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Entrepreneurship: Origins and Returns

Helge Berglann, Espen R. Moen, Knut Røed, Jens Fredrik Skogstrøm*

Abstract

We examine the origins and outcome of entrepreneurship on the basis of exceptionally comprehensive Norwegian matched worker-firm-owner data. In contrast to most existing studies, our notion of entrepreneurship not only comprises self-employment, but also employment in partly self-owned limited liability companies. Based on this extended entrepreneurship concept, we find that entrepreneurship tends to be profitable. It also raises income variability, but the most successful quartile gains much more than the least successful quartile loses. Key determinants of the decision to become an entrepreneur are occupational qualifications, family resources, gender, and work environments. Individual unemployment encourages, while aggregate unemployment discourages, entrepreneurship.

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1. Introduction

Economists have good reasons to care about entrepreneurship. The most obvious one is that entrepreneurship generates *wealth*. According to OECD (2003; 2005), around 20-40 per cent of the overall labor productivity growth in eight major industrialized countries can be directly attributed to the reallocation of inputs arising from the entry of new and the exit of old firms. A second reason to care about entrepreneurship is that it may entail *externalities*, which in turn call for policy. For example, if labor markets are imperfect, the creation of new workplaces gives rise to positive externalities for the hired workers. And if the entrepreneur cannot fully appropriate the value of a new (or improved) product, its introduction also gives rise to positive externalities for consumers. However, entrepreneurship may also entail negative externalities associated with business stealing and rent seeking. Competitors – including former employers – may lose market shares and profits. Whether the positive or the negative externalities predominate depends on firm and industry characteristics. A third reason why economists should be interested in entrepreneurship is that it may be an important source of labor market *flexibility*. While employees typically have strictly regulated work-hours, protection against dismissal on short notice, and often rigid retirement schemes, entrepreneurs can adjust their own labor supply continuously to changes in preferences and market conditions; i.e., they are in position to “grease the wheels” of rigid labor markets.

There is no consensus on the definition of entrepreneurship. According to Schumpeter (1947, p. 151), the entrepreneur is responsible for “the doing of new things or the doing of things that are already being done in a new way”. In the business literature, a popular view of the entrepreneur is someone who “perceives and opportunity, and creates an organization to pursue it” (Bygrave and Hofer, 1991, p 14). In most empirical studies, however, an entrepreneur is simply defined as someone who is self-employed; see Hamilton (2000) for an influential example and Van der Sluis et al. (2008) for a recent survey. The obvious reason for this more mundane interpretation of entrepreneurship in empirical applications is that self-employment – in contrast to individuals who “perceive and pursue novel ideas” – is observed, and at the same time (hopefully) correlated to the intrinsically unobserved activities of “genuine entrepreneurship”. Yet, we will argue that the

state of self-employment is an unsatisfactory proxy for the kind of economic behavior that motivates economists to care about entrepreneurship. The most interesting – and at the same time observable – distinguishing feature of entrepreneurship from an economics perspective is in our view the dual role of employing *both human and financial capital* into a business activity. Thus, an entrepreneur differs from an investor/venture capitalist in that the entrepreneur devotes his/her labor to the firm. The entrepreneur differs from an employee (or a CEO) in that the entrepreneur owns the firm and, hence faces the risks associated with being the *residual claimant* to the firm's earnings. A self-employed person is obviously an entrepreneur according to these considerations, whether operating alone – as a sole proprietor – or as a partner in an unincorporated firm. However, a person who invests capital in a limited liability company (LLC) and then becomes an employee in his/her own company is also an entrepreneur. In contrast to most datasets used to analyze entrepreneurship in the literature, our rich Norwegian register data allow us to identify *employed owners* of LLC's. Our entrepreneurship concept thus includes self-employed as well as persons who are employed by a company in which they are significant owners, either directly or (crucially) indirectly via other firms. It includes persons operating alone as well as persons engaging in unincorporated and incorporated partnerships. As it turns out, there are just as many LLC-entrepreneurs as there are self employed in Norway (excluding the primary sectors).

The purpose of the present paper is to analyze the origins of – and the private return to – entrepreneurship in Norway, irrespective of its organizational structure. While we will argue that the mode of firm ownership is of secondary importance for the economic implications of entrepreneurship as such, we have every reason to expect firms with different ownership structures to behave differently. Both ownership forms have advantages and disadvantages. Limited liability reduces the downside for the owner, but may make it more difficult to raise capital. Limited liability firms are more heavily regulated than firms with sole proprietorship, e.g., in the form of minimum equity requirements, and they are required to disclose more information.¹ In general, the lower administrative costs associated with sole proprietorship make this arrangement relatively more

¹ In Norway, all limited liability companies must report audited account to the government, and these are publicly available

attractive for small than for large firms, although one may also find large companies organized as sole proprietorships. The sorting of entrepreneurs into self-employment and limited liability companies is in any case not likely to result from a random-assignment-like process with respect to the performance of the firms. Indeed, we show in this paper that LLC entrepreneurs tend to have higher and more business-oriented education and also earn a lot more money than self-employed entrepreneurs. Hence, entrepreneurship studies focusing exclusively on self-employment may be subject to the serious limitation that they cover a highly selected sub-sample of the entrepreneur-population only. A key contribution of the present paper is that we remove this limitation, and examine the implications it has for our view on the recruitment into entrepreneurship and on the economic performance of entrepreneurs. Based on a panel of Norwegian administrative worker-firm-owner data from 2000 through 2005, we examine the determinants behind the decision to become an entrepreneur, as well as the outcome of that decision, in terms of the pecuniary rewards it offers to the entrepreneur.

There is an active literature on entrepreneurship originating in existing firms; see for instance Sleeper (1998), Klepper and Sleeper (2002), Agarwal et al (2004), and Hellman (2006), aiming at identifying the type of firm characteristics that foster entrepreneurship and spinoffs. We make a novel contribution to this literature by exploiting our access to audited accounts for all Norwegian limited liability firms to investigate the impacts of a firm's economic performance on the entrepreneurship propensity among its employees. We find that entrepreneurship increases with a firm's profitability and declines with its value added per employee; hence by allocating a low share of the factor income to its workers, a firm incites its employees to start their own business. We show that *unemployed* jobseekers have a higher probability of starting their own businesses than fully employed workers, but that *underemployed* workers are the most entrepreneurial of all. Downsizing of existing firms also breeds entrepreneurship among the (potentially) affected employees. However, conditional on labor market status (employment or unemployment), we find that high and rising occupation-specific aggregate unemployment discourages entrepreneurship. Thus, while individual joblessness encourages entrepreneurship, aggregate unemployment discourages it.

The existing empirical literature tends to indicate that entrepreneurship does not pay off economically, and that entrepreneurship is primarily motivated by non-pecuniary factors, such as personal pursuit of autonomy and job satisfaction; see, e.g., Van Praag and Versloot (2007) for a recent review. Parker (2004, p 16) refers to the “tentative emerging consensus” that entrepreneurs earn less than employees. Hamilton (2000) provides evidence that many workers are actually willing to forgo significant earnings premiums as employees in order to remain self-employed. And questionnaire analyses invariably show that the search for independence and the desire to fully exploit own skills are ranked much higher among the determinants of new firm formation than the pursuit of monetary rewards; see Santarelli and Vivarelli (2007). There exist some pieces of evidence, however, that do not fit into this picture. Rosen and Willen (2002), for example, find that with proper controls for education and other personal characteristics, self-employed have higher mean and median income levels than wage-workers. And Daly (2009) finds that self-employed men tend to have earnings similar to those of the members of a matched control group in the short and medium term, but higher earnings over a longer term horizon. Our own findings also challenge the “emerging consensus” that entrepreneurship does not give rise to personal economic gains. We find that there is in most cases a significant income premium associated with entrepreneurship, but that this expected premium has to be traded off against higher income variability, just as we would expect from theoretical considerations; see Iyigun and Owen (1998).

2. Data and definition of entrepreneurship

The analyses in this paper rely on three blocks of administrative register data. The first block contains comprehensive information on economic activities for all residents in Norway, based on employment registers, tax records, unemployment registers, social security files and education registers. This block also contains detailed information on demographics and other background variables, such as age, gender, education, nationality, family background, marital status, children, wealth, previous earnings, and place of residence. The second block contains annual audited accounting data for the majority of

firms in Norway, including all limited liability companies.² The third data-block lists the major owners and board members of all limited liability companies. An owner is recorded if his/her/its share in a company exceeds 3 %. Importantly, the three blocks contain the same (encrypted) individual as well as firm identification numbers, making it possible to merge information on, e.g., labor market activity, firm ownership, and firm performance at the individual (owner) level.

We exploit the three data-blocks to identify a *main economic activity* by October 1 each year (2000-2005) for all residents in Norway. The mutually excluding main activities are i) regular employment, ii) entrepreneurship, iii) education, iv) unemployment, v) retirement or disability pension, and vi) other. The latter of these activities comprises individuals for which it is difficult to identify personal incomes consistent with a subsistence level. They might draw on their personal capital stock or loans (e.g. long vacationers, unregistered unemployed); and/or they might be supported financially by others (spouse/parents) or draw on some unidentified source of income (e.g. military service, temporary migrants, black laborers).

Our notion of entrepreneurship includes self-employment in the form of sole proprietorship as well as regular employment in partly self-owned limited liability companies and partnerships.³ According to this definition, an entrepreneur is a person who takes an active part in managing a company in which he/she also invests capital and thus bears a significant part of the economic risks involved. More precisely, we define an entrepreneur as a person who is either employed in a firm in which he or she is directly or indirectly a major/active owner (defined as either controlling at least 30 % of the company or controlling at least 10 % of the company *and* being a board member or a chief executive)

² The audited accounts are recorded for all enterprises with an obligation to keep accounts, in addition to a number of firms registering their accounts voluntarily. All limited liability and state-owned companies and most general and limited partnerships are obliged to keep accounts. Sole proprietorships are obliged to keep accounts if their assets exceed NOK 20 million or if they employ more than 20 man-labor years.

³ We interpret a person as self-employed if annual registered business earnings are larger than labor earnings and also exceed around 140,000 NOK (corresponding to around 30 % of average earnings for full-time employees in Norway). This implies that we probably omit some startup of new firms where the initiator still earns more from employment (or have extremely low earnings), but has invested and is developing an enterprise.

or who runs his or her own business as self-employed.⁴ Identification of active owners in limited liability companies is a non-trivial exercise, given the high frequency of cross-ownership among companies. A typical situation is that a person is fully employed in a company A and at the same time is a major owner in another company B, indicating (at first sight) that employment is the main economic activity. By closer inspection, however, it may turn out that company A is owned partly or wholly by company B, sometimes through a third company C (or through several company linkages). Hence, in order to correctly identify the active owners – our entrepreneurs – we use the data to trace out the degrees of *ultimate* ownerships. Note, however, that we do not define a person as an entrepreneur if earnings from fulltime employment in another firm (which the person does not own according to the definition above) exceed earnings from the owned business activity; i.e., we require that entrepreneurship is *the most important* economic activity.

Our definition of entrepreneurship does not require that the firm is “new”; nor does it require that the entrepreneur is necessarily the founder of the firm. This follows directly from the view that the key distinguishing feature of the entrepreneur is the combined investment of capital and labor in the same firm. Whether these investments occur through the establishment of a new firm or through takeover – and potentially revitalization – of an existing firm is of secondary importance. At this point, our definition of entrepreneurship is in line with the commonly used self-employment definition. From a more practical viewpoint, it would be difficult to separate new from old firms on the basis of administrative registers only, since the organizational numbers that could have been used for such a purpose frequently change for reasons other than a brand new firm being established (takeovers, mergers, demergers, organizational changes). Consequently, it would also be hard to identify the true founders of each firm.

3. Descriptive statistics – entrepreneurship in Norway

The upper panels of Figure 1 display the average distribution of main economic activities for the whole Norwegian working-age population by gender and age in 2000-2005. The

⁴ The thresholds used to define LLC-entrepreneurs are of course somewhat arbitrary. However, moderate changes in the thresholds do not cause large changes in the number of identified entrepreneurs. For example, had we required a 15 % ownership share (5 % for board members and chief executives) rather than 30 % (10 %), the total number of entrepreneurs in our data would on average have increased by 1.9 %.

first striking observation is that entrepreneurship is much more prevalent among men than women. The age profiles also differ across gender; the peak entrepreneurship age is 51 for men (with 14.3 % of the population) and 44 for women (with 3.7 % of the population). It is worth noting that the fractions in regular employment are very similar for men and women, although the decline starts much earlier for men (around age 37) than for women (around age 49), largely reflecting the rising entrepreneurship propensity among men.

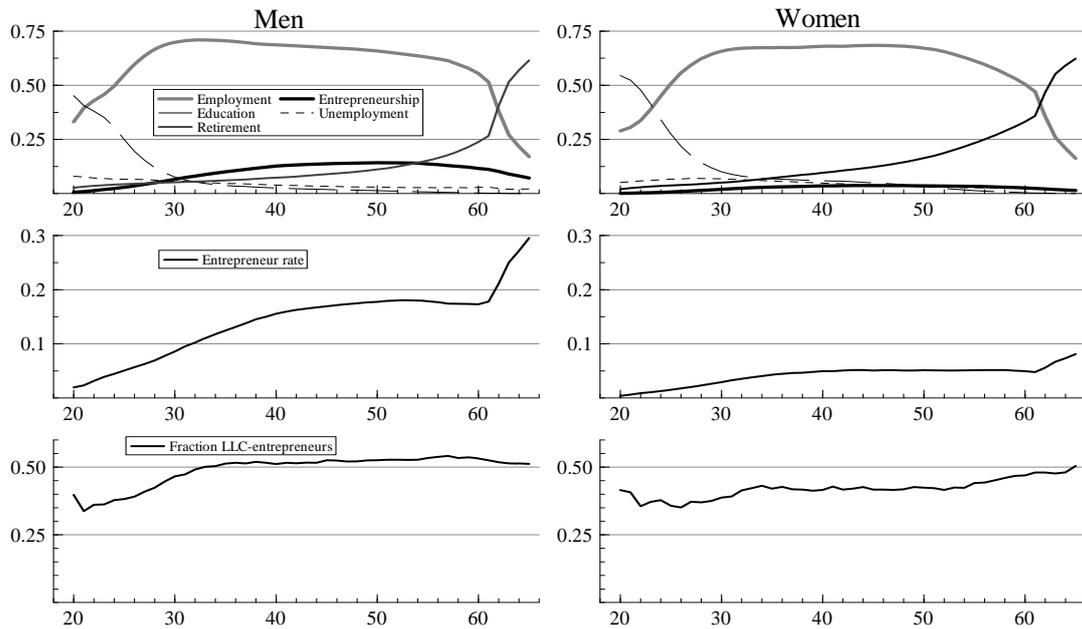


Figure 1. Main economic activity in 2000-2005, by gender and age (average over all years).

Note: Upper panels show fraction of population in each state. Medium panels show the fraction of entrepreneurs among those who are either employed by others or entrepreneur. Lower panels show the fractions of entrepreneurs (excluding entrepreneurs in agriculture and fisheries) who are employees in limited liability companies (LLC).

The medium panels of Figure 1 display the “entrepreneur rate”, defined as the fraction of entrepreneurs among those who are either in regular employment or in entrepreneurship. For men, this rate rises gradually until the mid 40’s, after which it stabilizes around 17-18 %. It then again rises sharply after the age of 60, reflecting that employed workers tend to retire much earlier than entrepreneurs. For women, the entrepreneur rate stabilizes already in the mid 30’s around a level of 4-5 %. After the age of 60, it rises as a result of early retirement among employees. The lower panels show the fraction of (non-

primary sector) entrepreneurs that are employees in self-owned LLC's. In total, the two entrepreneur groups – self-employed and LLC entrepreneurs – are approximately of the same size. The fraction of LLC entrepreneurs is significantly higher for men than for women, and it rises with age. Since LLC entrepreneurs are formally employed, they enjoy the same social insurance privileges as regular employees. This implies in particular that they are insured against unemployment. Note, however, that health-insurance is not dependent on employee-status in Norway; all Norwegian citizens are fully insured within a comprehensive public health-care system. Child-care subsidies are also independent of employee-status.

It is important to bear in mind that the concept of self-employment identified from administrative data (on the basis of registered business earnings) differs from self-employment as reported in sample surveys. Individuals working as employees in their own company may think of and report themselves as self-employed. According to sample survey data (OECD, 2008), the self-employment rates in Norway for 2005 were 7.4 % for all workers, 10.2 % for men, and 4.5 % for women (OECD, 2008). In comparison, the average *entrepreneur rate* in our 2005 data is 9.1 %; 13.4 % for men and 4.0 % for women. Hence, it is clear that *for men*, our entrepreneur definition covers a significantly larger fraction of the Norwegian workforce than the survey-based self-employment concept.⁵ Our entrepreneurship definition thus entails an even larger gender divide in entrepreneurship than indicated by sample surveys. While the ratio of the male to female entrepreneur rates is 2.3 according to the commonly used survey-based self-employment definition, it is as high as 3.4 according to our definition.⁶

⁵ For women, our definition seems to cover a smaller fraction of the workforce than the survey-based definition. This probably results from our requirement that annual business earnings must exceed a threshold for self-employment to be interpreted as a person's main economic activity; see Section 2.

⁶ Two alternative survey-based entrepreneurship definitions that can both be constructed from the so-called Global Entrepreneurship Monitor are the concepts of "early stage entrepreneurial activity" and the "established business ownership"; see, e.g., Bosma *et al.* (2008). The former of these covers individuals involved in setting up a brand new business and owners and managers in relatively young (up to 3.5 years) enterprises, while the latter covers owners and managers in established businesses. For Norway 2005, these measures indicate a ratio of male to female early stage entrepreneurship of only 1.2 and a rate of male to female established business ownership of 2.3 (Minniti *et al.*, 2006).

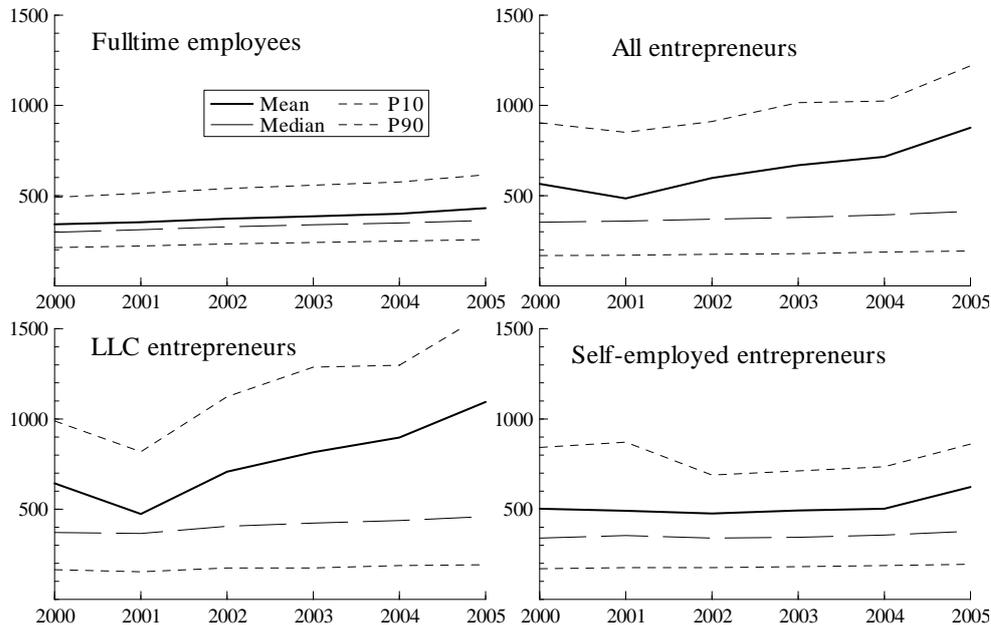


Figure 2. Total incomes for fulltime employees and entrepreneurs.

Note: Entrepreneurs in agriculture and fisheries are not included. Total income includes labor and business earnings, dividends, and other capital income.

Based on administrative income files covering all sources of income, we are able to compute comprehensive income measures for employees as well as entrepreneurs, including labor earnings, business income, dividends, and other capital income. The two upper panels of Figure 2 show how total incomes developed among full time employees and entrepreneurs from 2000 through 2005.⁷ Both mean and median incomes are significantly higher among entrepreneurs than among full time employees. Entrepreneurial incomes are much more variable, however, as reflected by the large difference between incomes in the 10th and the 90th percentile of the two income distributions. It may also be noted that the entrepreneurs identified through company ownership data – the LLC entrepreneurs – tend to have significantly higher incomes than the entrepreneurs identified directly through self-employment business income; see the two lower panels of Figure 2. On average, the median income in the former group was 16 percent higher than in the

⁷ All incomes reported in this paper are measured in Norwegian Kroner (NOK). 1 NOK is typically valued at around 0.15-0.20 \$. The income concept we use is comprehensive in the sense that it includes all sources of *personal* income. We have chosen to include capital income for the reason that entrepreneurship sometimes involves significant capital investments, implying substitution of dividends for other capital income. Note also that our income concept does *not* include earnings retained in incorporated businesses.

latter group, whereas the mean income was as much as 50 percent higher. The time-profile of the recorded incomes for LLC-entrepreneurs was affected by changes in the tax regime. After a long period (since 1992) with no taxation of dividends, the Government imposed in September 2000 a temporary 11 percent dividend tax. The tax was quickly abolished, and from 2002 through 2005 dividends were again exempted from taxation. In 2006, however, the tax was reintroduced in the form of a 28 percent tax on dividends above a certain “safe return” level. All these tax reforms were expected or announced in advance, giving ample scope for firm owners to time dividends strategically. As a result, dividends were exceptionally low in 2001 (explaining the dip in LLC-incomes this year) and exceptionally high in 2005 (a point to which we return in Section 5).⁸

Table 1 shows how the composition of incomes varies across the groups of full-time employees, LLC-entrepreneurs, and self-employed entrepreneurs. As expected, full-time employees earn almost all their money from their salaried job, while self-employed obtain most of their income directly from their business activity. LLC-entrepreneurs, on the other hand distribute their income between wage earnings and capital income (dividends), with the latter component being the most important.

Table 1
Income composition by main economic activity 2000-2005 (1000 NOK, average of annual averages)

	Fulltime em- ployees	LLC-entrepreneurs	Self-employed
Total annual income 2000-2005	380	777	512
Income composition:			
Wage earnings	354	324	41
Business earnings	2	54	343
Capital income (including dividends)	15	389	119
Transfers	9	10	9

The apparent entrepreneurship income premium prevails even conditional on the length and type of education. Table 2 reports the average entrepreneur rates and the entrepreneur-employee income differentials for 34 different education groups (2000-2005). Both mean and median earnings are higher among entrepreneurs than among full time employees in almost all education groups. The highest entrepreneurship-premium is recorded for lawyers and businessmen, while the highest entrepreneurship rates are recorded

⁸ The 28 percent dividend tax imposed from 2006 was announced in March 2004.

for dentists and veterinaries.⁹ Even though the latter two groups have many years of education, the general pattern is that entrepreneur rates are higher among persons with low than among persons with high education. The mean entrepreneurship rates are 13 % for compulsory, 14 % for lower secondary, 12 % for upper secondary, 7 % for bachelor, 11 % for master, and 5 % for PhD education. The fraction of entrepreneurs who incorporate their business activity in a limited liability company (LLC) varies significantly by education. It is particularly low for hairdressers, physiotherapists, and doctors, and particularly high for those with business education, engineers, and scientists. The fraction of entrepreneurs who runs LLC's rather than being self-employed rises with education; from 37 % for entrepreneurs with only compulsory education to around 60 % for entrepreneurs with university degrees. This confirms that the extension of the entrepreneurship concept to include formally employed entrepreneurs in LLC's is important in order to ensure an undistorted picture of entrepreneurship behavior.

Given the enormous variation in entrepreneur rates across different educational groups, one might suspect that the large gender differences in entrepreneurship behavior described above are driven by differences in education/occupation. This is not the case, however. The gender differentials in entrepreneurship are equally large when controlled for education as they are uncontrolled. For example, using a linear probability model to examine entrepreneurship status in 2005, we find that being a women rather than a man reduces the entrepreneurship propensity by 7.8 percentage points when we control for age (47 dummy variables) and nationality (10 dummy variables) only. When we also control for education (34 dummy variables corresponding to the education codes used in Table 2) the estimated gender differential declines by a mere 0.2 percentage points.

⁹ Hamilton (2000, p. 609) did not include doctors and lawyers in his analysis on the returns to entrepreneurship, citing that many of these professionals advance by becoming partners in the firm, implying a reclassification from paid employment to self-employment, and that their earnings are likely to be top-coded. Conditional on education, the entrepreneurship premium in Norway is indeed high for lawyers, while it is not particularly high for doctors. Taken together, these two groups make up around 2 % of the entrepreneur-population in Norway; hence the fact that we include all non-primary-sector entrepreneurs in our analysis does not significantly reduce our analysis' comparability to Hamilton (2000). If doctors and lawyers are removed from our sample, the average income totals reported in Table 1 are reduced by 0.8 percent for wage earners, by 2.2 percent for LLC entrepreneurs, and by 3.5 percent for self-employed.

Table 2
Entrepreneurship and relative earnings by education. Annual averages 2000-2005. All sectors except agriculture and fisheries. All earnings included.

	Average number in full employment or entrepreneurship	Entrepreneur rate (%)	LLC fraction (%)	Earnings in entrepreneurship relative to full employment			
				Relative mean	Relative median	Relative P10	Relative P90
Compulsory education only	232 967	13.2	36.6	1.45	1.16	0.78	1.67
Lower secondary							
General subjects	46 313	14.4	51.7	1.89	1.22	0.74	2.08
Fabrication, mining, etc.	6 052	14.4	44.4	1.32	1.13	0.77	1.49
Business, office work	13 446	15.2	61.4	1.99	1.26	0.81	2.34
Construction, building, carpentry, mechanics etc.	44 126	15.3	45.2	1.39	1.14	0.77	1.61
Hairdresser	869	38.2	17.6	1.08	0.98	0.78	1.30
Arts and handicraft	4 610	13.4	45.0	1.36	1.10	0.69	1.70
Other	93 774	12.9	45.9	1.73	1.22	0.78	1.95
Upper secondary							
General subjects	87 972	11.7	57.7	2.14	1.18	0.74	1.96
Fabrication, mining, etc.	21 629	8.4	53.5	1.51	1.14	0.81	1.70
Business, office work	41 423	16.2	59.6	1.84	1.22	0.82	1.96
Construction, building, carpentry, mechanics etc.	173 884	12.3	50.7	1.33	1.09	0.80	1.52
Hairdresser	6 569	44.6	25.2	1.29	1.17	0.98	1.47
Nursing	6 804	1.3	26.1	1.22	1.17	0.81	1.54
Arts and handicraft	6 022	19.0	50.3	1.47	1.16	0.81	1.68
Other	98 895	7.3	50.9	1.54	1.15	0.77	1.65
Bachelor level							
Business and administration	61 591	11.2	76.6	2.65	1.32	0.72	2.64
Building, construction (engineer)	35 097	12.8	75.5	1.69	1.13	0.74	1.95
Therapeutic subjects (physiotherapist)	4 017	30.4	22.4	1.73	1.49	1.16	1.88
Nursing	32 198	1.8	45.9	1.60	1.13	0.71	1.78
Pedagogic subjects (teachers)	83 757	2.9	46.4	1.55	1.09	0.66	1.87
Other	109 188	7.8	55.0	1.71	1.07	0.61	1.69
Master level							
Business and administration	4 966	7.5	75.3	3.17	1.09	0.42	3.18
Building, construction (engineer, architect, etc.)	19 780	12.3	81.6	1.60	1.11	0.72	1.74
Natural science	19 365	5.3	75.6	1.75	1.12	0.59	1.69
Computer science, mathematics etc.	3 155	6.0	76.5	1.72	1.23	0.68	2.04
Law	11 012	15.1	45.2	3.38	2.23	1.11	4.04
Social science	7 103	3.6	64.0	2.74	1.17	0.54	2.03
Psychology	2 739	11.9	29.1	1.60	1.56	1.06	1.89
Medicine (doctors)	8 316	21.6	29.5	1.46	1.34	1.16	1.53
Dentistry	1 988	59.5	39.3	1.75	1.62	1.17	2.09
Veterinary	936	47.1	27.0	1.30	1.11	0.88	1.18
Other	25 257	5.2	49.1	1.75	1.05	0.52	2.20
PhD level – all subjects	10 141	4.7	57.6	1.57	1.31	0.62	1.86

Note: All statistics are first calculated annually. The reported numbers are averages over all years (2000-2005).

4. The determinants of entrepreneurship

This section examines the determinants of the *transition into entrepreneurship* in Norway by means of multivariate probability models. We focus on two types of entrepreneurship entries, labeled *proactive* and *reactive*, respectively. A proactive entrepreneurship entrant is a person who, in the time between October 1 in one year and October 1 the next year, leaves the relative safety of a fulltime job in order to become an entrepreneur. A reactive entrant is a person who, in the same time interval, escapes unemployment by becoming an entrepreneur.¹⁰

To put the two transition rates of interest into perspective, Table 3 shows a typical annual transition matrix between main economic activities during the period from 2000 to 2005 in Norway. The annual transition rate from regular employment to entrepreneurship is on average 1.0 percent (1.5 percent for men and 0.5 percent for women; not shown in the table), while the transition rate from entrepreneurship to regular employment is 8.7 percent.¹¹ The average transition rate from unemployment to entrepreneurship is 2.1 percent (3.2 percent for men and 0.9 percent for women); i.e., roughly twice as high as the transition rate from employment to entrepreneurship. Only 1.0 percent of the entrepreneurs become unemployed from one year to another, compared to 2.8 percent of the employed (these numbers are roughly the same for men and women). This may reflect, however, that self-employed individuals are not insured against unemployment in the social security system; hence ex-entrepreneurs have weaker incentives than ex-employees to register as unemployed.¹²

¹⁰ Note that the timing of entrepreneurship entry according to our definition does not necessarily coincide with the timing of company establishment. Some entrepreneurs engage in already existing companies. Moreover, even those who establish a new company may decide to maintain existing employment (and, hence, not be counted as entrepreneur) while testing out their own business ideas; see also Section 5.

¹¹ In comparison, Hyytinen and Maliranta (2008) report an annual transition rate from employment to entrepreneurship in Finland around 0.7 percent. Both the Norwegian and the Finnish transition rates to entrepreneurship are significantly below the 2.0-3.5 percent annual switching rate from employment to self-employment typically recorded in the U.S.; see Parker (2004, p. 52).

¹² According to Table 3, it is the group of “others” that have the largest entry rate into entrepreneurship. This high entry rate is an artifact of the income thresholds used to define self-employment and do not all represent “genuine” state transitions. The vast majority of the “entrants” from the “other” group (90%) went into self-employment (and not LLC). Around two thirds of them had business income even before the recorded entry, but the income was too low to qualify as entrepreneur according to our definition.

Table 3
The distribution of main economic activities in 2000-2005 and the transitions between activities from year to year (percent). Age 20-65.

State in year t		State in year t+1					
		Employment	Entrepreneur	Education	Unemployment	Pension/disability	Other
Employment	60.3	89.3	1.0	3.2	2.8	2.2	1.5
Entrepreneur	6.5	8.7	81.2	0.7	1.0	1.4	7.0
Education	8.7	30.7	0.7	60.5	3.7	1.0	3.5
Unemployment	4.5	39.4	2.1	5.5	41.7	3.8	7.5
Pension/disability	12.9	3.0	0.2	0.3	1.3	93.2	2.0
Other	7.1	13.6	4.9	3.3	4.3	5.5	68.5

In the statistical analysis, we focus on factors that potentially affect the decision to become an entrepreneur, such as own and family wealth, the quality of a current job match, and the tightness of the local labor market. For ease of interpretation, we report in the following subsections estimates from linear probability models (multiplied by 100); i.e., the mean percentage point impacts of various explanatory variables on the probability of becoming an entrepreneur during the next year. To save space, most of the coefficients are reported with indicators of statistical significance, rather than standard errors. The significance statements are based on robust standard errors, taking into account that multiple observations for the same individual are not stochastically independent. A complete list of estimation results with (robust) standard errors are reported on our web site www.frisch.uio.no/docs/entrepreneurship.html. On this site, we also report estimates (and standard errors) from non-linear probability models.

Given the large dataset, we specify many of the explanatory variables as categorical to avoid unjustified functional form assumptions. A particularly important variable in this regard is educational attainment. Inspection of the entrepreneurship rates reported in Table 3 indicates that a number-of-years-specification of the education effect is likely to be misleading. Instead, we assign a separate indicator variable to each education type reported in that table. On the basis of family linkages, we identify partners (married or cohabitating with joint children) and parents. Together with information on labor market status, income, and wealth, we use the family identifiers to construct variables designed to reflect entrepreneurship opportunities and family obligations (family wealth, partner's

economic status, the presence of small children etc.). We also use these variables to characterize each person's family background, in terms of the parents' educational attainment, wealth, and entrepreneurial activities.

For currently employed workers, we collect a host of information regarding the quality of the job match. Individual return from the current job is measured in terms of absolute earnings and in terms of earnings relative to other Norwegians of approximately the same age and with exactly the same education. The quality of the workplace is measured by value added and running surplus per man-year, by the employee turnover rate, and by downsizing events. The innovativeness of the work environment is represented by the fraction of employees with very high education and by the number of R&D man-years relative to total man-years. Firm size is measured as the (log of the) number of employees. And the type of work is measured by industry indicator variables. All earnings and wealth variables are measured in actual values, rather than in logs. The main reason for this is that these variables are frequently negative (wealth) or zero (earnings). To avoid outliers from obtaining excessive influence on regression results, we have censored the wealth and earnings variables at the 1st and the 99th percentile. Labor market tightness is measured by calculating, for each year and for each of Norway's 19 counties, the unemployment rate for each of the 34 education groups referred to above.

4.1. Proactive entrepreneurship decisions

The analysis in this sub-section is conditioned on the initial state being fulltime employment; i.e., we are analyzing the proactive decision to leave a fulltime salaried job for entrepreneurship. Existing empirical evidence indicates that many entrepreneurs exploit business ideas encountered in current employment; see Bhide (2000). This implies that the characteristics of an existing work-environment – e.g., in terms of size, productivity, profitability, human capital, and R&D intensity – may affect entrepreneurial spawning.

Note that we do not distinguish between self-employment and LLC-entrepreneurship in this Section. The reason for this is that we view the decision to become an entrepreneur as the key decision of interest for which we intend to identify some driving mechanisms, not the selection organizational arrangement. This does of course not rule out that there are interesting differences with respect to the composition of the

two entrepreneurship groups. We return to this issue in the next section, when we examine entrepreneurship performance.

Workplace characteristics

The majority of new entrepreneurship endeavors originates from existing workplaces, hence it is of interest to examine what kind of workplace characteristics foster entrepreneurship. We assess the impact of workplace and job characteristics on entrepreneurship decisions separately for men and women. The results are reported in Table 4. We first note that a higher current earnings level – as well as a high earnings level relative to peers (workers with the same education and of roughly the same age (± 2 years)) – typically implies a higher probability of becoming an entrepreneur.¹³ These relationships need not have a causal interpretation; they may reflect that workers with high earnings simply tend to be more entrepreneurial than others, *ceteris paribus*. High firm productivity – as measured by value added per employee – significantly discourages entrepreneurship. A high running surplus, on the other hand, encourages entrepreneurship. We would expect that low output per worker encourages some employees to leave the firm, and that some of those who leave become entrepreneurs. It is also to be expected that workers are more inclined to start their own business if the employees' share of total factor income is low, as the expected gain from being owner is then correspondingly high.

Downsizing (defined as a reduction in the number of man-years by at least 25 percent during the base-year) clearly encourages entrepreneurship. Working in a downsizing firm – as opposed to a stable or growing firm – implies roughly a doubling of the probability of becoming an entrepreneur, *ceteris paribus*. Again, as a large fraction of the employees is forced to leave, some will go for entrepreneurship. Our findings at this point are in line with recent results reported by Von Greiff (2009), who examined the impacts of displacement due to firm closure on subsequent self-employment in Sweden. Her baseline estimate was that displacement raises the probability of being self-employed next year by 1.2 percentage points, or 87 %. It is particularly interesting that the process of

¹³ The relative earnings measure is computed as follows: For each worker we identify a comparison group consisting of all other full-time employees with the same education (according to the categorization in Table 2) with a maximum of two years of age difference. We then divide the worker's annual earnings on the average earnings level within the group.

creative destruction apparently is two-sided: Not only does creativity cause destruction, as new and innovative firms push obsolescent firms out of the market; destruction also potentially causes creativity, as redundant workers and workers at risk of redundancy seek new ways to support themselves. The level of the local unemployment rate (among persons with the same educational/occupational qualifications), on the other hand, seems to discourage entrepreneurship, at least among men.

Table 4. The impact of job characteristics, employment conditions, and economic incentives on the probability of making a transition from employment to entrepreneurship
Estimates from linear probability models (OLS) (multiplied by 100)

	<i>Men</i>	<i>Women</i>
Current earnings level (100,000 NOK)	0.040*	-0.012
Current earnings level relative to peers	0.337***	0.303***
Tenure		
Less than one year	0.045	0.042*
1-2 years	0.092***	0.006
2-5 years	0.016	0.008
5-10 years	-0.048**	-0.001
More than 10 years	Ref.	Ref.
Value added per man-year	-0.286***	-0.134***
Running surplus per man-year	0.328***	0.127***
Turnover	0.415***	0.049***
Downsizing (at least 25% of the firm's total man-years)	0.859***	0.227***
Firm larger than 10 employees	-1.640***	-0.732***
Firm size (log man-years)	-0.237***	-0.062***
Fraction of employees with PhD education	0.733**	0.207
Fraction of employees with university education	-0.403***	-0.201***
R&D man-years relative to total man-years [#]	-0.054	0.011
Local unemployment rate education group	-1.660***	0.588
Change in local unemployment rate education group	-0.013	0.927
Industry		
Manufacturing	Ref.	Ref.
Construction	0.769***	0.196***
Retail, hotel, restaurants	0.251***	0.266***
Transport, communication	0.115***	0.084***
Financial services	0.390***	0.063***
Other private services	0.672***	0.242***
Publicly provided services	0.242***	0.078***
Number of observations	3,571,812 (1,072,542 [#])	2,263,525 (308,567 [#])
R-squared	0.016	0.007

[#] Estimates obtained from separate regressions which only include firms who have participated in Statistics Norway's R&D surveys (all firms with more than 100 employees and a sample of smaller firms). Additional controls in all regressions: Age, Family background, education, county, marital status, children, own wealth, family wealth, calendar year, corporate body of employer, and dummies for missing accounting variables in the all-firms-regressions (see www.frisch.uio.no/docs/entrepreneurship.html for details)

We find that firm size has a significant negative impact on entrepreneurship among its employees. This is in accordance with the view that small firms provide the best environment for entrepreneurial learning because the employees then work alongside

the firm's manager and/or founder; see Gompers et al. (2005) and Hyytinen and Maliranta (2008). Accordingly, it casts doubt on the popular argument that large firms spawn entrepreneurship due to their rigid wage systems and their inability to compensate their employees for innovative ideas; see Hvide (2009). Note, however, that firm size may operate as a proxy for the scale properties of the production process at the current workplace and thus also for the technology characterizing the most likely startup prospects. Hence, the estimated size effect may be an artifact of the distribution of optimal scale properties across individual entrepreneurship opportunities, and hence have nothing to do with either the current learning environment or the current compensation systems.

There are no clear-cut effects of human capital composition at the workplace. Entrepreneurship seems to be positively affected by the fraction of workers with PhD education, while the fraction with a university degree has a negative impact. Based on a subsample of the data – consisting of the employees in larger firms who have participated in the R&D surveys (conducted regularly by Statistics Norway), we also find that the R&D-intensity – measured by the number of man-years devoted to R&D relatively to the total number of man-years in the firm – has no significant effect on entrepreneurship behavior.

Family background and wealth

We assess the impacts of family background, family resources and economic conditions on the basis of the same statistical model. However, for the purpose of examining the roles of these factors, we limit the analysis to individuals for which we are able to identify at least one parent and divide the population into different samples based on marital status.¹⁴ Table 5 presents the results. We assume that three sources of wealth may play distinct roles in the entrepreneurship decision process; own wealth, the spouse's wealth, and the parents' wealth. Since the wealth level in the current year may be directly affected by an entrepreneurship decision, we only allow wealth to affect entrepreneurship with a lag. For married workers, we find that the transition rate into entrepreneurship tends to be positively correlated to all components of family wealth. This may reflect de-

¹⁴ We lose approximately 25 percent of the observations due to this sample restriction. Since the probability of parent-identification declines with age, the average age the included employees also decline, from 41.7 to 38.2 years.

creasing absolute risk aversion, the prevalence of credit constraints, and/or spurious correlation arising from a selective distribution of assets. However, while the entrepreneurship decisions of women are much more sensitive with respect to own wealth than with respect to the spouse's wealth, men respond more strongly to the spouse's wealth. It is also of interest to note that unmarried men tend to be *less* entrepreneurial the higher their own wealth.

Table 5. The impact of entrepreneurship opportunities, wealth, and family obligations on the probability of making a transition from employment to entrepreneurship
Estimates from linear probability models (OLS) (multiplied by 100)

	<i>Men</i>		<i>Women</i>	
	<i>Married</i>	<i>Unmarried</i>	<i>Married</i>	<i>Unmarried</i>
Wealth (last year, Mill. NOK)				
Own wealth	0.188***	-0.195***	0.102***	-0.002
Spouse's wealth	0.325**		0.033*	
Parent's wealth	0.336***	0.267***	0.127***	0.082***
Earnings (100,000 NOK)				
Own earnings	-0.079	0.186***	-0.079	-0.027
Spouse's earnings	0.023*		0.012*	
Max (parent's education)	0.015***	0.019***	0.003	0.008**
Parent being entrepreneur	0.971***	0.556***	0.441***	0.287***
Previous unemployment experience	-0.296***	-0.361***	-0.085*	-0.114***
Industry experience outside firm	0.100***	0.107***	0.030***	0.050***
Age of youngest child				
No children	Ref.	Ref.	Ref.	Ref.
0-3 years	0.276***	0.327***	0.073*	0.042*
4-6 years	0.357***	0.363***	0.063	0.031
7-16 years	0.275***	0.331***	0.015	0.055**
17 years or more	0.214***	0.293***	0.012	0.040
Number of observations	1,261,080	1,429,124	766,378	889,066
R-squared	0.020	0.014	0.008	0.008

Additional controls in all regressions: Age, Family background, education, industry, county, calendar year, job characteristics (see Table 4). Data restricted to include observations for which at least one parent is still alive

4.2. *Reactive entrepreneurship decisions*

In this subsection, we examine the transition from unemployment to entrepreneurship. Again, we divide the sample into married and unmarried individuals. Given the much smaller population of unemployed individuals, it is difficult to obtain precise estimates for many of the coefficients of interest. We again find that the spouse's wealth and earnings have significant – both in the statistical and the substantive interpretation of this word – impacts on male entrepreneurship, but no impact on female entrepreneurship. And again, we find that the parents' wealth encourages entrepreneurship. Own wealth, however, does not encourage reactive entrepreneurship at all, and for unmarried individuals it

strongly discourages it. Apparently, it is the lack of economic resources that push job seekers into entrepreneurship rather than the profit opportunities that attract them. Necessity seems to be “the mother of invention” among the unemployed.

Table 6. The impact of entrepreneurship opportunities, wealth, and family obligations on the probability of making a transition from unemployment to entrepreneurship (percentage points)
Estimates from linear probability models (OLS) (multiplied by 100)

	<i>Men</i>		<i>Women</i>	
	<i>Married</i>	<i>Unmarried</i>	<i>Married</i>	<i>Unmarried</i>
Wealth (last year, Mill. NOK)				
Own wealth	-0.582	-2.060**	0.295	-0.480**
Spouse's wealth	2.370***		-0.076	
Parent's wealth	0.780**	0.433***	0.216*	0.181***
Earnings (100,000 NOK)				
Spouse's earnings	0.323**		0.041	
Max (parent's education)	0.146**	0.047***	0.074***	0.028**
Parent being entrepreneur	3.160***	1.080***	1.180***	0.394***
Local unemployment rate education group	-17.700	-7.340*	-5.160	-0.887
Change in local unemployment rate education group	-32.200	-9.300	-9.340	-3.090
Unemployment duration (months)	-0.046***	-0.018***	-0.009**	-0.006***
Access to some part-time work	2.300***	1.190***	-0.048	-0.013
Participant in active labor market program (ALMP)	-3.220***	-0.558***	-0.705***	-0.149*
Age of youngest child				
No children	Ref.	Ref.	Ref.	Ref.
0-3 years	1.580***	1.350***	-0.329	-0.090
4-6 years	2.270***	1.030***	0.141	0.054
7-16 years	2.510***	1.190***	0.095	0.111
17 years or more	2.620***	0.915***	-0.184	-0.021
Number of observations	39658	170596	70727	147359
R-squared	0.025	0.017	0.009	0.007

Additional controls in all regressions: Age, Family background, education, industry, county, calendar year, job characteristics, and level of UI benefits (see www.frisch.uio.no/docs/entrepreneurship.html for details). Data restricted to include observations for which at least one parent is still alive.

The local education-specific unemployment rate tends to affect entrepreneurship negatively for all groups, although the effect is statistically significant only for unmarried men; see Table 6. Own unemployment duration affects entrepreneurship negatively. Having a foot inside the labor market – in the form of some part time work – has a significant positive impact on entrepreneurship. Hence, while full employment is associated with a lower entrepreneurship propensity than unemployment, *some* employment (underemployment) is associated with higher entrepreneurship propensity than full unemployment. Participation in active labor market programs, on the other hand, correlates negatively with entrepreneurship, perhaps reflecting that these programs often are designed to motivate job *search* rather than job *creation*. We emphasize, however, that neither part-time

work nor program participation are randomly assigned, hence the estimated impacts of these indicators may reflect spurious correlation as well as causality.

5. The performance of new entrepreneurs

This section examines the impacts of entrepreneurship decisions on the entrepreneurs' economic performance during the subsequent 5 years. The analysis is based on the entrants to entrepreneurship from employment and unemployment respectively, between October 2000 and October 2001. In total, there were 10,546 proactive and 1,637 reactive entrants into entrepreneurship in this period, corresponding to entry rates of 1.2 and 1.9 percent respectively. Figure 3 first takes a look at the distribution of labor market states from 2002 through 2005 for these two groups; see the upper panels of the figure. It is evident that many entrepreneurship endeavors are short-lived, particularly among those following a period of unemployment. Around 40 percent of these reactive entrepreneurship periods lasts less than one year and 60 percent lasts less than four years. However, a significant fraction of the terminated entrepreneurship endeavors are followed by regular employment, suggesting that entrepreneurship may have served as a stepping stone towards employment. Even among the proactive entrepreneurs, 30 percent of the endeavors lasts shorter than a year and around 50 percent lasts shorter than four years.¹⁵

The lower two panels of Figure 3 show the fraction of new entrepreneurs in 2001 who are LLC entrepreneurs. It is evident that proactive entrepreneurs to a larger extent than reactive entrepreneurs choose LLC rather than self-employment. This probably reflects that a nascent unemployed entrepreneur face tighter credit constraints than a nascent employed entrepreneur. It is also evident from Figure 3 that LLC entrepreneurship tends to survive longer than self-employment.

¹⁵ A number of entrepreneurship entrants have also tried entrepreneurship before. While we cannot evaluate this for the 2001-entrants (since we do not have entrepreneurship data prior to 2000), we note that, e.g., around 15 % of the 2005-entrants (who, by definition, were not entrepreneurs in 2004) were entrepreneurs in 2003.

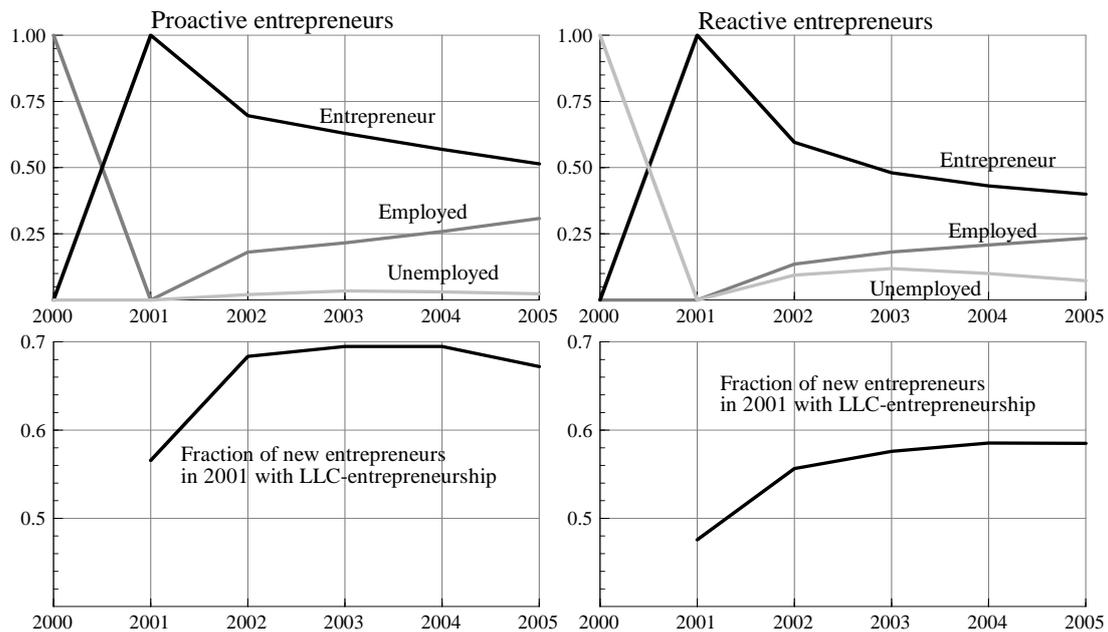


Figure 3. The distribution of main economic activities 2002-2005 for entrants to entrepreneurship in 2001.

To assess the financial rewards for entrepreneurship, we compare the 1997-2006 personal income paths (including earnings, dividends, capital income etc.; see Section 3) for the 2001-entrepreneurs with control groups of non-entrepreneurs. We construct separate control groups for proactive and reactive entrepreneurs by means of *matching* (with one control for each “treatment”). For this purpose, we have estimated models similar to those presented in Sections 4.1 and 4.2 to account for the transitions to entrepreneurship in 2001, from employment and unemployment, respectively. However, to improve the quality of the matches, we use probit, rather than linear probability models. Moreover, we have estimated proactive entrepreneurship separately for rather narrowly defined education-age groups, and also included a more detailed account of the spouse’s economic activity and of past earnings. Hence, we use *exact matching* on education (according to the grouping in Table 2), gender, and age-group (in 10-year intervals), and select the controls on the basis of *nearest neighbor propensity score* within each group. Due to the much lower number of observations, it was not possible to use the same exact matching procedure for the analysis of reactive entrepreneurship; hence, for this event we rely on propensity score matching based on a single joint estimation. As we will see below, the match quality appears to be much better for proactive than for reactive entrepreneurs. The

controls are persons who neither became entrepreneurs, nor exited the labor market, in 2001. This implies that we do not rule out transitions to entrepreneurship after 2001.¹⁶ For a treatment-control pair to be included in the analysis, we require that the estimated transition probability for the control does not deviate more than 0.5 percentage point from that of the treatment. As a result, we exclude 327 (3.1 %) proactive and 6 (0.4 %) reactive treatment-control pairs.

5.1 The financial reward for proactive entrepreneurship

Figure 4 presents the income developments for the *proactive* 2001 entrepreneurs and for their matched control group members. Note that we do not condition on survival as entrepreneur in this comparison, hence any changes in the income path resulting from entrepreneurship comprise the direct reward of the entrepreneurial activity as well as any indirect rewards (or losses) through impacts on the subsequent employment career (we look at survivors and non-survivors separately below). The upper panels show median incomes for treatment and controls among men and women, respectively, while the lower panels show the income *differences* between the treatments and the controls at different points of the two income distributions. In addition to the median, we report income differentials at the 10th, the 25th, the 75th, and the 90th percentiles of the income distributions for treatments and controls, respectively.¹⁷ Mean incomes are actually not very informative in this case, since they are so strongly affected by a few outliers. The income profiles prior to 2001 are included to facilitate an assessment of the quality of the matches. The treatments and the controls tended to have very similar income profiles prior to the moment of treatment, indicating that the two groups are indeed comparable.

¹⁶ Among the proactive controls, 4.1 % of the men and 2.0 % of the women actually do become entrepreneurs during 2002-2005. Among reactive controls, the corresponding percentages are 6.4 and 1.6.

¹⁷ These differentials are computed as the difference in incomes between persons having the same position in their respective income distributions. For example, the p90 difference is the difference between the person holding the p90-position in the treatment group and the person holding the p90-position in the control group. Under the additional assumption that all persons would maintain their rank in the income distribution regardless of their treatment status, the differentials can also be interpreted as quantiles of the treatment effect distribution; see Firpo (2007).

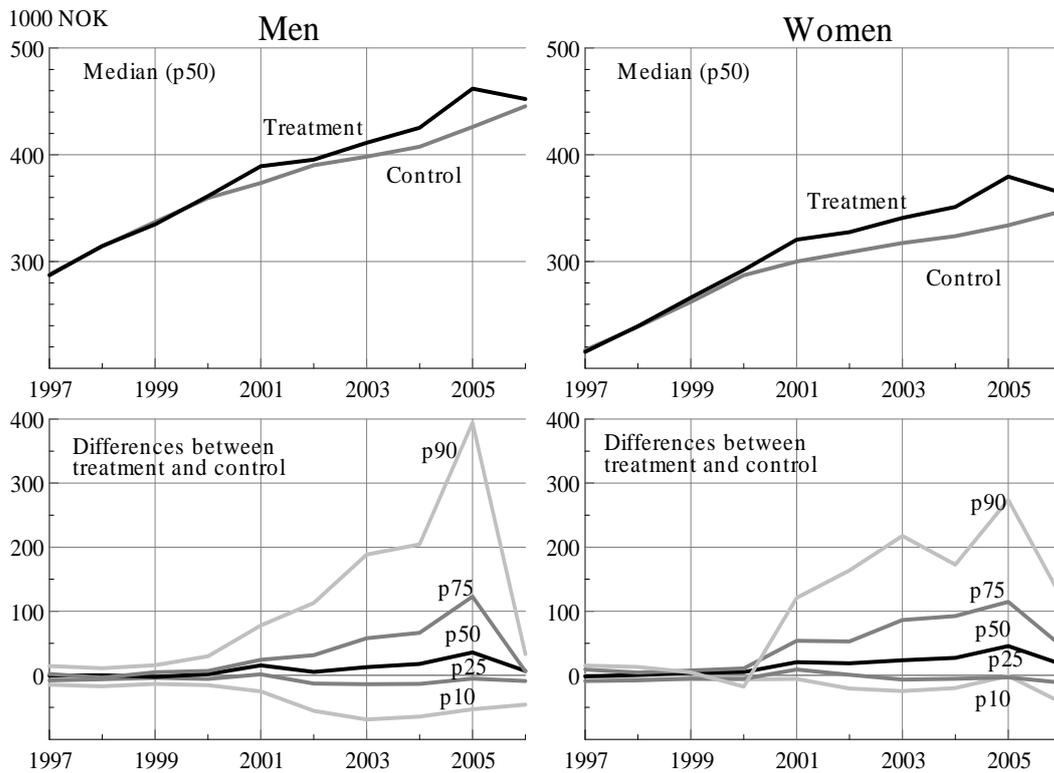


Figure 4. Total annual incomes for the 2001 proactive entrepreneurs and a matched comparison group from 1997 to 2006. By gender.

There is clearly a marked shift in the income differentials from 2001 and onwards, suggesting that the entrepreneurship decisions in 2001 indeed had a major impact on future income developments. The median entrepreneur did significantly better than his/her control group counterpart the first years after the entrepreneurship decision. Over the whole 2001-2005 period the median (discounted) income for a male (female) entrepreneur were 16.4 % (19.5 %) higher than for the median control (not shown in the figure). The most conspicuous impact of the entrepreneurship decision, however, is to increase income dispersion; see the two lower panels of Figure 4. The rise in income dispersion may reflect that entrepreneurship entails a higher income risk at the individual level and/or that variation in human capital and effort generates larger (anticipated) income differences for entrepreneurs than for employees. The upside of entrepreneurship in any case seems to be much larger than the downside, and entrepreneurs in the upper quartile of the income distribution receive great financial rewards. To the extent that increased variability reflects increased risk, there is an interesting difference in the risk-profiles for

male and female entrepreneurs. While the most successful male entrepreneurs gain much more than the most successful female entrepreneurs, the least successful also lose much more. Male entrepreneurs thus seem to take larger risks than female entrepreneurs.

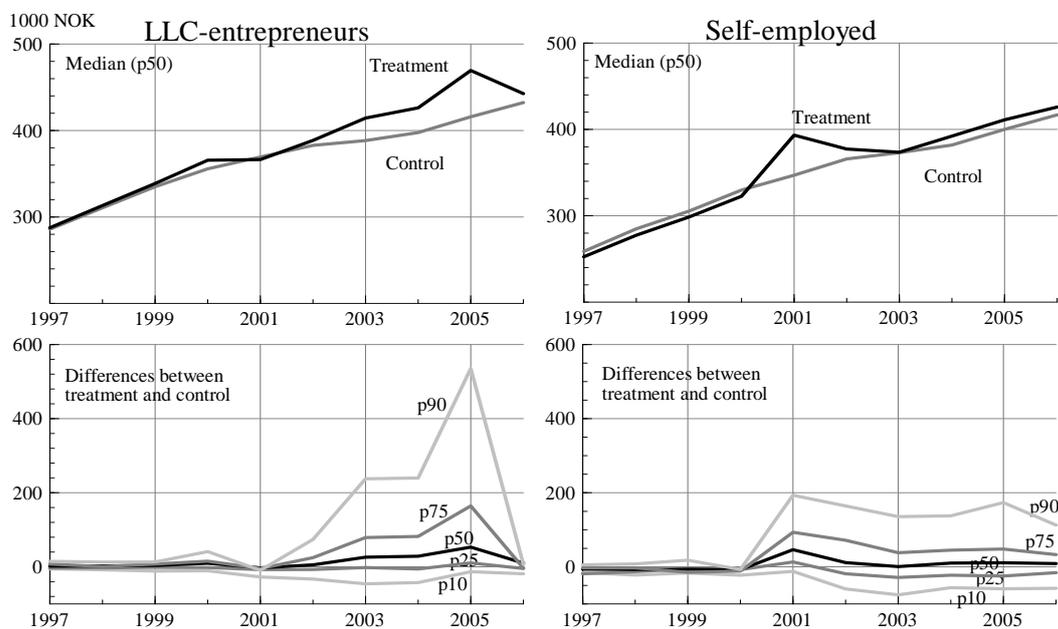


Figure 5. Total annual incomes for the 2001 proactive entrepreneurs and a matched comparison group from 1997 to 2006. By mode of ownership.

Even though we have modeled entrepreneurship entry as one unique event – regardless of ownership structure – it is possible to compare the performance of LLC and self-employment entrepreneurs after entry. Figure 5 reports the financial rewards for these two groups of entrepreneurs separately.¹⁸ A first point to note is that LLC entrepreneurs tend to perform significantly better than their self-employed counterparts. In particular, LLC entrepreneurship seems to entail a much larger upside – and a smaller downside – than self-employment. A second point to note is that the time-profiles of the income streams also differ between the two types of entrepreneurship. While self-employment income tended to be evenly distributed across years, although with a noticeable spike in median earnings in the first year (2001), the income paths of LLC-entrepreneurs were clearly influenced by the changes in the tax regulations that were en-

¹⁸ Note that the majority (67 %) of proactive LLC-entrepreneurs engage in already existing companies (i.e., companies that existed in the year prior to entrepreneurship entry according to our definition).

forced in 2002 and 2006. Recall that there was a temporary tax on dividends in 2001 (known in 2001 to be removed in 2002), and that a new dividend tax was introduced in 2006 (announced as early as in 2004); see Section 3.

As we saw in Figure 3 above, a large fraction of entrepreneurship spells are short-lived. Figure 6 examines the rewards for entrepreneurship entry in 2001 by entrepreneurship status in 2005 (i.e., by entrepreneurship survival during the first five years). Unsurprisingly, survivors do much better than non-survivors. However, even among the non-survivors, the losses seem to be limited. The upside is still larger than the downside, and the most successful non-survivors actually gain quite a lot from their short-lived entrepreneurship endeavors.

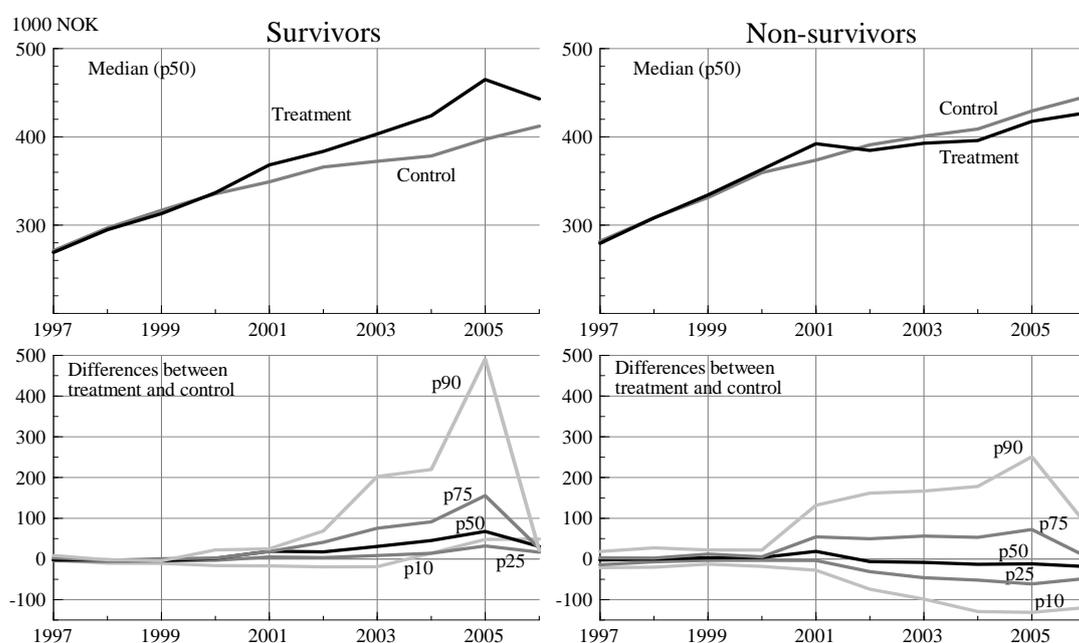


Figure 6. Total annual incomes for the 2001 proactive entrepreneurs and a matched comparison group from 1997 to 2006. By entrepreneurship status in 2005.

5.2 The financial reward for reactive entrepreneurship

Figure 7 presents the income developments for the *reactive* 2001 entrepreneurs together with their matched controls. Unfortunately, we cannot claim the same high quality for these matches. The reason for this is that the samples are much smaller, implying that we cannot match exactly on education and age. Even though median incomes for the treatment and control groups were similar in the years prior to the entrepreneurship decision,

there were large differences across other parts of the distribution, particularly for men, suggesting that the treatment and the control groups differ ex ante; see the two lower panels. Yet, there appear to be some significant income shifts taking place around the time of the entrepreneurship decision. At the median, the discounted accumulated income gain over the 2001-2005 period is 8.3 % for a male and 23.1 % for a female reactive entrepreneur (not shown in the graph). A particularly interesting feature of the results presented in Figure 7, however, is that reactive entrepreneurs seem to do better than their matched controls both in the upper and in the lower parts of the two income distributions. Hence, while securing large gains for those who succeed, entrepreneurship also serves as a sort of insurance against very poor outcomes. Entrepreneurship seems to be particularly beneficial for unemployed women.

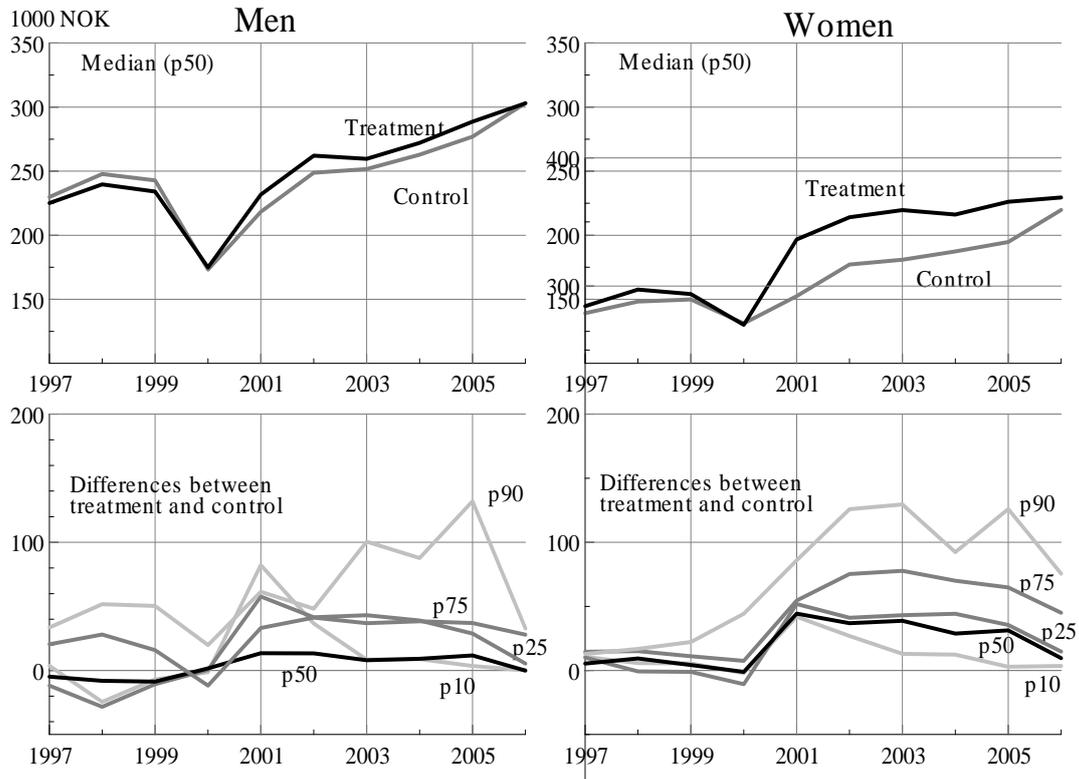


Figure 7. Total annual incomes in for the 2001 reactive entrepreneurs and a matched comparison group from 1997 to 2006. By gender.

Figure 8 displays income paths for reactive entrepreneurs by mode of ownership. LLC-entrepreneurs and self-employed seem to perform equally well.¹⁹ But again, we note a clear tendency for LLC-entrepreneurs to allocate their personal income to years with zero tax on dividends (2002-2005).

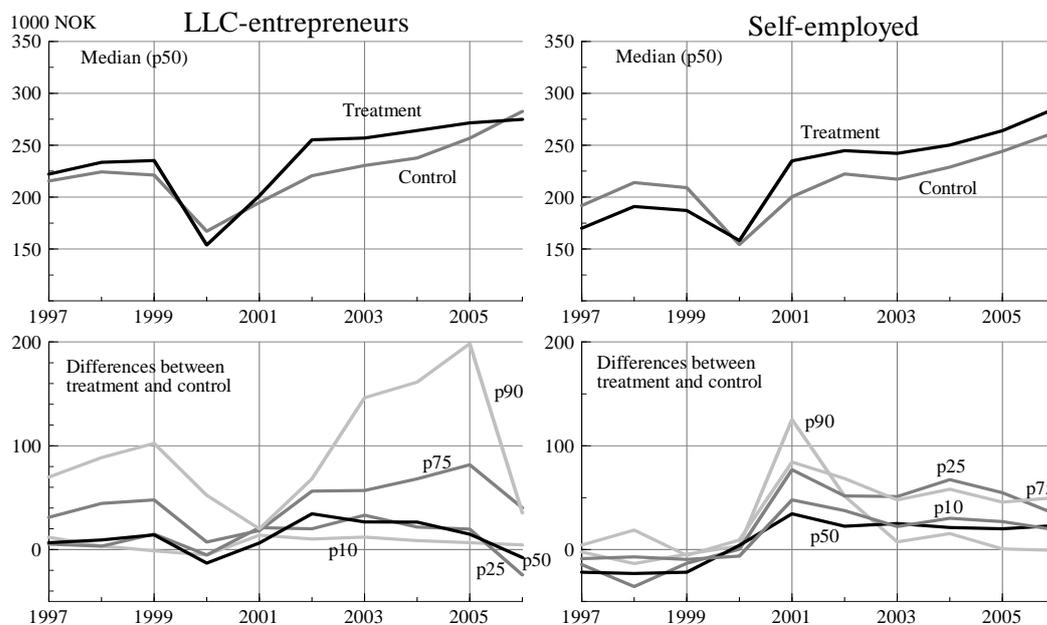


Figure 8. Total annual incomes in for the 2001 reactive entrepreneurs and a matched comparison group from 1997 to 2006. By mode of ownership.

The favorable outcomes of reactive entrepreneurship do not rely entirely on entrepreneurship survival. This point is illustrated in Figure 9, where we show the income developments for entrepreneurs and comparison group members by entrepreneurship status in 2005. For both entrepreneur groups, median earnings seem to rise in the year of entrepreneurship (2001). But while the median surviving entrepreneur experiences a further gain, the non-survivor returns to a median income path similar to the comparison group of non-entrepreneurs. Yet, even among non-survivors, it seems that the upside is larger than the downside; hence, entrepreneurship clearly represents a stepping stone back to regular employment for some unemployed job seekers.

¹⁹ The vast majority (81 %) of reactive LLC-entrepreneurs engage in already existing companies.

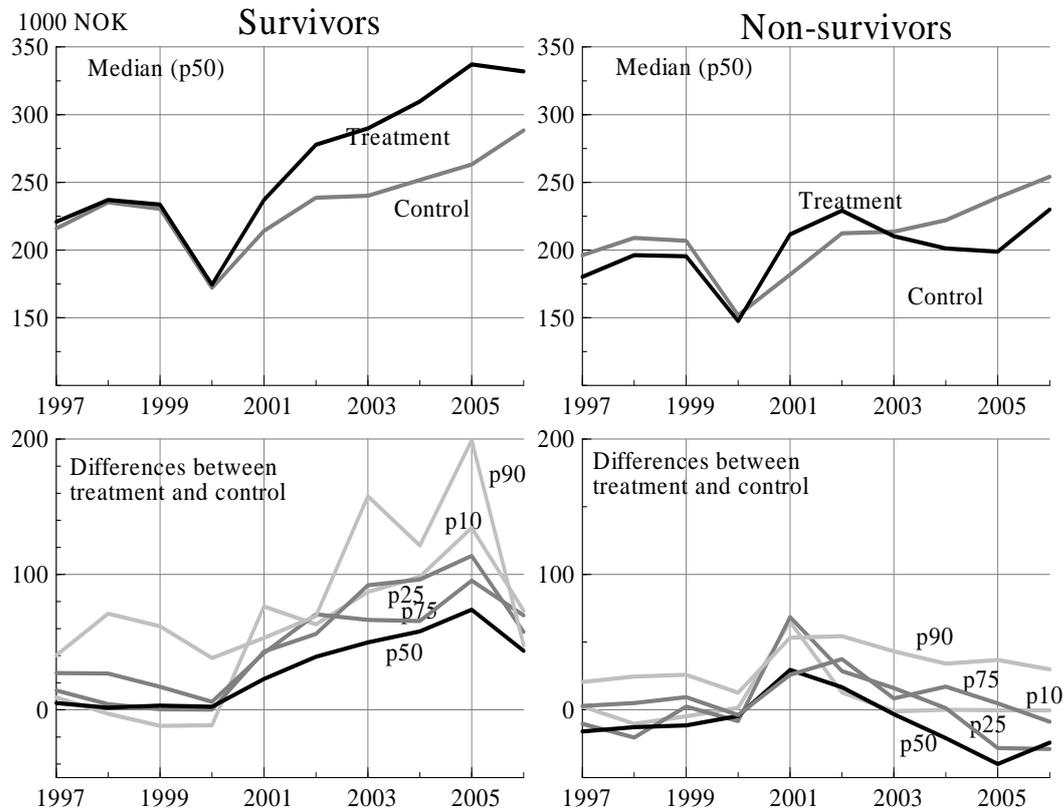


Figure 9. Total annual incomes for the 2001 reactive entrepreneurs and a matched comparison group from 1997 to 2006. By entrepreneurship status in 2005.

6. Conclusion

In the present paper we use a unique Norwegian matched worker-firm-owner dataset to analyze the origins and outcome of entrepreneurship. Our data allow us to apply a wider measure of entrepreneurship than the pure self-employment concept commonly applied in the literature, also encompassing employees in partly self-owned limited liability firms. The objectives of the paper have been to exploit our extraordinarily rich dataset to provide an overview of the key determinants behind entrepreneurship and to reconsider the issue of how entrepreneurial endeavors are rewarded in a welfare state economy like Norway. A key finding is that entrepreneurs tend to be rather generously rewarded, and the median entrepreneur experiences a significant rise in pre-tax income (the after-tax gain is even larger, since parts of the entrepreneurial incomes are taxed at a lower rate than earnings). Even among those who fail in entrepreneurship – in the sense that they

terminate their entrepreneurship state within five years – we find evidence of substantial gains, although the median entrepreneur in this group does not perform better economically than he/she would have done in the absence of the entrepreneurship endeavor.

Examining the origins of entrepreneurship, we find that the gender differences are huge, despite Norway's reputation as a country with equal opportunities for men and women. In 2005, the average entrepreneur rate was 13.4 percent for men and 4.0 percent for women. And the difference does hardly change at all when we control for occupation. We also show that occupational qualifications (in the form of narrowly defined educational attainment) have a large impact on the probability of becoming an entrepreneur. The most entrepreneurial occupations are dentists, veterinaries and hairdressers; all occupations where firms tend to be small and hence the fraction of owners to employees is high. Somewhat discouragingly perhaps – at least from a Schumpeterian point of view where the entrepreneur is seen as the economy's innovator – scientists with a PhD are among the *least* entrepreneurial of all education groups.

We also examine how characteristics of a present employer influence the transition rate into entrepreneurship. The transition rate is high if the value added per worker is low, if profit per worker is high, and if the firm is downsizing. Unemployed workers have a higher transition rate to entrepreneurship than employed workers, but their transition rate depends negatively on unemployment in the local labor market.

The entrepreneurship propensity is unambiguously higher the larger is the wealth of the parents and the spouse. Own wealth, however, does not encourage entrepreneurship among the unemployed; hence, for this group, entrepreneurship seems to be generated by necessity rather than by opportunity.

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