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Self-employment matching: an analysis of dual-earner couples in Sweden

Lina Andersson
Linnaeus University

Mats Hammarstedt
Linnaeus University

Abstract

This paper presents an analysis of self-employment matching among dual-earner couples in Sweden. The results show that self-employment propensities are positively correlated across partners. Self-employment propensities are significantly higher for both males and females whose spouses are self-employed. The existence of 'positive assortative mating' and the fact that self-employment knowledge and abilities are transferred across partners are presented as explanations for the results. One policy conclusion that can be drawn from the results is that if governments and policymakers want to increase the rate of female self-employment, stimulating overall self-employment might be effective, since an important determinant of female self-employment is having a self-employed spouse.

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1. Introduction

Self-employment has attracted increased interest among researchers in recent decades. Such research has, among other factors, paid attention to how gender, marital status and intergenerational links affect self-employment propensities. One conclusion is that family background is an important determinant in the decision to undertake self-employment.

Family background can affect self-employment propensities through different channels. Several studies have documented that having a self-employed parent increases the propensity for self-employment.[1] Previous literature, including Bernhardt (1994) and Blanchflower and Oswald (1998), has pointed out that intra-household influences might affect the self-employment decision and that having a working spouse enhances self-employment propensities. More recent research has concluded that intra-household influences might be of great importance for an individual's self-employment decision. Brown, Farrel and Sessions (2006) studied self-employment matching within couples and households and found positive support for this phenomenon, i.e. self-employed individuals were likely to match with other self-employed individuals. Further, Parker (2008) studied entrepreneurship among married couples and found a positive interdependence of business ownership propensities within couples.

Self-employment propensities can be correlated across partners for a variety of reasons. One explanation for this positive correlation can be found in the phenomenon of 'assortative mating': individuals are likely to match with others who are similar to themselves in terms of characteristics such as age, education and labour market experiences. Applied to self-employment, this will lead to a situation in which self-employed individuals match with other self-employed individuals. Furthermore, a positive correlation of self-employment propensities across partners might also be a result of the fact that self-employment knowledge and abilities are transferred within families.

However, there might also be a negative correlation in self-employment propensities across partners. In the presence of 'negative assortative mating', opposites attract: people with different labour market experiences match with each other. Thus, people who are self-employed might prefer to match with people who are wage-employed, rather than with those who are self-employed. One reason for this might be that self-employment has traditionally been seen as riskier than wage-employment and that individuals tend to pool risks.

In this paper we add to the literature on self-employment and its determinants by focusing on self-employment matching among dual-earner couples in Sweden. We depart from the theories of 'assortative mating' and knowledge transfers within households and argue that it is possible to end up in a situation in which both spouses are self-employed. We also depart from the theory of risk pooling and argue the opposite: that diversified types of employment within couples are more common. The aim of our empirical analysis is to determine which situation is more likely to occur.

We divide individuals into three employment categories by level of income risk: full-time self-employment, part-time self-employment, and full-time wage-employment. Individuals are defined as full-time self-employed if they were registered as employed by Statistics Sweden in 2007 and if their earnings from self-employment were positive and wage earnings

[1] See Le (1999) for an overview.

were zero. Individuals are defined as part-time self-employed if they were registered as employed by Statistics Sweden in 2007 and if both earnings from wage-employment and self-employment were positive. Self-employed farmers are excluded from the sample. Finally, individuals are defined as wage-employed if they were registered as wage-employed by Statistics Sweden in 2007 and if their wage earnings were positive and earnings from self-employment were zero. Individuals who were registered as unemployed in 2007 are excluded from the study. We then estimate an ordered probit model of the probability of ending up in a certain employment type. By investigating how the spouse's employment type affects this probability, we are able to study the extent to which self-employed persons either match with each other or prefer to match with those who are wage-employed.

We arrive at the following conclusions: Self-employment propensities are significantly higher among males and females with self-employed spouses. Thus, self-employment propensities are positively correlated across spouses. One possible explanation for this is that 'positive assortative mating' exists with regard to self-employment. At the same time, it is possible that the result is an effect of the fact that self-employment abilities are transferred across partners.

The remainder of the paper is organised in the following way: The next section presents the theoretical framework. Section 3 presents the data and some descriptive statistics while Section 4 presents the empirical analysis. Finally, we present our conclusions in Section 5.

2. The self-employment decision

Starting with Knight (1921) most of the literature on self-employment and its determinants has departed from the assertion that an individual will choose self-employment over wage-employment if the utility from being self-employed exceeds that of being wage-employed.

Self-employment has traditionally been viewed as a riskier occupational choice than wage-employment. Kihlstrom and Laffont (1979) introduced a model in which the individual chooses between a risky self-employment career with potentially high earnings and a less risky wage-employment career with fixed earnings. The extent to which an earnings differential between self-employment and wage-employment influences self-employment propensities has been tested empirically in different countries. Several studies have documented a positive relationship between the differential in predicted earnings from self-employment and wage-employment and the propensity for self-employment.[2]

Besides pecuniary factors, family situation is known to be of great importance for an individual's self-employment decision. Several studies have found that married people are more likely to enter self-employment than are non-married people.[3] There are several plausible explanations for this. Le (1999) argues that marriage presumably represents stability and provides a safety net for risky undertakings such as self-employment. Another explanation is that self-employed workers run the risk of hiring employees who will shirk on the job. One way to diminish this type of risk for a married self-employed individual is to hire his or her spouse. In addition to solving the shirking problem, this allocation of labour within the family is optimal since both workers will have the same incentives: maximisation of family income (or self-employment profits). Furthermore, a cohabitant couple can make a

[2] See Rees and Shah (1986) and Taylor (1996) dor studies from the UK, De Wit and van Winden (1989) for a study from the Netherlands, Johansson (2000) for a study from Finland, Leung (2006) for a study from Canada and Hammarstedt (2009) for a study from Sweden.
[3] See Taylor (1996), Gerorgellis and Wall (2000).

greater investment in starting a business than a single person can. Family support may also make self-employment less demanding than it would be otherwise.

In this paper we study the extent to which there is a correlation in self-employment propensities among dual-earner couples. There are several explanations for such correlations. One explanation can be found in the phenomenon of 'assortative mating', which might be either positive or negative. According to Becker (1974), 'negative assortative mating' exists if high-earning males match with females who specialise in household production. If 'negative assortative mating' exists and is the dominant force in our case, self-employed people will match with people who are not self-employed. However, 'positive assortative mating' is also possible. Research has documented 'positive assortative mating' with respect to earnings; high-earning spouses tend to match with each other.[4] If 'positive assortative mating' exists and dominates with regard to self-employment, self-employed individuals will prefer to match with each other rather than with wage-employed individuals.

Furthermore, previous research has shown that offspring inherit self-employment abilities and human capital from their ancestors and that self-employment abilities are transferred across generations within families.[5] Similar types of transmissions of work experience and human capital can of course be made across partners, ending up in a situation in which being married to a self-employed partner increases a person's propensity for self-employment. In fact, there is empirical evidence for that having a self-employed husband increases a wife's self-employment propensities.[6]

However, aside from the phenomenon of 'negative assortative mating' there are further arguments for why self-employed individuals might prefer to match with wage-employed individuals rather than with other self-employed individuals. One such argument can be found in the concept of pooling income risks. As stated above, self-employment is traditionally seen as a riskier occupational choice than wage-employment. Therefore, we can expect that self-employed individuals tend to pool income risk with their partners and therefore match with wage-employed rather than with other self-employed individuals.

To sum up, today there is a relatively large body of literature on self-employment and its determinants. In this literature there is a consensus that the family situation is of great importance for an individual's self-employment decision and for self-employment propensities. To date, this literature has, with few exceptions, neglected the importance of intra-household decisions on an individual's decision to undertake self-employment. From a theoretical point of view we might expect self-employed individuals to prefer to match with other self-employed individuals if 'positive assortative mating' dominates and/or if self-employment knowledge and abilities are transferred within households and across couples. However, it is also possible that self-employed individuals prefer to match with wage-employed individuals. This happens if 'negative assortative mating' dominates and/or if husbands prefer to pool income risks. Against this background it becomes an empirical question as to whether self-employed individuals prefer to match with other self-employed individuals or with wage-employed individuals.

[4] See e.g. Nackosteen and Zimmer (2001).
[5] See Dunn and Holtz-Eakin (2000) and Andersson and Hammarstedt (2010).
[6] See Bruce (1999).

3. Data and descriptive statistics

We use register data from the LISA data base, collected by Statistics Sweden. The data include information on individual characteristics such as age and educational attainment, on household characteristics such as number of children and region of residence, and on labour market characteristics such as employment and earnings. We have information on *all married couples* aged 25-64 in Sweden in 2007. Since we focus on the self-employment matching of dual-earner couples, we limit our analysis to couples in which both partners were between the ages of 25 and 64 years old. Further, we study working couples in which both spouses are either registered as full-time wage-employed, full-time self-employed or as part-time self-employed. Our sample consists of 386,227 dual-earner households. *At least one the individuals* are either part time- or full-time self-employed in 52,753 of these households. Thus, about 14 per cent of the households in our sample are active in the self-employment sector in some form. Furthermore, in 11,239 of the households *both spouses are active in either part-time of full-time self-employment*. This implies that both spouses are active some form of self-employment in about 3 per cent of the households in our sample. Finally, in 2,370 of the households *both spouses are registered as either part-time or full-time self-employed in the same firm*. Thus, about 21 per cent of the households in which both spouses are active in some form of self-employment are family enterprises in the sense that both spouses are active in the same firm.

Since we are interested in the extent of self-employment matching among couples, we divide individuals into three employment statuses: (1) full-time wage-employed; (2) part-time self-employed; and (3) full-time self-employed. We exclude couples in which at least one of the individuals is registered as unemployed. Individuals are defined as full-time wage-employed if they were registered as employed by Statistics Sweden in 2007, if income from wage-employment was larger than zero, and if income from self-employment was zero. We define individuals as part-time self-employed if they were registered as employed by Statistics Sweden in 2007 and if their earnings from both self-employment and wage-employment were positive. Finally, individuals are defined as full-time self-employed if they were registered as employed by Statistics Sweden in 2007, if earnings from self-employment were larger than zero, and if earnings from wage-employment were zero.[7] Furthermore, couples in which one or both of the spouses was a farmer are excluded from the sample.

Table 1 presents descriptive statistics of the married couples in our sample by gender and by employment type. It emerges that self-employed men, both full-time and part-time are, on average, somewhat older than those who are wage-employed. Further, full-time self-employed men tend to have fewer years of schooling, live in metropolitan areas to a larger extent, and are more likely to be immigrants. There are no major differences by employment type as regards number of children. We observe the same pattern for women for all individual and household characteristics. However, it is worth noting that full-time self-employed females are, on average, about three years younger than their full-time self-employed male counterparts. Furthermore, full-time self-employed females have, on average, somewhat higher educational attainment than full-time self-employed males.

[7] Statistics Sweden correct for the fact that self-employed individuals tend to underreport their incomes by multiplying reported incomes from self-employment by a factor of 1.6.

Table I: Descriptive statistics of the married couples

	Men			
	All	Full-time wage-employed	Part-time self-employed	Full-time self-employed
Age	47.3	47.1	48.2	49.3
Educational attainment (years)	12.5	12.6	12.7	11.6
Metropolitan area	35.2	34.8	34.9	41.1
Immigrant	18.9	18.4	15.1	31.4
Number of children	1.4	1.4	1.5	1.4
Number of observations	386,227	346,471	21,375	18,381
	Women			
	All	Full-time wage-employed	Part-time self-employed	Full-time self-employed
Age	44.9	44.8	46.6	46.1
Educational attainment (years)	13.0	13.0	13.2	12.1
Metropolitan area	35.2	35.0	36.8	39.8
Immigrant	20.6	20.5	15.8	31.1
Number of children	1.4	1.4	1.4	1.4
Number of observations	386,227	361,991	14,178	10,058

Table 2 presents differences in yearly total household earnings for dual-earner couples with different types of employment compared to a household in which both spouses are full-time wage-employed. The earnings differentials presented in Table 2 are adjusted for differences in age, educational attainment and immigrant background between the households. The table reveals that total household earnings are the highest when the male spouse is wage-employed and the female spouse is part-time self-employed, followed by households in which both spouses are full-time wage-employed. Household earnings are the lowest when both spouses are full-time self-employed.

Table II: Earnings differentials (in per cent) yearly household income among married dual-earner couples by employment matching. All figures are adjusted for differences in age, educational attainment and immigrant status between households.

Employment matching	Household earnings
Both spouses full-time wage-employed	Reference
Male full-time wage-employed and female part-time self-employed	+1.6%
Male full-time wage-employed and female full-time self-employed	–13.0%
Male part-time self-employed and female full-time wage-employed	–5.7%
Male part-time self-employed and female part-time self-employed	–4.0%
Male part-time self-employed and female full-time self-employed	–37.3%
Male full-time self-employed and female full-time wage-employed	–32.0%
Male full-time self-employed and female part-time self-employed	–24.2%
Male full-time self-employed and female full-time self-employed	–67.8%
Number of observations	386,227

Table 3 shows the distribution of married couples across the three employment types. It emerges that for all of the spouses' choices of employment, whether it is the wife's choice or the husband's, the other spouse is most likely to be active in wage-employment. As regards the self-employment propensity, about 4 per cent of the males whose spouse is full-time wage-employed are full-time self-employed. This can be compared to the fact that about 33 per cent of the males whose spouse is full-time self-employed are full-time self-employed themselves. For females, the propensity to be full-time self-employed is less than 2 per cent among those with a full-time wage-employed spouse. In comparison, about 18 per cent of the females whose spouse is full-time self-employed are themselves self-employed. Thus, the fact that the probability of being wage-employed is higher than the probability of being self-employed for males as well as for females, independently of the occupation of their spouse, gives some indication of that married couples tend to pool risks rather than to match with other self-employed persons. However, there are also indications of 'positive assortative mating' in self-employment, since self-employment propensities increase substantially among both males and females given that their spouse is self-employed.

Table III: Distribution of employment type among the married dual earner couples

	Female employed as:					
	Full-time wage employed		Part-time self-employed		Full-time self-employed	
Male employed as:	Number	Per cent	Number	Per cent	Number	Per cent
Full-time wage-employed	333,474	92.1	7,466	52.6	5,531	55.0
Part-time self-employed	15,874	4.4	4,271	30.2	1,230	12.2
Full-time self-employed	12,643	3.5	2,441	17.2	3,297	32.8
Total	361,991	100.0	14,178	100.0	10,058	100.0

	Male employed as:					
	Full-time wage-employed		Part-time self-employed		Full-time self-employed	
Female employed as:	Number	Per cent	Number	Per cent	Number	Per cent
Full-time wage-employed	333,474	96.2	15,874	74.2	12,643	68.8
Part-time self-employed	7,466	2.2	4,271	20.0	2,441	13.3
Full-time self-employed	5,531	1.6	1,230	5.8	3,297	17.9
Total	346,471	100.0	21,375	100.0	18,381	100.0

3. Ordered probit analysis

In order to elucidate the extent to which self-employed persons prefer to match with other self-employed persons or to pool risk and thus choose to match with individuals who are wage-employed, we estimate an ordered probit model. This model builds on the fact that these different employment categories can be ranked by level of income risk, from lowest to highest. In the literature it is often argued that self-employment with potentially high earnings is riskier than wage-employment with fixed earnings.[8] On this basis, we rank full-time wage-employment as the employment type with the lowest risk and full-time self-employment as the employment type with the highest risk. Between these extremes, we can place part-time self-employment. The ordered probit model then provides a prediction of the conditional probability that an individual ends up in a certain type of employment.

Thus, the model specification comprises three categorical outcomes. The dependent variable is 1 if the individual is full-time wage-employed, 2 if the individual is part-time self-employed, and 3 if the individual is full-time self-employed. We study the extent to which married couples match with other self-employed individuals or match in order to pool risks by including dummy variables indicating the partners employment type. We include one variable for each employment type. Partners who are full-time wage-employed constitute the reference group. We estimate two specifications of the ordered probit model for male and female spouses separately. In addition to controls for the spouse's employment type, *Specification 1* includes controls for age and educational attainment as measured by years of schooling. *Specification 2* controls, in addition to the variables included in *Specification 1*, for region of residence, number of children in the household, household income, and immigrant background. Table 4 describes how the variables included in the two specifications are constructed.

[8] See e.g. Kanbur (1979) and Kihlstrom and Laffont (1979).

Table IV: Variables included in the regressions

Variable	Description
Dependent variables	
Employment in 2007	1 if full-time wage-employed 2 if part-time self-employed 3 if full-time self-employed
Independent variables	
Spouse full-time wage-employed	Reference
Spouse part-time self-employed	1 if the spouse was part-time self-employed in 2007, 0 otherwise.
Spouse full-time self-employed	1 if the spouse was full-time self-employed in 2007. 0 otherwise
Age	Continuous
Age squared / 100	Continuous
Educational attainment	Number of years of schooling, continuous
Immigrant	1 if the individual is foreign born, 0 otherwise
Metropolitan area	1 if living in the region of Stockholm, Gothenburg or Malmö, 0 otherwise
Number of children	Number of children living in the household, continuous
Household income / 100	Sum of the spouses' earnings from wage-employment and self-employment divided by 100, continuous

Table 5 presents the results for the employment variables from the ordered probit estimations for males.[9] Both *Specification 1* and *Specification 2* show that the probability of being self-employed is about 25 percentage points higher if the spouse is either part-time self-employed or full-time self-employed than if the spouse is full-time wage-employed. Furthermore, having a part-time or a full-time self-employed spouse also increases the propensity for part-time self-employment. Thus, the results from the ordered probit estimations for males indicate the existence of 'positive assortative mating'. Furthermore, the results might also be due to the fact that self-employment knowledge and abilities are transferred across partners.

[9] The results from the complete estimations are available from the authors upon request.

Table V: Ordered probit estimations of employment type for male spouses in married couples, marginal effects (standard errors within parentheses).

	Employment type		
	Full-time wage-employed	Part-time self-employed	Full-time self-employed
Specification 1			
Spouse full-time wage-employed	Reference	Reference	Reference
Spouse part-time self-employed	–0.3408***	0.1127***	0.2282***
	(0.0039)	(0.0010)	(0.0032)
Spouse full-time self-employed	–0.3940***	0.1197***	0.2743***
	(0.0048)	(0.0010)	(0.0042)
Number of observations		386,227	
Pseudo R^2		0.0774	
Specification 2			
Spouse full-time wage-employed	Reference	Reference	Reference
Spouse part-time self-employed	–0.3442***	0.1181***	0.2261***
	(0.0039)	(0.0011)	(0.0032)
Spouse full-time self-employed	–0.3499***	0.1184***	0.2314***
	(0.0048)	(0.0012)	(0.0040)
Number of observations		386,227	
Pseudo R^2		0.0949	

Note: *** indicates significance at the 1 per cent level, ** at the 5 per cent level, and * at the 10 per cent level.

The corresponding results for females are presented in Table 6.[10] Just as for males, the table suggests that there is 'positive assortative mating' and that self-employment knowledge is transferred across partners. Both specifications show that having a self-employed spouse increases self-employment propensities for females. If the male spouse is part-time self-employed, self-employment propensities increase by about 10 percentage points compared to when the male spouse is full-time wage-employed. If the spouse is full-time self-employed, self-employment propensities increase by somewhat more than 15 percentage points compared to if the spouse is full-time wage-employed.

[10] The results from the complete estimations are available from the authors upon request.

Table VI: Ordered probit estimations of employment type for female spouses in married couples, marginal effects (standard errors within parentheses).

	Employment type		
	Full-time wage-employed	Part-time self-employed	Full-time self-employed
Specification 1			
Spouse full-time wage-employed	Reference	Reference	Reference
Spouse part-time self-employed	–0.2009*** (0.0029)	0.0919*** (0.0012)	0.1090*** (0.0019)
Spouse full-time self-employed	–0.2856*** (0.0034)	0.1182*** (0.0013)	0.1674*** (0.0025)
Number of observations		386,227	
Pseudo R^2		0.1065	
Specification 2			
Spouse full-time wage-employed	Reference	Reference	Reference
Spouse part-time self-employed	–0.2000*** (0.0029)	0.0917*** (0.0012)	0.1083*** (0.0019)
Spouse full-time self-employed	–0.2802*** (0.0035)	0.1169*** (0.0013)	0.1633*** (0.0026)
Number of observations		386,227	
Pseudo R^2		0.1074	

Note: *** indicates significance at the 1 per cent level, ** at the 5 per cent level, and * at the 10 per cent level.

4. Conclusions

Today there is a relatively large literature on the propensities and determinants of self-employment. However, this literature has focused on individuals to the exclusion of the fact that an individual's self-employment decision can often be a result of different types of matching between partners and intra-household decisions.

Against this background, this paper has analysed self-employment matching among dual-earner couples in Sweden. The results show that self-employment propensities are positively correlated across partners. Self-employment propensities are significantly higher for both males and females whose spouses are self-employed. However, when interpreting this result one should be aware that this analysis is based upon cross-sectional data and that we therefore have not been able to identify the employment types of the couples in our study at the point at which they met. Consequently, the result can be an effect of 'positive assortative mating', i.e. that individuals with self-employment abilities are attracted to each other, by the fact that self-employment knowledge and abilities are transferred across partners, or naturally by both.

Independently of the explanations, we argue that at least one important policy conclusion can be drawn from the fact that self-employment is positively correlated across partners. This is related to the fact that females are under-represented in self-employment in many countries. If governments and policymakers want to increase female self-employment rates, measures targeted to females might of course be a good idea, but stimulating overall self-employment might be just as effective since one important determinant of female self-employment is having a self-employed spouse.

Finally, it is worth pointing out that future research in this area should, as far as possible, make use of longitudinal data in order to understand the mechanisms behind the positive correlations in self-employment propensities across spouses.

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