0 .140
	(0 .197)	(0 .113)	(0 .104)	(0 .120)	(0 .156)	(0 .083)
Intercept	9 .170*	9 .195*	9 .326*	9 .543*	9 .723*	9 .261*
	(0 .354)	(0 .160)	(0 .122)	(0 .170)	(0 .213)	(0 .150)
R^2	0 .355	0 .356	0 .343	0 .326	0 .284	0 .485

* Significant at the significant level of α=0.05 ; numbers in parentheses are standard error.

Table 7. Estimated Coefficients for Group II (N=418)

Independent Variable	Quantile at 0.10	0.25	0.50	0.75	0.90	OLS
Education						
Years of schooling	0 .081*	0 .081*	0 .076*	0 .069*	0 .073*	0 .084*
	(0 .024)	(0 .012)	(0 .009)	(0 .011)	(0 .012)	(0 .011)
Mating (in contrast with Hypergamy)						
Homogamy	0 .210	0 .306*	0 .221*	0 .216*	0 .198	0 .242*
	(0 .117)	(0 .089)	(0 .063)	(0 .082)	(0 .131)	(0 .057)
Hypogamy	0 .111	0 .080	-0 .027	-0 .010	0 .055	0 .041
	(0 .118)	(0 .067)	(0 .057)	(0 .095)	(0 .122)	(0 .072)
Occupation						
ISEI	0 .003	0 .005	0 .005*	0 .010*	0 .013*	0 .008*
	(0 .006)	(0 .003)	(0 .002)	(0 .003)	(0 .003)	(0 .002)
Mating (in contrast with Hypergamy)						
Homogamy	-0 .040	-0 .019	0 .103	0 .123	0 .225	0 .116
	(0 .145)	(0 .118)	(0 .080)	(0 .122)	(0 .120)	(0 .079)
Hypogamy	-0 .127	-0 .041	0 .011	-0 .032	-0 .073	0 .006
	(0 .124)	(0 .069)	(0 .062)	(0 .094)	(0 .089)	(0 .063)
Labor force participation (in contrast with 1HINC)						
2-Income	0 .383*	0 .390*	0 .281*	0 .324	0 .322	0 .281*
	(0 .166)	(0 .099)	(0 .110)	(0 .170)	(0 .168)	(0 .075)
1-wife-Income	-0 .637	-0 .560*	-0 .627*	-0 .595*	-0 .445	0 .570*
	(0 .360)	(0 .159)	(0 .179)	(0 .258)	(0 .337)	(0 .128)
Hours of Work	0 .001	0 .002	0 .003*	0 .003*	0 .003*	0 .003*
	(0 .002)	(0 .001)	(0 .001)	(0 .001)	(0 .001)	(0 .001)
Agriculture sector	-0 .493*	-0 .523*	-0 .267	-0 .229	-0 .419*	0 .349*
	(0 .200)	(0 .206)	(0 .269)	(0 .153)	(0 .155)	(0 .131)
Public sector	-0 .015	-0 .055	0 .023	-0 .072	-0 .158*	0 .053
	(0 .087)	(0 .057)	(0 .051)	(0 .085)	(0 .079)	(0 .066)
Self-employment	-0 .143	-0 .025	0 .035	0 .068	0 .239*	0 .054
	(0 .118)	(0 .074)	(0 .057)	(0 .073)	(0 .121)	(0 .055)
Dummy for missing data						
Husband	-0 .003	-0 .008	-0 .001	0 .034	-0 .023	0 .036
	(0 .168)	(0 .098)	(0 .099)	(0 .144)	(0 .091)	(0 .094)
Wife	-0 .148	-0 .016	-0 .041	0 .040	0 .233	0 .046
	(0 .159)	(0 .107)	(0 .080)	(0 .156)	(0 .183)	(0 .087)
Intercept	9 .132*	9 .069*	9 .282*	9 .355*	9 .302*	9 .017*
	(0 .364)	(0 .250)	(0 .187)	(0 .173)	(0 .285)	(0 .185)
R^2	0 .354	0 .377	0 . 367	0 .337	0 .314	0 .506

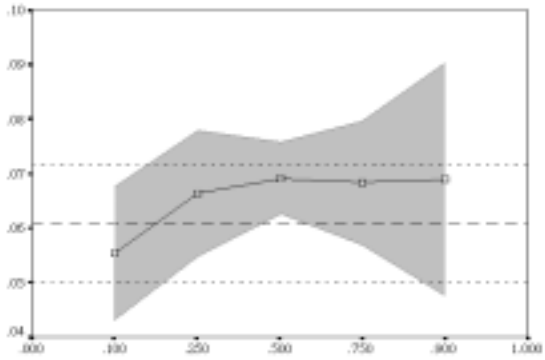
* Significant at the significant level of α=0.05 ; numbers in parentheses are standard error.

Table 8. Significant Test for Interquantile Model by Group

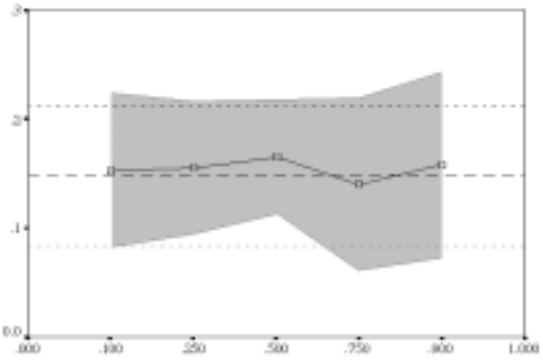
Independent Variable	Group I		Group II	
	0.10/0.90	0.25/0.75	0.10/0.90	0.25/0.75
Education				
Years of schooling	-	-	-	-
Mating (in contrast with Hypergamy)				
Homogamy	-	-	-	-
Hypogamy	-	-	-	-
Occupation				
ISEI	*	-	-	-
Mating (in contrast with Hypergamy)				
Homogamy	*	-	-	-
Hypogamy	-	-	-	-
Labor force participation (in contrast with 1HINC)				
2-Income	-	-	-	-
1-wife-Income	-	-	-	-
Hours of Work	-	-	-	-
Agriculture sector	*	-	-	-
Public sector	-	-	-	-
Self-employment	*	*	*	-
Dummy for missing data				
Husband	-	-	-	-
Wife	-	-	*	-
Intercept	-	*	-	-

* Significant at the significant level of α=0.05

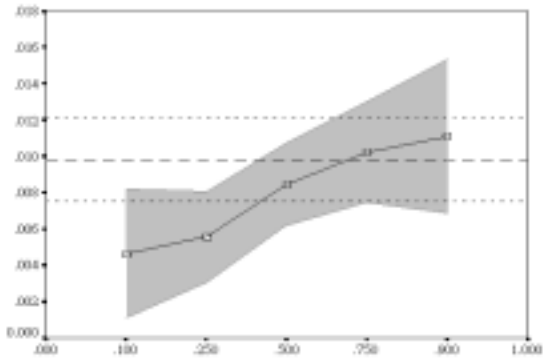
(a) Years of Schooling



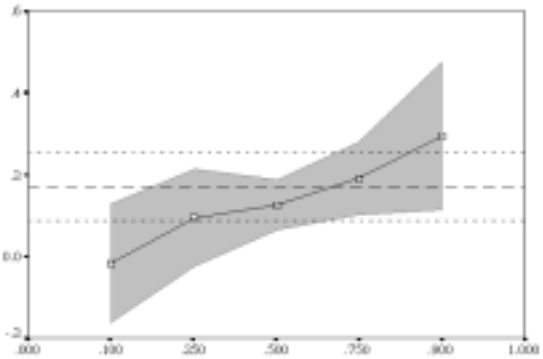
(b) Educational Homogamy



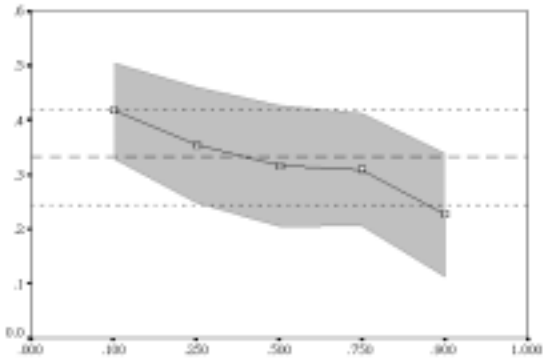
(c) ISEI



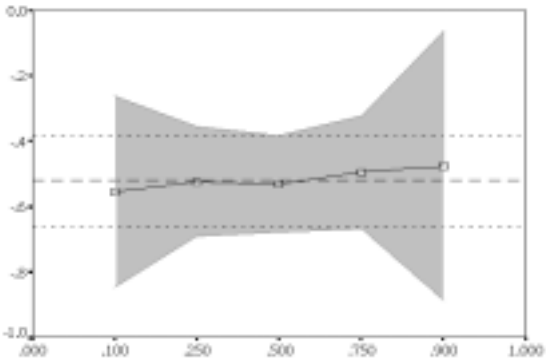
(d) Occupational Homogamy



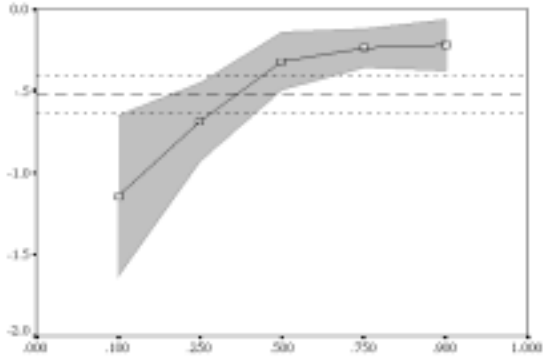
(e) 2-income Family



(f) 1-wife-income Family



(g) Agricultural Sector



(h) Hours of work

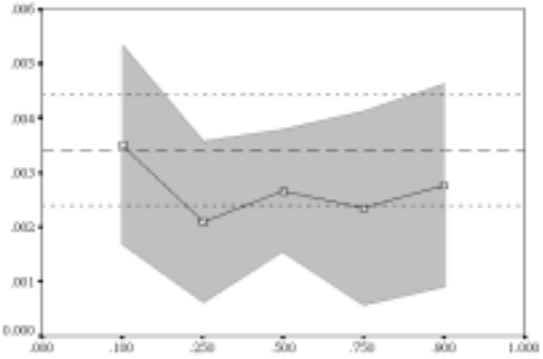
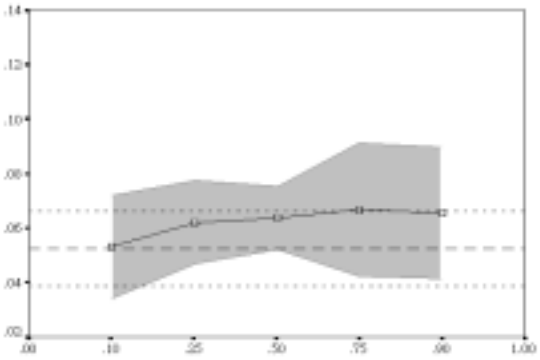
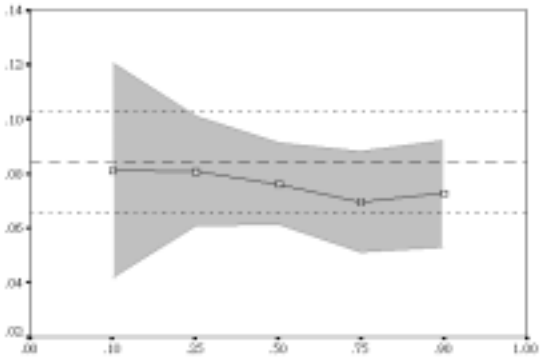


Figure 1. Parameter Estimates for Income Equation

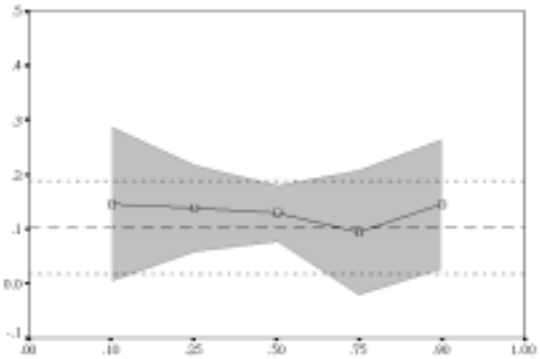
(a) Years of Schooling: Group I



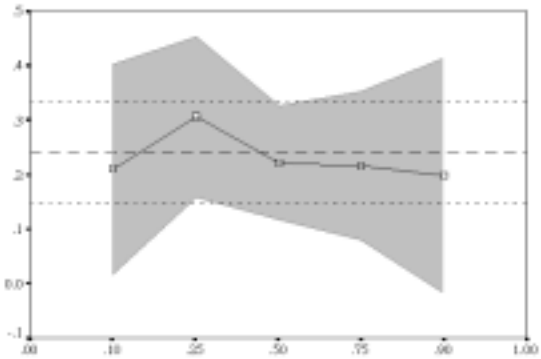
(b) Years of Schooling: Group II



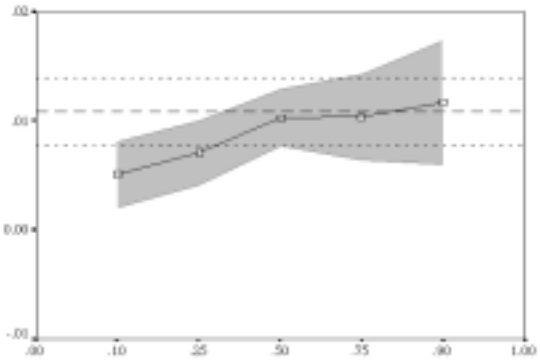
(c) Educational Homogamy: Group I



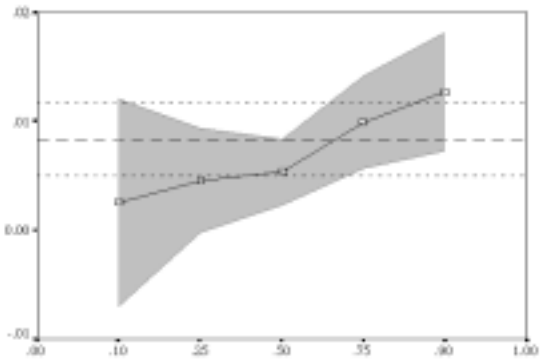
(d) Educational Homogamy: Group II



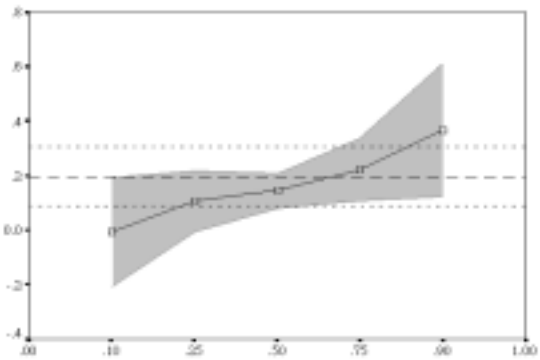
(e) ISEI: Group I



(f) ISEI: Group II



(g) Occupational Homogamy: Group I



(h) Occupational Homogamy: Group II

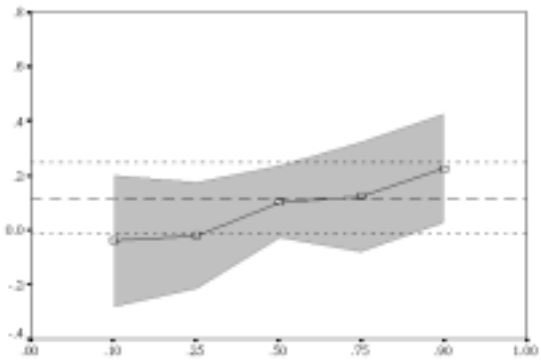


Figure 2. Parameter Estimates for Group I (1945-55) and Group II (1956-63)