Gender, Education and Self-Employment in Korea in the 1990s

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We use data from the Korean Labor and Income Panel Study to investigate gender differences in self-employment. The Korean context is an interesting one in which to examine gender differences given the rapid industrialization of the Korean economy, the very high levels of educational attainment among both Korean men and women, a high level of self-employment in the nonagricultural sectors of the economy, but a low level of labor force participation among women relative to other industrialized countries. In addition, the Korean economic crisis of the late 1990s provides an opportunity to look at the responsiveness of self-employment to the unemployment rate. Our results of multinomial logit models and the hazard models show that women are less likely than men to be self-employed but are more likely to be family workers. The effects of education on professional and nonprofessional self-employment operate in a similar manner for men and women. Increases in the unemployment rate result in increases in the rate of entering nonprofessional self-employment but have no effect on entering professional self-employment. These findings also hold for both men and women.

Ⅰ. Introduction

The proportion of the labor force who were self-employed or who worked as unpaid family workers has long been higher in the Korean economy than in many other industrialized countries.[1] It does not include women engaged in housework. Since 1963, the first year in which information on employment status is available, non-agricultural self-employment accounted for more than 20 percent of total non-agricultural employment. The 1963 figure was 30 percent when unpaid family workers were included. Thirty-five years later in 1998, 24.9 percent of the total non-agricultural labor force was self-employed and over 30 percent was either self-employed or serving as unpaid family workers. This was the highest level among the Organization for Economic Cooperation and Development

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1) Unpaid family workers are individuals who work in a family-owned business but receive no wages for their work.

(OECD) countries, except for Mexico (25.7 %) and Turkey (25.1 %). Further, the historical decline of self-employment from the 1960s through the 1980s in Korea reversed in the early 1990s, and the overall rate of self-employment started to increase. Over the 1990s the growth rate of self-employment exceeded that of total civilian employment: the annual average growth rates of self-employment and total civilian employment during the period of 1990-98 were 3.8 and 2.1 percent, respectively (OECD 2000).

The Korean economy represents an interesting case of the prevalence of high levels of self-employment in the context of a highly industrialized economy. Thus, it would be interesting to see how the previous empirical findings on self-employment in other advanced economies applies to the Korean case, which has the highest proportion of self-employment in the world with the pattern of increase over the 1990s. As Blanchflower (2000) properly pointed out, most work on self-employment is based on US or European countries and the results may not hold in other contexts.

In this study we investigate the effects of individual and family background characteristics on the likelihood of becoming self-employed during the 1990s. This provides an opportunity to examine the ways in which some major factors associated with self-employment operate in Korea relative to other industrialized countries. More specifically, we focus on the roles of two key individual factors - education and gender - and the role of one key macroeconomic factor - unemployment - in self-employment. We are particularly interested in the impact of the economic crisis in Korea, which began in December 1997 and peaked in the middle of 1998 with an unprecedented dramatic increase in unemployment, providing an opportunity to examine individual choices to become self-employed in response to a rise in the unemployment rate.

To help us understand more thoroughly how education, gender, and unemployment are related to self-employment, we distinguish between professional and non-professional self-employment. Previous studies have shown that the self-employed are a very heterogeneous group including various occupations such as farmers, restaurant owners, craftsmen, lawyers and doctors. These occupations have very different labor market statuses (Arum 1997, 2000; Shavit and Yuchtman-Yaar 2001). We adopt Arum's (1997) distinction between professional and non-professional self-employment. Our results show that education, gender, and unemployment have different relationships with the two types of self-employment. Our results suggest that it is very important to distinguish between these two types of self-employment. By doing this, we build on previous studies of self-employment in Korea.

In the present analysis we include only non-agricultural self-employment to facilitate

comparability with other cross-national comparative research, which generally excludes the agricultural sector (e.g., OECD 2000; Arum and Mûller 2001).[2] The paper is organized as follows. First, we use the previous literature to develop some hypotheses about the potential relationships between education, gender, unemployment and self-employment. Second, we introduce the data used in the analysis, including a discussion of the variables and methods we use. Third, we briefly describe the trends in self-employment in Korea with special attention to differences by gender and the types of self-employment (professional and non-professional). Fourth, we present the analysis of the relationship between education, gender, and unemployment on self-employment status at a single point in time (1998). After presenting an additional analysis of entering into self-employment during the 1990-1998 period, we conclude with summaries and implications of our study.

II. Background

Past research has documented the importance of a number of individual and labor market characteristics in influencing whether or not individuals enter self-employment. In this paper, we focus on three of these: education, gender, and unemployment. These are particularly important variables in the Korean context for a number of reasons. First, the Korean educational system has experienced dramatic expansion. The percentage of young Koreans who have college degrees is among the highest of any industrialized countries. Second, comparative research on educational systems and labor markets has shown that the Korean educational system has become more open to the participation of women. The Korean labor market, on the other hand, continues to be characterized by much less labor force participation by women relative to men (Brinton 2001). The low rates of labor force participation among Korean women stand out not only in comparison to most western countries but also in comparison to other countries in East Asia such as Taiwan and Japan. Consequently, we would expect women to be less likely to be self-employed since they are also much less likely than men to participate in any form of paid work. On the other hand, education may affect self-employment for women in basically the same way as it does for men. Finally, the recent economic crisis in Korea in the late 1990s provides an

2) Most cross-national research on self-employment also generally excludes unpaid family workers, who are considered not to be entrepreneurs but to be the assistants to entrepreneurs (OECD 2000: 156). In our study, the description of trends in self-employment distinguishes between the self-employed and unpaid family workers. On the other hand, for the hazard models of entry into self-employment we do not distinguish between the self-employed and unpaid family workers.

opportunity to examine the responsiveness of individual decisions to seek self-employment to changes in the unemployment rate, and to see if this responsiveness characterizes both men and women.

1. Education

Previous studies of the determinants of being self-employed have yielded somewhat inconsistent findings concerning the relationship between education and self-employment. For example, a monotonically positive relationship between education and self-employment was discovered for American (Carr 1996) and Russian workers (Gerber 2001). The positive association between self-employment and education was also found in the United Kingdom (Blanchflower 2000). In some countries, however, individuals with the least education are more likely to be self-employed. This is the case for such countries as Greece, Italy, and Portugal. Some studies have distinguished between professional and non-professional self-employment, and the effects of education appear to differ depending on whether we are looking at professional or non-professional self-employment. The relationship between education and self-employment appeared to be curvilinear for non-professional self-employment in Israel: those with the lowest and highest levels of education are less likely to be self-employed than those with the intermediate levels of education. The same study, however, found that education has a negative impact on professional/managerial self-employment (Shavit and Yuchtman-Yaar 2001).

Past studies on the effect of education on self-employment in Korea have also produced inconsistent results. Using the same data as that used in this study, Kim (1999) showed that there is not much variation by educational levels in the probability of being self-employed, though elementary education has a slightly negative effect on self-employment compared to high school education. In another study of self-employment among Korean women, those with an educational level of less than high school were more likely to be self-employed than those with a high school education, while there was no difference in the likelihood of self-employment between those with high school and those with higher education (Sung 2001). Other researchers found a negative relationship between education and self-employment in Korea (Kum and Cho 1999).

The contrasting findings regarding the effects of education on self-employment in Korea are in part attributable to the heterogeneous nature of self-employment in industrialized economies. As recognized from the previous literature, the effect of education on self-employment varies significantly, depending on the industry (Luber et al. 2000) or

occupation (Shavit and Yuchtman-Yaar 2001) involved. A distinction between professional and non-professional self-employment seems to be particularly necessary to better understand the relevance of education on self-employment.

In this paper we distinguish between professional and nonprofessional self-employment. Based on previous research, we hypothesize that the likelihood of professional self-employment will increase with education, while the likelihood of nonprofessional self-employment will decrease with education. We expect these relationships to hold in both the analysis of employment status in 1998 and the analysis of entry into self-employment during 1990-98.

2. Gender

In general, the proportion of men who are self-employed is significantly higher than that of women. It has been documented that women are much less likely to enter self-employment in many industrial economies (Gerber 2001; Ishida 2001; Shavit and Yuchtman-Yaar 2001). This pattern is also found in Korean self-employment (Kum and Cho 1999). However, it should be noted that over the past two decades the number of women who are self-employed has significantly increased in many advanced economies (OECD 2000). In Korea, during the period of 1990-97 the annual growth rate of self-employment was a bit higher for women, 5.2 and 5.0 percent for men, respectively. We hypothesize that women will be less likely than men to be self-employed and to enter self-employment.

Although most previous studies included gender as one of the covariates and thus estimated gender differences in the likelihood of being self-employed, relatively little research has examined whether the factors that are associated with self-employment operate in the same manner for men and women (but see Arum 1997, 2000; Robert and Bukodi 2001). We are especially interested in the effects of education and how they operate for men and women. Although women may be less likely to be self-employed, there is no reason to expect that education will not have the same effects for women as for men. In fact, limited evidence has suggested a similar pattern in the effect of education on becoming self-employed between men and women in the U.S. (Arum 1997) and Hungary (Robert and Bukodi 2001), though the effect seems to be stronger for women in both societies. Consequently, we hypothesize that the likelihood of professional self-employment will increase with education for women and that the likelihood of nonprofessional self-employment will decrease with education for women.

3. Unemployment Rate

There is considerable disagreement about the association between unemployment and self-employment. Two competing perspectives provide contrasting predictions about the effects of unemployment on self-employment. The first hypothesis argues that high unemployment is positively associated with self-employment. When times are hard, people are "pushed" into self-employment because it is difficult to find alternative paid-employment opportunities. The empirical evidence for a positive relationship between unemployment and self-employment is found in a number of studies reviewed in Blanchflower (2000). Further, some research on the relationship between an individual's own employment status and entering self-employment shows that the unemployed or those out of labor force are more likely to become self-employed than are those who are employed (Arum 2001; Evans and Leighton 1989; Gerber 2001).

The other perspective, in contrast, assumes that unfavorable economic conditions represented by high unemployment do not "pull" people to enter self-employment. People are less likely to leave their current paid-employment status and start their new business in such a precarious economic environment. We can find empirical evidence supporting this claim in Blanchflower (2000) and Blanchflower and Oswald (1998). Blanchflower (2000) found that there is a negative relationship between self-employment and unemployment in most OECD countries except in Iceland and Italy.

Although a number of studies have considered the effects of unemployment on self-employment, in this analysis we take a somehow different strategy to better understand the relationship in the Korean context. Most research on this issue has adopted a strategy comparing the unemployment rate and the self-employment rate across countries. These studies find either a positive (or negative) relationship based upon the finding that countries with a high unemployment rate show a high (or low) self-employment rate. While this approach is useful for detecting the general association between unemployment and the self-employment rate, it fails to identify clearly how unemployment rates determine individuals choices of becoming self-employed. Only by explicitly modeling the effect of the unemployment rate on the hazard rate of entering self-employment, we can determine whether a higher unemployment rate increases the likelihood of becoming self-employed.

Another advantage of our study over past research is that we consider the heterogeneous nature of self-employment. We examine the relationship between unemployment and self-employment separately for professional and non-professional

self-employment. It is possible that the effect of unemployment differs between these two types of self-employment. This is likely to be the case since the expense of entering self-employment varies depending on the type of self-employment. Soliciting work as a handyman, for example, is a much less expensive way of entering self-employment than establishing an independent practice as a primary care physician. Further, it is probably more often that low skilled laborers are pushed into the labor market than are high skilled laborers. Consequently, we hypothesize that entering nonprofessional self-employment will increase with the unemployment rate while entering professional self-employment will either not respond or decrease with the unemployment rate.

4. Control Variables

We also include a small set of control variables in the analysis. We attempt to capture the other major individual factors that previous research has shown to be associated with entering self-employment. Family background has important effects on whether an individual enters self-employment. Past research in various industrial societies has shown that having a self-employed father enhances a respondent's chance of being self-employed (Blau and Duncan 1967; Shavit and Yuchtman-Yaar 2001). There are two different ways through which parental self-employment increases the probability of the respondent's self-employment (Arum and Mûller 2001; Shavit and Yuchtman-Yaar 2001). On the one hand, the inheritance of self-employment operates via the direct intergenerational transmission of a business. On the other hand, socialization in families where the father is self-employed may create a normative expectation that the child will be self-employed or demonstrate to the child that self-employment is a viable option for succeeding in the labor market.

Father's occupation as well as father's self-employment appears to be associated with respondent's self-employment. In particular, children of professional fathers are more likely to be in professional self-employment (Arum 2001; Ishida 2001). We are not aware of any studies looking at the effect of father's occupation on self-employment in Korea, distinguishing between professional and non-professional self-employment.

Although in general family background such as parental involvement in self-employment or parental occupation is significantly associated with self-employment, the effect may vary with gender. For example, American men with professional fathers were more likely to become self-employed professionals, while this did not hold for women with professional fathers (Arum 2001). On the other hand, past research on the effects of family background

on occupational attainment among Korean youth provided evidence that family background has a relatively stronger impact on female labor force participation and occupational choice than on male labor force participation and occupational choice (Sandefur and Park 2002). This suggests that we need more in-depth investigation of the effects of family background on self-employment among men and women in the Korean context.

Across a variety of nations there is relatively consistent evidence that age has a positive effect on the probability of self-employment (Blanchflower 2000; Luber et al. 2000). As a proxy measure of work experience, age reflects the accumulation of financial resources and/or social capital, which facilitates the establishment of ones own business. However, several studies showed that self-employment is not related to age or work experience in a linear way but more likely in a non-linear way: the probability of self-employment increases at a decreasing rate (Luber et al. 2000). On the other hand, age even appeared to have a linear and negative effect on the hazard of entry to self-employment among Russians reflecting the context of the post-Soviet era (Gerber 2001).

Marital status is also associated with self-employment among both men and women. Some research has shown that American single men were more likely than married men to enter non-professional self-employment, while single women were much less likely than married women to enter professional self-employment (Arum 1997). However a cross-national study on self-employment in four European countries, France, German, Italy, and the UK, found that single men have a lower probability of being self-employed than the ever married except in the UK (Luber et al. 2000).

III. Data and Methods

The data for this study come from the Korean Labor and Income Panel Study (KLIPS), conducted in 1998 by the Korean Labor Institute. Starting in 1998, the KLIPS is a longitudinal survey of a representative sample of Korean households and individuals in the household who reside in non-rural areas (See Phang et al. 1999 for detailed information on the survey). In the first year of 1998, the KLIPS interviewed 13,317 persons in 5,000 households, with a 76 % response rate. Focusing on the topic of economic activities, the survey contains detailed information on such occupational-relevant variables as employment status, wage, and working hours. In the first survey, particularly, respondents were asked to report their entire work histories recording the month and year of each change in job as well as the characteristics of each new job. The next waves of the survey collected the

same information on any job changing after the first survey. Thus, by utilizing the first (1998) and the third (2000) waves, we can trace the respondent's work histories up to the interview time of the 2000 wave on a monthly basis.[3] In this analysis, we have constructed a person-month file representing the employment history since January 1990. As we will show later in detail, self-employment in Korea declined over the 1980s but started to increase after 1990. This historical pattern suggests that we need to examine the determinants of self-employment separately between before 1990 and after 1990.

1. Methods

We conduct two sets of multivariate analyses. We first use multinomial logit models to look at employment status in 1998. This permits us to distinguish between professional self-employment, nonprofessional self-employment, and unpaid family labor. We compare the effects of gender, education and the control variables on being in these different forms of self-employment relative to being wage-workers. We then examine the effects of education and the control variables on different forms of self-employment separately for men and women.

While estimating multinomial logit models for employment status at a specific time point - in our case 1998 - provides a general understanding of various factors associated with self-employment, to better understand the process of becoming self-employed we need to estimate a model that looks at entry into self-employment over time (Arum and Müller 2001). To estimate the effects of various covariates on the hazard of entering self-employment, we conduct discrete-time hazard models using a person-month file (Allison 1984; Yamaguchi 1991). The risk set for moving into self-employment at any given month includes those who completed schooling and were not engaged in self-employment in the previous month. The agricultural self-employment spells are excluded from the analysis. We separately examine the effects of independent variables on the hazard of entry into the two different types of self-employment - professional and non-professional self-employment - estimating a kind of competing risk model. It should be also noted that in this analysis of the hazard models, we do not separate unpaid family workers from the self-employed and thus "self-employment" referred to in this part of the analysis is a broad definition including unpaid family workers.[4] The hazard models include education as well as family

3) For the current study, we restricted our analyses to job histories until the year of 2000.

4) Most unpaid family workers would probably be included in the nonprofessional self-employed category, and it is likely that the factors associated with being an unpaid family worker and a nonprofessional self-employed worker are more similar to one another than they are to the factors associated with being a professional

background (fathers occupation and fathers self-employment status), previous employment status, and the unemployment rate. We conduct the analysis separately for men and women.

2. Measures

< Table 1 About Here >

Table 1 contains some basic descriptive statistics - means or proportions - for the pooled data used in the hazard models. Age is the only continuous variable and it is also a time-varying characteristic, i.e., the value for age changes over a spell in a job. The men are a bit older on average than the women. The respondent's education is classified into six categories reflecting important branch points in the Korean educational system: primary (or less), middle school, vocational high school, academic high school, 2-year junior college degree, and 4-year university degree. Detailed information on educational attainment, which enables us to distinguish between vocational and academic high school, and between 2-year junior college and 4-year university degrees, is particularly beneficial to our research looking at specifically the relationship between educational attainment and entry into self-employment. The results show that the men in the sample are about twice as likely as the women to have completed a four-year university degree. The women are almost twice as likely to have only a primary education or less. The male and female percentages with other types of degrees are very similar. Education is treated as a fixed variable since in Korea most people do not re-enter the educational system once they have left it. Consequently, their education is unlikely to change over the course of a spell in a job.

We include a dummy variable indicating whether an individual is married or not. Over 3/4 of the men and 70 percent of the women are married. Since marital status may change over the course of a job, we treat it as a time-varying covariate.

Family background is represented by two variables, father's occupation and father's self-employment. We distinguish six categories for father's main occupation when the respondent was 14-years old: professional/managerial, lower non-manual, service, farmers, skilled, and unskilled workers. Table 1 shows that over 1/2 of men and women had fathers who were farmers. This helps account for the approximately 70 percent of men and women whose fathers were self-employed when the respondent was 14-years old.

To represent economic conditions under which respondents had to decide to move into

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self-employed worker.

self-employment, we use two indicators. Previous employment status indicates whether the respondent was non-employed or employed in the previous month. This is a time-varying covariate as well. Women were much less likely to be employed than were men. We have collected information on monthly unemployment rates since January 1990 from government economic statistics to test contrasting hypotheses on the relationship between the national unemployment rate and entry into self-employment.[5] The average monthly unemployment rate over the 1990 to 2000 period was 3.2 percent.

IV. Trends in Self-Employment in Korea

< Figure 1 About Here >

Figure 1, based on government macro statistics, shows the trends in self-employment and unemployment in Korea over the past two decades. First of all, it is evident that self-employment accounts for a considerable proportion of workers in the Korean economy. The percentage of self-employed among total non-agricultural employment has been substantial, exceeding 20 percent when unpaid family workers are excluded. When we include unpaid family workers in the definition of self-employment, the proportion increases to 30 percent.

Regarding time trends, the two different measures of self-employment show a parallel pattern. The rate of self-employment declined over the 1980s. However, it started to increase since 1990 and peaked in 1999, showing an increase of 15 percent from 22.4 percent in 1990 to 25.6 percent in 1999 (for self-employment without unpaid family workers). During this period, the unemployment rate in Korea declined slightly since 1980. After 1988, it remained between 2 and 3 percent until the economic crisis in December 1997. The economic crisis led to a dramatic increase of the unemployment rate from 2.6 percent in 1997 to 6.8 percent in 1998. Unemployment declined substantially in 2000 when the Korean economy revitalized.

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5) It might be better to use unemployment rates of local labor market instead of national average rates as used in this study. We could not obtain such detailed information on unemployment rates of places where respondents worked. However, it should be noted that Korea is a small country in terms of size and our KLIPS data sampled people only who are in non-rural area, which means that there should be no large variation in unemployment rates among regions.

< Figure 2 About Here >

Figure 2 breaks down the trends over the 1990s in self-employment (including unpaid family workers) by types of self-employment and gender. Since such information is not available from government statistics, the information in this figure is based on the pooled data of our data source, KLIPS, from 1990 to 2000. The figure shows clearly that non-professional self-employment is dominant in Korean self-employment. Over the 1990s the proportion of total professional self-employment among total non-agricultural employment has not exceeded 5 percent, though it has slightly increased from 3.4 percent in 1990 to 4.7 percent in 1998. On the other hand, non-professional self-employment has accounted for about 25 percent of total non-agricultural employment, showing a slight increase from 24.5 in 1990 to 28.3 in 1999.

Regarding gender differences, the proportion of men that were self-employed was higher than the proportion of women that were self-employed for both professional and non-professional self-employment. However, the growth over time was more substantial among women than among men. The share of women's self-employment generally showed a linear increase by 33 percent from 10.3 percent in 1990 to 13.7 in 1999, while for men a 9 percent increase occurred, from 17.6 percent in 1990 to 19.2 percent in 2000. Of women's total increase in self-employment over the 1990s, the increase in non-professional self-employment accounts for 85 percent, while the increase in non-professional self-employment explains half of the total increase in men's self-employment.

In sum, Figure 1 and Figure 2 show that self-employment in Korea has modestly increased over the 1990s for both professional and non-professional self-employment. This increase has been mainly driven by women's more rapid increase in self-employment participation, of which a larger part is attributable to more rapid increase in non-professional self-employment than in professional self-employment.

V. The Results of Multinimial Logit Models

1. Education and Self-Employment

< Table 2 About Here >

We hypothesized that the likelihood of being a self-employed professional would increase with education while the likelihood of being a self-employed nonprofessional would decrease with education. Table 2 contains the results of estimating a multinomial logit model in which the dependent variable has six categories: professional self-employment, nonprofessional self-employment, family worker, out of labor force, unemployment, and working for wages. The latter category serves as the reference category. We actually estimated a nested set of two multinomial logit models. In the first model, the two forms of self-employment are collapsed into one category. In the second model, they are separated. The coefficients for the remaining categories should be the same in both models and they are with only minor differences in their numerical values. As we noted above, the data for jobs held in 1998 allow us to separate out unpaid family work as a category.

The results in Table 2 for the effects of education show that if we combine the types of self-employment, only those with a four-year university degree differ from those with other levels of education in their likelihood of being self-employed. Those with a four-year university degree are less likely to be self-employed than those in other educational categories. If we stopped here we would conclude that in the Korean labor market in 1998, the likelihood of self-employment was lowest for those with the highest level of education.

When we distinguish between professional and nonprofessional self-employment, however, we find that the likelihood of professional self-employment is lowest for those with primary and middle school educations, and highest for those with 2-year junior college or 4-year university credentials. The likelihood of being non-professionally self-employed does not differ significantly across the four lowest levels of education, but is significantly lower for those in the two highest educational categories. Those in the highest educational category are also significantly less likely to be unpaid family workers. These findings are generally consistent with the hypothesis that the likelihood of professional self-employment increases with education while the likelihood of nonprofessional self-employment decreases with education.

2. Gender and Self-Employment

We hypothesized that women would be less likely to be self-employed than would be men but that the effects of education on the likelihood of professional and nonprofessional self-employment would be very similar for men and women. This is based on the underlying assumption that although Korean women are less likely to be in the labor force

and to be self-employed than men, education would function to discriminate among the women who became self-employed in the same way that it did for men. The results in Table 2 show that if we combine the two types of self-employment, women are less likely to be self-employed than are men. When we separate the two types of self-employment, however, the difference between men and women is significant only for nonprofessional self-employment.[6] The results for gender also show that women are much more likely than men to be family workers, out of the labor force, or unemployed. These results are consistent with what we know about the lower levels of labor force participation among women in Korea.

< Table 3 About Here >

In order to compare the effects of education for men and women, we estimated the multinomial logit models separately for men and women. These results appear in Tables 3 and 4. Table 3 contains the results for men. Although there are some minor differences in the effects of education relative to Table 2, the general pattern remains the same. The least educated are the least likely to be self-employed professionals while the most educated are the most likely to do so. The level of education is negatively associated with the likelihood of being a self-employed nonprofessional and with being an unpaid family worker.

< Table 4 About Here >

In Table 4, we see that the coefficients for the effects of education on professional self-employment among women appear to be stronger than those for men, while we have not yet carried out any formal statistical tests of the differences in the effects of education for men and women. Education also has negative effects on the likelihood of nonprofessional self-employment and the likelihood of being an unpaid family worker. Thus, the results suggest that although women are less likely than men to be self-employed, education acts in a similar way for men and women in determining who is self-employed and who is not.

The effects of the other variables in Tables 2, 3, and 4 are consistent with what the literature suggests we should expect, with some interesting gender variations. The

6) The coefficient for gender in the professional self-employment column, however, is close in value to the overall coefficient and that for nonprofessional self-employment. The fact that it is not significant may have something to do with the small number of women who are profesionally self-employed (59 of 256 are women).

likelihood of being self-employed increases with age in Table 2, and at least for nonprofessional self-employment it does so at a decreasing rate. The likelihood of being a family worker also increases with age at a decreasing rate. However, the effects of age vary with gender. Among men in Table 3, the likelihood of being in any form of self-employment increases with age at a decreasing rate, but there are no age variations in the likelihood of being a family worker.[7] Among women, on the other hand, age is not related to professional self-employment but is related in the expected way to nonprofessional self-employment and family work.

Married individuals in Table 2 are more likely to be nonprofessionally self-employed and to be family workers, but single and married individuals do not differ in their likelihood of being a self-employed professional. Again, there are some variations by gender. Among men, marital status has an effect on nonprofessional self-employment, while among women, marital status is positively associated with professional self-employment, nonprofessional self-employment, and family work.

The results for family background also differ for men and women. In Table 2, we see that the likelihood of being a self-employed professional is higher if one's father was self-employed and is also higher if one's father was a professional or manager. The likelihood of nonprofessional self-employment is lowest for those whose fathers were farmers. The likelihood of being a family worker is highest for those whose fathers were self-employed. Among men (Table 3), the likelihood of either type of self-employment is higher for those whose fathers were self-employed, while among women (Table 4), father's self-employment is not positively associated with either form of self-employment but is associated with involvement in family work.

VI. The Hazard Models of Entering Self-Employment

< Table 5 About Here >

Our final hypothesis had to do with the effects of unemployment on self-employment. We hypothesized that the likelihood of entering nonprofessional self-employment would increase with unemployment while the likelihood of entering professional self-employment would either decrease with unemployment or be unaffected by it. Table 5 contains the results of

7) Note that the number of male family workers in the 1998 sample is only 47.

estimating separate hazard models for men and women during the 1990-98 period. The covariates in Table 5 are the same as those in Tables 2-4 with the addition of the monthly unemployment rate and an indicator of whether an individual was employed or not just prior to moving into a new job. The results for both men and women suggest that the rate of entering nonprofessional self-employment increases with the unemployment rate, but that there is no statistically significant association between the monthly unemployment rate and entering professional self-employment for either men or women. On the other hand, individuals who are not employed are less likely to enter both professional and nonprofessional self-employment than are individuals who are employed. These effects are present for both men and women.

The results for education show that the likelihood of entering professional self-employment increases with education for both men and women. The effects of education on entering nonprofessional self-employment show no clear pattern. Among men, the rate is lowest for those with middle school and 4-year university degrees while among women the rate is lowest for those with 2-year junior college degrees.

The effects of age are similar for men and women. The rate of entering both types of self-employment increases with age at a decreasing rate. On the other hand, married men are more likely than single men to enter self-employment while married women are less likely than single women to enter professional self-employment. Having a father who was self-employed has a positive effect on entering both types of self-employment for men but no effects for women. There is only one significant coefficient for father's occupation and that is the effect of having a professional/managerial father on professional self-employment for men. The coefficient for women is similar in size but not statistically significant.

VII. SUMMARY

In this paper, we investigated the factors associated with being self-employed at a particular point in time and with becoming self-employed over time. We distinguished between professional and nonprofessional self-employment. We investigated the roles of gender, education, and national unemployment as factors in determining who is and who is not self-employed. Our first hypothesis was that women would be less likely to be in either professional or nonprofessional self-employment than would be men. The results supported this hypothesis. Women are less likely than men to be self-employed. On the other hand, they are more likely than men to be unpaid family workers. Our second

hypothesis was that the effects of education on self-employment would be similar for men and women. The results showed that in 1998, the most highly educated men and women were the most likely to be self-employed professionals and the least likely to be self-employed nonprofessionals. The results for the hazard models of entering self-employment were very consistent with these findings for professional self-employment, but less consistent with the findings for nonprofessional self-employment.

Our final hypothesis was that the rate of entering nonprofessional self-employment would increase with the unemployment rate, and the results supported this for both men and women. The rate of entering professional self-employment did not vary with the unemployment rate for either men or women.

The results support those who have argued that it is very important to distinguish between professional and nonprofessional self-employment. Starting a professional business involves a considerable amount of both financial and social capital, while starting a nonprofessional business can sometimes be done with very little of either type of capital. Both some micro factors such as education and at least one macro factor - unemployment - have very different effects on the two types of self-employment. On the other hand, age has a similar effect on both kinds of self-employment. The likelihood of being or becoming self-employed increases with age at a decreasing rate in most of our models. This is especially the case for men.

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