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Returns to Self-Employment Experience in the Wage and Salary Sector: A Comparative Analysis of Germany and the United States*

By Eileen Trzcinski**

Summary

This article uses data from the United States Panel Study of Income Dynamics and the German Socio-Economic Panel to estimate gender-specific earnings equations that provide an extensive differentiation of past labor market history. Overall the results suggest that previous experience in self-employment yields a complex pattern of returns to later employment in the wage and salary sector. These returns differ by gender and by country, and they represent a mixture of human capital and signaling effects. The alternatives of unemployment and time out of the labor market, however, exert effects across gender and country that are stronger and more consistently negative, thus suggesting that self-employment represents a positive alternative when opportunities in wage and salary employment are limited.

1. Introduction

This article examines how earnings in wage and salary employment are affected over time by periods of self-employment. The analyses are presented by gender for Germany and for the United States. In both Germany and the United States, policy initiatives exist to stimulate self-employment. In the United States, these initiatives have recently focused on the creation of microenterprises and function within a broader strategy of individual initiative in the alleviation of poverty. In Germany, emphasis on self-employment policy falls within unemployment policy and within the broad policy initiatives associated with economic development in eastern Germany.

In general, the initiatives in both countries are based on the premise that movement into self-employment represents a positive event, while movement out of self-employment represents a negative event. Data from the U.S. Panel Study of Income Dynamics (PSID) and the German Socio-Economic Panel (GSOEP), however, suggest that for many individuals self-employment represents one component of an employment history that is marked by movement into and out of wage and salary employment and that a substantial percentage of individuals in wage and salary employment have previously worked in self-employment. To the extent that the current political measures succeed in increasing movement into self-employment, the percentage of workers with at least one spell of self-employment is likely to increase. Hence, an assessment of the viability of self-employment as an economic development and poverty alleviation strategy requires an analysis of the impact of

periods of self-employment on subsequent earnings in the wage and salary sector. If self-employment yields returns that are comparable to other types of employment, then policy initiatives to stimulate self-employment as a human capital and economic strategy are warranted, even if the self-employment option does not continue for a prolonged period. However, if self-employment yields human capital and economic development returns that are beneath other types of employment, then self-employment may still be an attractive alternative to unemployment.

2. Overview of Literature

Most of the theoretical and empirical literature on self-employment focuses on returns to self-employment while the person is self-employed. For most individuals, however, self-employment represents one or more phases of employment over the life cycle, which is marked by periods of wage and salary employment as well as self-employment. Although theoretical and empirical literature that addresses this issues is scarce, labor market theory and research on gender-based wage differentials provide three sets of related literature that can be adapted to the case of self-employment.

The first set of theories focuses on the effect of labor force attachment on wages. Since the early 1970s considerable theoretical and empirical research has been undertaken to determine the impact of intermittent labor force participation on wages. (See, for example, Blinder and Weiss 1976; Killingsworth 1983; Polachek and Kim 1994; Wood, Corcoran, and Courant 1993). When applied to explain gender-based wage differentials, this theory argues that female workers earn less than their male counterparts because they have less human capital, either job-specific or general, due to their higher expected probability of future career interruptions, primarily in anticipation of bearing and rearing children. Thus, continuity of lifetime work activity is theoretically a determinant of human capital investment.

If self-employment represents a period of general human capital investment and general on-the-job training, then movement into and out of self-employment can represent a career strategy that maximizes an individual's lifetime earnings stream. As such, any differentiation between work experience gained in wage and salary employment and work experience gained via self-employment should yield little discernable effect on an individual's income stream over time. If self-employment requires a set of specific and non-transferable skills, then periods of self-employment could function similarly to time out of the labor market—that is,

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skills acquired in self-employment may not be transferable to the wage and salary sector. Thus, the same negative effects predicted for labor market intermittency in general may apply for self-employment.

The second set of theories explaining gender-based earnings differentials is statistical discrimination theory. Statistical discrimination models rest on the premise that employers have limited information about potential employees on an individual basis and hence must also rely on the pertinent characteristics of the group to which the individual belongs (Lazear and Rosen 1990). If employers view self-employed workers as possessing different characteristics than workers who have specialized exclusively in wage and salary employment, then employers may be hesitant to hire or to promote workers based in part on experience in self-employment. In addition, employers have less information on self-employed workers, since no references from previous employers are available for spells of self-employment.

A third set of theoretical literature also has implications for the long-term economic effects of self-employment. Implicit contract theory points to another source of the link between job tenure and upward sloping wage profiles. Typical of this literature are works by Lazear and Moore (1979) and Medoff and Abraham (1981), which present several theories concerning why firms give preferential treatment to more experienced workers. According to these theories, employees with longer tenure gain greater job security and higher compensation in their later years; these rewards motivate workers to perform more industriously in their early years. Workers hesitate to shirk under this scheme, since they stand to lose far more than they would if they were paid their actual marginal product in each period. Implicit contract theory implies that self-employed workers would not receive long-term gains from a spell of self-employment when they moved from the self-employment sector to the wage and salary sector.

3. Estimation Models and Data Description

Estimation Models

Many studies have shown that self-employed workers are not a random sample of workers. In other words, self-employed workers are found to be systematically different from wage and salary workers in some unobserved aspects. If these aspects are observable, one can simply control for these aspects by entering them as independent variables in a regression function of wages. However, if the aspects that differentiate self-employed workers from wage and salary workers are not observable (and thus cannot be controlled for), such as personal preference pertaining to working for oneself versus for others, the regression analysis without consideration of these variables will yield biased results. To factor self-selection into the self-employment or wage and salary sector, a switching model with an

endogenous switching variable is used in this analysis (Greene 1990; Maddala 1983, 1993).

In this study, the two regimes are whether one works for oneself or works for others. The selection criterion depends on the relative preference for each regime, which is a function of many variables, such as expected earnings from each regime and other personal and family characteristics, which we do not observe. What we observe instead is whether the person is self-employed or working for others. A standard two-step procedure is used to estimate earnings in wage and salary employment. In analyses for the United States, the models are estimated with and without the selection bias correction.

Data and Variable Selection

The main data set used for the United States study is the 1990 preliminary released version of the Panel Study of Income Dynamics (PSID). Work history of individuals is compiled from the PSID 1979-1990 waves. Due to limited information on community variables in the PSID concerning the local labor market information, Census Bureau summary data for 1990, which consists of information on all 3,142 counties in the United States, are used to supplement the PSID in the analysis. The units of analysis are heads and wives in the PSID family units. Of this sample, 9.4 percent are self-employed. The self-employed workers in this study include all non-farm workers who classify themselves as self-employed, either incorporated or unincorporated. Those who classify themselves as both working for themselves and for others are excluded from our sample. Sensitivity analysis indicated that the inclusion or exclusion of these individuals did not affect the results.

The variables used in this study are of three types: (1) individual and family characteristic variables; (2) work history and occupation characteristics; (3) regional as well as community characteristics variables. The primary difference between the set of explanatory variables included for the selection equations and for the wage equations is that the selection equations include a more extensive set of family variables, including number and ages of children, family income, and nonbusiness assets, whereas the wage equations include a more extensive set of work history and occupation characteristics.

The earnings equations for Germany are based on data from GSOEP (West German and foreign sample) and include years of full-time work, years of part-time work, and years of work in the home. The earnings function and selection equations are based on earnings and employment status in the 1995 wave, with work history obtained from the activity calendar and income calendar files. These files were used to obtain information on months and spells of unemployment and self-employment and on length of time since the last spell of unemployment, self-employment, and work in the home.

A complex set of variables is included in an attempt to differentiate between signal and human capital effects of different types of work history strategies. The existence and number of spells are included to test for signaling effects. If a spell exerts a significant effect on wages, then this effect can be interpreted as a signal. For example, if a spell of self-employment or unemployment exerts a negative effect on

wages, then this effect can be interpreted to indicate that potential employers view this event as a stigma. Weeks or months spent in a particular state (self-employment, unemployment, or time out of the labor market) are included to measure human capital accumulation (where the sign is significant and positive) or deterioration (where the sign is significant and negative). Finally, variables are

Table 1

**Earnings Function for Male Wage and Salary Workers,
United States, 1990**

Variable	Excludes Part-Time		Includes Part-Time	
	with Mills	without Mills	with Mills	without Mills
Intercept	1.039*** (0.194)	1.130*** (0.192)	1.130*** (0.197)	1.230*** (0.195)
Years worked full-time	0.009*** (0.002)	0.010*** (0.002)	0.010*** (0.002)	0.011*** (0.002)
Years worked full-time squared	-0.0004*** (0.0001)	-0.0004*** (0.0001)	-0.0004*** (0.0001)	-0.0004*** (0.0001)
Part-time now	—	—	-0.197*** (0.044)	-0.197*** (0.044)
Years worked part-time	0.005 (0.005)	0.005 (0.005)	0.009** (0.005)	0.009** (0.005)
Education	0.048*** (0.005)	0.049*** (0.005)	0.046*** (0.005)	0.047*** (0.005)
Spells of self-employment	-0.004 (0.022)	-0.003 (0.022)	-0.008 (0.022)	-0.006 (0.022)
Spells of unemployment	-0.15* (0.009)	-0.015* (0.009)	-0.013 (0.009)	-0.013 (0.009)
Spells out of labor force	0.033*** (0.008)	0.033*** (0.008)	0.027*** (0.008)	0.026*** (0.008)
Weeks of self-employment	-0.0003 (0.0004)	-0.0003 (0.0004)	-0.0001 (0.0004)	-0.0001 (0.0004)
Weeks of unemployment	0.00003 (0.0004)	0.00003 (0.0004)	-0.0001 (0.0004)	-0.0001 (0.0004)
Weeks out of labor force	-0.001*** (0.0002)	-0.001*** (0.0002)	-0.001*** (0.0002)	-0.001*** (0.0002)
At least one spell of self-employment	-0.110*** (0.044)	-0.111*** (0.044)	-0.142*** (0.048)	-0.153*** (0.045)
At least one spell of unemployment	-0.159*** (0.041)	-0.160*** (0.041)	-0.151*** (0.041)	-0.153*** (0.041)
At least one spell out of labor force	0.130 (0.085)	0.125 (0.085)	0.146* (0.085)	0.139* (0.085)
Years since self-employment	0.005 (0.006)	0.005 (0.006)	0.005 (0.006)	0.005 (0.006)
Years since out of labor force	-0.019*** (0.007)	-0.017*** (0.007)	-0.019*** (0.007)	-0.017** (0.007)
Years since last unemployment	0.010*** (0.004)	0.010*** (0.004)	0.010*** (0.004)	0.011*** (0.004)
Inverse Mills ratio	0.164*** (0.059)	—	0.175*** (0.058)	—
N	2,500	2,500	2,629	2,629
R ²	0.38	0.37	0.36	0.36

* Significant at 10 percent level; — ** Significant at 5 percent level; — *** Significant at 1 percent level.

Source: Calculations by author, using 1990 preliminary released version of the PSID and Census Bureau summary data for 1990.

Table 2

**Earnings Function for Female Wage and Salary Workers,
United States, 1990**

Variable	Excludes Part-Time		Includes Part-Time	
	with Mills	without Mills	with Mills	without Mills
Intercept	0.795*** (0.159)	1.187*** (0.149)	0.707*** (0.162)	1.167*** (0.142)
Years worked full-time	0.017*** (0.002)	0.020*** (0.002)	0.016*** (0.002)	0.018*** (0.002)
Years worked full-time squared	-0.0006*** (0.00008)	-0.0006*** (0.00008)	-0.0006*** (0.00008)	-0.0006*** (0.00009)
Part-time now	—	—	-0.234*** (0.017)	-0.223*** (0.017)
Years worked part-time	0.004* (0.002)	0.007*** (0.003)	0.003 (0.022)	0.006*** (0.002)
Education	0.065*** (0.004)	0.056*** (0.003)	0.062*** (0.004)	0.053*** (0.003)
Spells of self-employment	0.056*** (0.016)	0.054*** (0.016)	0.044*** (0.015)	0.042*** (0.015)
Spells of unemployment	-0.017** (0.007)	-0.016** (0.007)	-0.002 (0.007)	-0.004 (0.007)
Spells out of labor force	-0.013** (0.006)	-0.012* (0.006)	-0.005 (0.006)	-0.005 (0.006)
Weeks of self-employment	-0.001*** (0.0003)	-0.001*** (0.0003)	-0.0009*** (0.0003)	-0.0008*** (0.0002)
Weeks of unemployment	0.0002 (0.0003)	0.0002 (0.0003)	0.0002 (0.0003)	0.0002 (0.0003)
Weeks out of labor force	-0.0005*** (0.0001)	-0.0005*** (0.0001)	-0.0005*** (0.0001)	-0.0005*** (0.0001)
At least one spell of self-employment	-0.047 (0.039)	-0.040 (0.040)	-0.060* (0.036)	-0.059* (0.036)
At least one spell of unemployment	-0.145*** (0.032)	-0.152*** (0.032)	-0.194*** (0.030)	-0.195*** (0.030)
At least one spell out of labor force	-0.090 (0.062)	-0.072 (0.062)	-0.096* (0.059)	-0.090 (0.060)
Years since self-employment	0.004 (0.005)	0.003 (0.005)	0.004 (0.005)	0.003 (0.005)
Years since out of labor force	0.030*** (0.006)	0.027*** (0.006)	0.028*** (0.006)	0.027*** (0.006)
Years since last unemployment	0.010*** (0.003)	0.010*** (0.003)	0.014*** (0.003)	0.014*** (0.003)
Inverse Mills ratio	1.502*** (0.230)	—	1.048 (0.179)	—
N	3,523	3,523	4,657	4,657
R ²	0.44	0.43	0.41	0.41

* Significant at 10 percent level; — ** Significant at 5 percent level; — *** Significant at 1 percent level.
Source: Calculations by author, using 1990 preliminary released version of the PSID and Census Bureau summary data for 1990.

included to measure the amount of time that has elapsed since the last spell occurred. These variables determine whether any observed positive or negative effects erode over time. Each of these variables is constructed so that a positive coefficient indicates that effects erode over time.

4. Results of Estimation of Earnings Functions

The results of the analyses are presented in Tables 1-3. Tables 1 and 2 present the earning equations for the United States. Results are presented separately for men and

women and include models with and without part-time workers. In addition the models are estimated with and without the selection bias correction.¹ Table 3 presents the results for men and women in Germany. The discussion below is limited to the effects of human capital variables on earnings and focuses specifically on the effects of differences in labor supply over the life cycle.

Results for the United States

Effects of Full-Time Work Experience. Years of full-time work experience and experience squared show the

¹ The tables presented in this article are abridged and exclude demographic variables and labor market conditions variables. A set of tables with all the included variables and the selection equations is available from the author.

Table 3

Estimation of Earnings Function for Wage and Salary Workers, Germany, 1995

Variable	Male		Female	
	Estimate	Standard Error	Estimate	Standard Error
Intercept	3.123	0.072***	2.796	0.155***
Years worked full-time	0.022	0.002***	0.019	0.003***
Years worked full-time squared	-0.0005	0.00005***	-0.0005	0.00009***
Months with same employer	0.006	0.0009***	0.009	0.002***
Part-time now	-0.222	0.052***	-0.059	0.017**
Irregular employment	-0.381	0.104***	-0.537	0.041***
Years worked part-time	-0.022	0.007***	0.006	0.005
Years worked part-time squared	0.002	4.267***	-0.0003	0.0001
Highest degree obtained (excluded <i>Realschule</i>) ^{a)}				
No degree	-0.106	0.030***	-0.042	0.042
Apprenticeship/(high school)	-0.074	0.019***	0.097***	0.025***
Professional technical college	0.093	0.032***	0.068	0.055
University	0.155	0.024***	0.156	0.035***
Other	-0.093	0.026	-0.054	0.037
Spells of unemployment	-0.008	0.010	0.007	0.020
Spells out of labor force	-0.063	0.028	-0.012	0.012
Spells of self-employment	0.028	0.016***	0.024	0.023
Months of unemployment	-0.004	0.001***	-0.002	0.002
Years of work at home	0.005	0.007	-0.003	0.001**
Months of self-employment	-0.002	0.0008**	-0.0007	0.002
Months since unemployment	0.0004	0.0002	0.0003	0.0003
Months since work in home	0.005	0.007	0.0002	0.0003
Months since self-employment	0.0004	0.0003	-0.0002	0.0005
Poor health	-0.081	0.057	-0.123	0.067*
Foreign sample	-0.026	0.019	-0.045	0.028*
Inverse Mills ratio	0.394	0.140***	0.192	0.314
R ²	0.34	—	0.32	—
N	2,615		1,834	

* Significant at 10 percent level; — ** Significant at 5 percent level; — *** Significant at 1 percent level. — ^{a)} A *Realschule* degree prepares individuals for administrative careers and is required for entry into a *Fachhochschule*; a high school degree (*Hauptschule*) prepares individuals for apprenticeships in trade and crafts; a technical/professional college degree (*Fachhochschule*) offers academic schooling with an emphasis on practical training.

Source: Calculations by author, using the West German and foreign samples of the GSOEP, 1995 wave.

quadratic relationship predicted by human capital theory for men and women; however, statistical significance is achieved only for female wage and salary workers. When one uses years worked full-time since age 18 as a proxy for post-schooling investment or general training, the returns are higher for female than for male workers in wage and salary employment.

Job Tenure. Consistent with the predictions of implicit contract theory, months at current job show a strong positive effect that is statistically significant for both genders in wage and salary employment. As is the case with years of full-time experience, returns to job-specific experience, as proxied by number of months worked for the present employer are also higher for female workers than for male workers in wage and salary employment.

Effects of Part-Time Employment. Both men and women in wage and salary employment pay a penalty for working part-time. Women who are now working full-time do, however, receive a positive return to previous part-time work experience.

Returns to Past Experience in Self-Employment. As noted above, a set of variables was included to determine how and to what extent prior experience in self-employment affects earnings after a worker has moved out of self-employment and into the wage and salary sector. These variables include total weeks in self-employment; number of spells in self-employment; a dummy indicating whether a spell had ever occurred; and a variable that looked at how long ago the most recent spell, if any, had occurred.

A spell of self-employment exerts a negative effect on earnings for both genders. The significance of the spell variable suggests that self-employment functions as a negative signal to potential employers. When these effects are compared with the effects of time out of the labor market and time spent unemployed, however, the results suggest that self-employment provides an alternative with less negative impact on future earnings in wage and salary employment. For women, weeks in self-employment tend to depress current earnings, but this effect is tempered for women who have multiple spells. This result indicates that women who move into and out of short periods of self-employment realize higher subsequent returns in the wage and salary sector than do women who have long but infrequent periods of self-employment. This result suggests that when movement into and out of self-employment is relatively unconstrained, then women use self-employment as an effective short-term strategy. Women with long but relatively few spells fare less well. The length of time spent in self-employment functions similarly to the effect of withdrawal from the labor market — a finding that suggests that wage — and salary-specific human capital tends to deteriorate during long periods spent in self-employment.

Unemployment and Time Out of the Labor Force. A corresponding set of variables was included for unemployment and time out of the labor force: total number of spells; total number of weeks; a dummy indicating whether a spell

had ever occurred; and a variable that indicated how long ago the most recent spell, if any, had occurred. Here we observe similarities and differences in how these aspects of labor market background affect wages for men and women in wage and salary employment. Overall, the findings suggest that the negative effects of unemployment tend to outweigh negative effects from self-employment. Total number of spells of unemployment exerts a significant, negative effect on wages for men and for women, while total weeks of unemployment are insignificant for both men and women. The variable indicating whether at least one spell of unemployment occurred exerts a negative effect on wages for men and women. For both male and female wage and salary workers, any negative effects of unemployment erode over time, since the length of time since the most recent spell of unemployment is positive and significant for both genders. The importance of the spell variables suggests that spells of unemployment (1) function as a stigma or (2) result in a less than efficient matching of labor market skills with jobs. Both of these theoretical alternatives are also consistent with the observed effect that the negative impact of unemployment tends to erode over time.

The effects of time out of the labor force differ for men and women in wage and salary employment. Number of spells out of the labor force exerts a positive influence on wages for men, but a negative influence for women. The analyses do not differentiate among reasons for labor market withdrawal. Hence this gender difference may reflect a higher percentage of withdrawals for work in the home for women in comparison with men.

Total number of weeks out of the labor force, however, significantly depresses wages for both men and women. The variable that measures when the last spell of nonparticipation took place is significant and positive for women, indicating that any negative effects resulting from the total number of weeks out of the labor force erode over time. For men, however, this variable exerts a negative and significant effect, thus indicating that the positive gains men accrue from short spells out of the labor force erode over time. For women, the negative effects of withdrawals from the labor market exceed the negative effects of time spent in self-employment. To the extent that self-employment represents a strategy by which some women are able to combine market and caregiving responsibilities more easily than in wage and salary employment, these findings indicate self-employment results in less negative impact than labor market withdrawal when wage and salary employment is resumed.

Results for Germany

The effects of previous full-time experience, job tenure, and part-time work are similar in the United States and Germany. The only exception is that German women, unlike their counterparts in the United States, receive no gains from previous experience in part-time work.

Returns to Past Experience in Self-Employment. Here the results differ for men and women. The self-employment variables exert no influence on current wages for women. For men, however, spells of self-employment tend to increase current wages, while total number of months in self-employment depresses current wages. These effects do not erode over time and indicate a process that is similar to that experienced by women in the United States. Men who frequently move into and out of self-employment fare better in the wage and salary sector than do men who spend extended periods of time in self-employment.

Unemployment and Time out of the Labor Force. These variables also function differently for men and women in Germany. The results suggest that months of unemployment depress current wages for men, but not women. Years of work at home decrease current wages for women. In neither case do these effects erode over time, which represents a contrast to the United States experience. When compared with the effects of self-employment, unemployment and time out of the labor market exert relatively greater negative effects than does the alternative of self-employment.

5. Discussion and Conclusions

The major premise of this paper was that the success and failure of self-employment initiatives need to be evaluated not only in terms of the longevity of a spell of self-employment, but also in terms of the future consequences of self-employment, if an individual moves from self-employment into the wage and salary sector. In addition, these effects need to be evaluated in terms of the other alternatives. These alternatives include not only wage and salary employment, but also unemployment and time out of the labor market. Overall, the results suggest that previous experience in self-employment yields a complex pattern of returns to later employment in the wage and salary sector. These returns differ by gender and by country and seem to represent a mixture of human capital and signaling effects. The alternatives of unemployment and time out of the labor market, however, exert effects that are more consistently negative across gender and country, thus suggesting that self-employment represents a positive alternative when opportunities in wage and salary employment are limited.

References

- Blinder, A.S. and Y. Weiss.* 1976. "Human Capital and Labor Supply: A Synthesis." *Journal of Political Economy*, 84: 449-472.
- Greene, H.W.* 1990. *Econometric Analysis*. New York: Macmillan.
- Killingsworth, M.R.* 1983 *Labor Supply*. NY: Cambridge University Press.
- Lazear, E.* 1987. "Why is There Mandatory Retirement?" *Journal of Political Economy*, 87(6): 1261-84.
- Lazear, E. and R.L. Moore.* 1979. "Incentives, Productivity, and Labor Contracts," *Quarterly Journal of Economics*, 99: 275-95.
- Lazear, E. and S. Rosen.* 1990. "Male-Female Wage Differentials in Job Ladders," *Journal of Labor Economics*, 8(1): S. 106-S. 123.
- Maddala, G.S.* 1993. *Econometrics of Panel Data*, Brookfield, VT: Elgar Publications.
- Maddala, G.S.* 1983. *Limited Dependent and Qualitative Variables in Econometrics*. Cambridge: Cambridge University Press.
- Medoff, J. and K. Abraham.* 1981. "Are Those Paid More Really More Productive? The Case of Experience," *Journal of Human Resources*, 16: 186-216.
- Polachek, S. and M. Kim.* 1994. "Panel Estimates of the Gender Earnings Gap: Individual Specific Intercept and Individual Specific Slope Models," *Journal of Econometrics*, 61: 23-42.
- Wood, R.G., M. Corcoran, and N. Courant.* 1993. "Pay Differences among the Highly Paid: Male-Female Earnings Gap in Lawyers' Salaries," *Journal of Labor Economics*, 11(3): 417-441.