

No 145

**A decomposition of the growth in
self-employment**

Frank van Es and Daniel van Vuuren

CPB discussion paper

cpb

CPB Discussion Paper

No 145

March 2010

A decomposition of the growth in self-employment

Frank van Es, Daniel van Vuuren

The authors thank Andre van Stel, Robin Douhan, Nicole Bosch, and Mark Roscam Abbing for their valuable comments on earlier versions of this paper. The responsibility for the contents of this CPB Discussion Paper remains with the authors.

CPB Netherlands Bureau for Economic Policy Analysis
Van Stolkweg 14
P.O. Box 80510
2508 GM The Hague, the Netherlands

Telephone +31 70 338 33 80
Telefax +31 70 338 33 50
Internet www.cpb.nl

ISBN 978-90-5833-447-3

Abstract in English

We decompose the rise of self-employment in the Netherlands in the period 1992-2006. The observed upturn is remarkable, as it contrasts with the decline in earlier decennia. Using Logit estimates we try to identify the most important determinants of this trend, separately for women and for men. Contrasting some findings for the US, we find that the industrial composition only plays a small role in explaining the upturn. For women, we find that intra-sectoral developments have been important in spurring self-employment. In particular, it has become more common for women to be self-employed in the Trade and Culture sectors. The aging of society (older people are self-employed more often) is an important cause of the observed increase. This effect is partly compensated by the negative effect of a higher educated labour force. This causes, in the context of our model, most of the upturn to be related to year effects, which could either be an indication of generic policy effects or a socio-cultural trend. The latter is reflected in an improved reputation of self-employment. We postulate that generic policy effects have been the most important cause of the increase in self-employment. The largest effects were seen just in the last few years of our sample (2004-2006), which appears to be inconsistent with the notion of a longer lasting socio-cultural trend.

Key words: self-employment, trend, decomposition

JEL code: J11, J21, L26

Abstract in Dutch

In dit paper maken we een decompositie van de toename van het aantal zelfstandigen in Nederland in de periode 1992-2006. Deze toename is opmerkelijk, want in de decennia daarvoor daalde het aantal zelfstandigen juist. Met Logit schattingen proberen we, apart voor mannen en vrouwen, de belangrijkste determinanten van deze nieuwe trend te identificeren. In tegenstelling tot enkele onderzoeksresultaten uit de VS vinden wij dat de sectorstructuur slechts een beperkte rol speelt. Voor vrouwen vinden we wel een belangrijke rol voor ontwikkelingen binnen de sector. Zo is het voor vrouwen meer gebruikelijk geworden om als zelfstandige te opereren in de Handel en in de Cultuursector. De vergrijzing van de beroepsbevolking (ouderen zijn vaker zelfstandige) is een belangrijke oorzaak van de toename van het aantal zelfstandigen. Dit wordt echter deels gecompenseerd door een negatief effect van een hoger opgeleide beroepsbevolking. Uit ons model volgt dat het grootste deel van de toename is gerelateerd aan jaareffecten. Dit kan zowel een indicatie zijn van effecten van generiek overheidsbeleid als van een sociaal-culturele trend. Onder deze laatste valt een verbeterde reputatie van zelfstandig ondernemerschap. We poneren dat het beleid een belangrijke rol heeft gespeeld bij de recente stijging. De meest indrukwekkende generieke trend wordt immers slechts in de drie laatste jaren

waargenomen (2004-2006), wat strijdig lijkt te zijn met het idee van een langlopende sociaal-culturele verandering.

Steekwoorden: zelfstandig ondernemerschap, trendmatige groei, decompositie

Contents

1	Introduction	7
2	Literature review	9
2.1	Sector composition	9
2.2	Individual and household factors	9
2.3	Social norms	10
2.4	Business cycle	11
2.5	Institutional factors	11
3	Self-employment in the Netherlands	13
4	Data	15
5	Analysis	21
5.1	Estimation of Logit model	21
5.2	Decomposition	23
6	Conclusion	25
	References	27
	Appendix A. Complete estimation results	31

1 Introduction

The recent rise in self-employment in European countries has been attributed to several factors. Changes in industrial organization, employment shifts among industries, stimulating government policies, and changes in individual characteristics and preferences could be underlying causes behind this development. The dynamics behind the rise of self-employment are of particular interest for policymakers. The social security system could be undermined in case individuals with low unemployment, sickness and disability risks evade the social security system through self-employment (adverse selection). Moreover, it could be that employers push their employees into 'dependent self-employment' (DSE), because they want to get rid of all kinds of employer obligations (i.e. employment protection, sickness and disability insurance, etcetera).

In this paper, we search for causes for the rise of self-employment in the Netherlands. The share of men in the labour force which is self-employed has risen from 10.3 to 15.1% over the period 1992-2006. For women, the self-employment rate has risen from 6.0 to 8.5%. In our analysis, we focus on (i) sector composition effects, (ii) business cycle effects, and (iii) individual and household composition effects. The issues of adverse selection and DSE are less of a problem to the extent that the growth in self-employment can be related to these three factors. We disentangle the growth of self-employment in the Netherlands during the period 1992-2006, using micro data from the Dutch Labour Force Survey (EBB). A comparable decomposition has been done before for other countries. The US self-employment rate decreased dramatically in the period 1910-1970, whereas this trend reversed in the period 1970-1990. The question was how these opposite developments could be explained. Fairlie and Meyer (2000) decompose the development of the self-employment rate in multiple dimensions, amongst which the age and industry composition. According to their findings demographic developments, in particular ageing, could not explain much of the observed developments. In contrast, a substantial part of both the initial decrease and the subsequent increase in the self-employment rate could be explained by a shift of labour from industries with a low self-employment rate towards industries with a high self-employment rate. The industries with the highest contribution to the increased self-employment rate (total increase of 1.39%-point) were Manufacturing (1.21%-point) and Construction (0.65%-point). These contributions were partly compensated by Trade (-1.04%). The other industries had more modest, mainly positive, contributions. In addition, Fairlie and Meyer (2000) find that the within-industry self-employment rate decreased strongly until 1970, and stayed flat from that year on. The same trend in the US was observed earlier by Blau (1987), who found that the increased self-employment rate since 1970 was mainly caused by changes in the industrial structure. Schuetze (2000) has found a similar result for Canada. Kamhi and Leung (2005) however concluded for Canada that despite a shift towards 'new' high-incidence self-employment industries like business services, "the rise in self-employment was due almost entirely to increasing self-

employment rates across all industries” (p. 5). The same was found by Torrini (2005) on a dataset on 25 OECD countries. He concludes that the industry distribution of employment only plays a minor role in explaining the large differences between countries, and that institutional variables and capital availability are much more important.

Results from a Logit model show that differences between men and women are substantial. For men, we find that the aging of society is an important cause of the observed increase, as the elderly are more often self-employed. This effect is however largely undone by the higher education level of younger generations. Medium and highly educated men are increasingly less likely to be self-employed than low educated men. The industrial composition only plays a small role in explaining the upturn. This contrasts with findings for other countries, such as the US. For women, we find that intra-sectoral developments have been important in spurring self-employment. In particular, it has become more common for women to be self-employed in the Trade and Culture sectors. As with men, sectoral shifts play a limited role in explaining the rising self-employment rate. As our model controls for individual and household characteristics, and for time trends in individual and household characteristics, we interpret the ‘unexplained part’ as a ‘generic time trend’. This generic time trend is large both for men (89%) and for women (62%). It seems likely that this generic trend is either related to generic government policies and/or a socio-economic trend. The latter could be related to the improved reputation of self-employed. The large role for generic effects could also be related to policy. During the period 2000-2006 a series of policy measures were taken, and the strongest effects are seen precisely during these years. We postulate that generic policy effects have been the most important cause of the increase in self-employment. The largest effects were seen just in the last few years of our sample (2004-2006), which appears to be inconsistent with the notion of a longer lasting socio-cultural trend. Year effects do not display a clear correlation with the business cycle, suggesting that the aggregate impact of the business cycle on self-employment is small.

This paper is organised as follows. In section 2 we highlight the most important economic theories which can possibly explain the rise in self-employment, and discuss some empirical findings. In section 3 we provide some background information on the relevant institutions in the Netherlands and make a brief comparison with some other OECD countries. In section 4 we discuss the data. The empirical analysis, including the decomposition, is done in section 5. Section 6 concludes.

2 Literature review

We discuss possible explanations for the observed rise in self-employment. Four categories are identified: the industrial composition (section 2.1), individual and household factors affecting the self-employment decision (section 2.2), social norms (section 2.3), the business cycle (section 2.4) and institutions affecting the self-employment decision (section 2.5). Apart from theory, we discuss the most important empirical findings.

2.1 Sector composition

Much research has been done on the question whether (changes in) the industrial structure could explain (changes in) the self-employment rate. It is clear that self-employment is more common in particular industries. Employment shifts between industries may therefore lead to a higher self-employment rate on the macro level. Industries where self-employment occurs relatively often are agriculture, sales, hotels, repairs, craft and managerial or professional occupations (De Wit and Van Winden, 1989; Le, 1999). Differences among industries can be explained by the capital-intensity of the industry and the existence of scale effects (Blau, 1987; Fairlie and Meyer, 2000). As was discussed in the introduction, Blau (1987), Fairlie and Meyer (2000), and Schuetze (2000) found that changes in the industrial structure were the main cause of the upturn of self-employment in the US and Canada. Changes in the industrial organization could influence self-employment as well. For example, the digitalisation of the economy (e.g. internet and wireless connections) increases the possibility of more flexible labour supply and outsourcing of non-core activities by large companies. This increases the demand for self-employed (especially without employees) to perform these activities using sub-contracts.

2.2 Individual and household factors

Determinants of the choice to become self-employed are well documented in the international literature. Individual characteristics that may impact the choice for self-employment include age, gender, and health. Dawson et al. (2009) find for the UK that being older, man, disabled, immigrant, or owner of a house or private sector renter has a positive effect on the propensity to be self-employed. De Wit and Van Winden (1989) also find that men are more often self-employed. Using Austrian data, Leoni and Falk (2010) find that the difference between men and women is for an important part related to the field of study. The dominance of women in specific fields of study, such as health and education, is an important explanatory factor for their relatively low self-employment rate. Some studies indicate that highly skilled individuals have higher self-employment rates than others. There is however no conclusive link between education and self-employment (Le, 1999). Lazear (2005) suggests that entrepreneurs are in general less specialised and more versatile than employees.

Individuals may wish more flexibility to improve their work/family balance (Duggan, 1998; Edwards and Field-Hendry, 2002; Wellington, 2006). Self-employment offers possibilities for flexible working hours, holidays and taking care of children. Moreover, in contrast with some decades ago, people often do not want to continue working for the same employer for a longer period. Becoming a 'free agent' often fits this situation better than normal employment. Dawson et al. (2009) look at the motives of self-employed and find that financial reasons are relatively important for men, while lifestyle and family reasons are much more important for women, older individuals and migrants. An interesting finding is that more educated individuals choose to be self-employed because of the prospect of independence and financial reward, whereas less educated individuals report a lack of alternative employment opportunities more often. This last point is put into perspective by the finding that the vast majority chooses self-employment for positive (pull) reasons.

Family background could be an explanation for the choice for self-employment, in particular the self-employment status of the father. There are two mechanisms behind this phenomenon. First, the child could take over the business of the father when he retires. Second, the father could learn his children how to become an entrepreneur. In this sense, he could serve as a role-model for his children. In the literature, De Wit and Van Winden (1989), Le (1999), and Hout and Rosen (2000) indeed find that the self-employment status of the father is a significant determinant of self-employment.

According to Nanda and Sorensen (2009), such a 'peer effect' is not necessarily linked to the father, but could for instance also be induced by co-workers. The authors address two mechanisms through which this peer effect may occur: first, individuals will more quickly perceive entrepreneurial opportunities, and second, they will be more motivated to pursue those opportunities.

2.3 Social norms

The status and reputation of self-employed is closely linked to social norms (Weiss and Fershtman, 1998). Social norms may evolve through natural selection. For instance, self-employed individuals may be more likely to pass on their preferences – e.g. to their children – than employed or unemployed individuals. An improved reputation of the self-employed may therefore be a part of the explanation for the growth in self-employment. For the UK, Duggan (1998) and Meagre (1994) indeed show that the reputation (positive ideology) of self-employment improved together with the self-employment rate, although it is impossible to verify the causality between these two developments.

2.4 Business cycle

Economic conditions could play a role in the choice between wage-employment and self-employment. The effect could go both ways. On the one hand, it is more difficult to find a regular job in bad conditions, which ‘pushes’ the individual into self-employment. On the other hand, individuals see market opportunities when economic conditions are good, and they are ‘pulled’ into self-employment.¹ The empirical literature is ambiguous on the role of economic conditions. Le (1999) finds a positive effect of the unemployment rate on self-employment, which supports the ‘push’-theory. Estimation results in Schuetze (2000) imply that a 5 percentage points increase in the unemployment rate lead to a 1 percentage point increase in the self-employment rate. Contrasting these studies, Dawson et al. (2009) do not find evidence for the push theory based on survey data. Blanchflower (2000) even finds a negative relationship between the unemployment rate and the self-employment rate.

2.5 Institutional factors

National governments seem to attach great importance to self-employment. This is mainly due to the contribution of self-employment to productivity growth and therefore economic growth (Audretsch and Keilbach, 2004; Van Praag and Versloot, 2007). The OECD (2000) observes many efforts of national governments to foster self-employment. For instance, governments simplify procedures for starting-up a company. Or they may stimulate access to financial capital, training and networks. For the UK and Ireland, Duggan (1998) shows that self-employment increased together with the intensity of policy measures aimed at this access.

Liquidity constraints could play an important role. In many cases, financial capital is needed to start a business, so that liquidity constraints could have a negative effect on self-employment (Evans and Jovanovic, 1989). Le (1999) concludes in his literature review that accumulated financial capital plays a significant role in the choice for self-employment. This finding suggests that liquidity constraints are relevant, as individuals with less accumulated financial capital are less likely to be self-employed. Both Dunn and Holtz-Eakin (2000) and Hurst and Lusardi (2002) however find that the relevance of liquidity constraints is small in the US.

Strict labour market regulations and policies may induce both employers and employees to use self-employment as a mean to circumvent these strict regulations and policies. This raises the issue of ‘false’ self-employment (OECD, 2000; Schuetze, 2000), consisting of people who behave like employees – one principal, work that can also be done by a ‘normal’ employee, not as much responsibility as a ‘normal’ self-employed – and have no employees themselves. This type of self-employment is sometimes labelled ‘dependent self-employment’ or DSE.

A first institutional cause of DSE may be the tax system. Both Schuetze (2000) and Kamhi and Leung (2005) find that a higher marginal income tax rate leads to more self-employed without

¹ See Dawson et al. (2009) for a more comprehensive discussion.

employees. This supports the tax evasion argument. Torrini (2005) also finds that tax evasion opportunities are positively correlated with self-employment. In contrast, Lindsay and Macaulay (2004) do not find any effect of tax changes.

A second institutional driving force of self-employment may be that unionised wage rates are relatively high compared to what the employer would pay to DSE. In this case, the employer would save costs on its wage bill (Collins, 1990).

Strict employment protection legislation (EPL) may encourage employers to outsource employment (Autor, 2003). Roman et al. (2010) indeed find empirical evidence for this theory based on the European Community Household Panel 1994-2001.

Fourth, social security arrangements may be costly both for the employer and the employee. For instance, the partial privatisation of sick leave and disability insurance in the Netherlands enlarges the risk for employers to hire new employees, which may result in an increasing demand from employers for self-employed. On the other hand, individuals with a low risk profile may find it attractive to not insure themselves against disability and unemployment and receive a higher income instead. This can be achieved through self-employment. In conclusion, generous social security arrangements may lead to adverse selection through self-employment. This adverse selection can be beneficial both for the employer and the employee.

Finally, the existence of a minimum wage makes it impossible to get a regular job for people whose productivity is lower than this minimum wage. The only alternative to find their way in the labour market is self-employment. Kamhi and Leung (2005) indeed find a positive relation between the minimum wage level and self-employment. The effect is however small in magnitude.

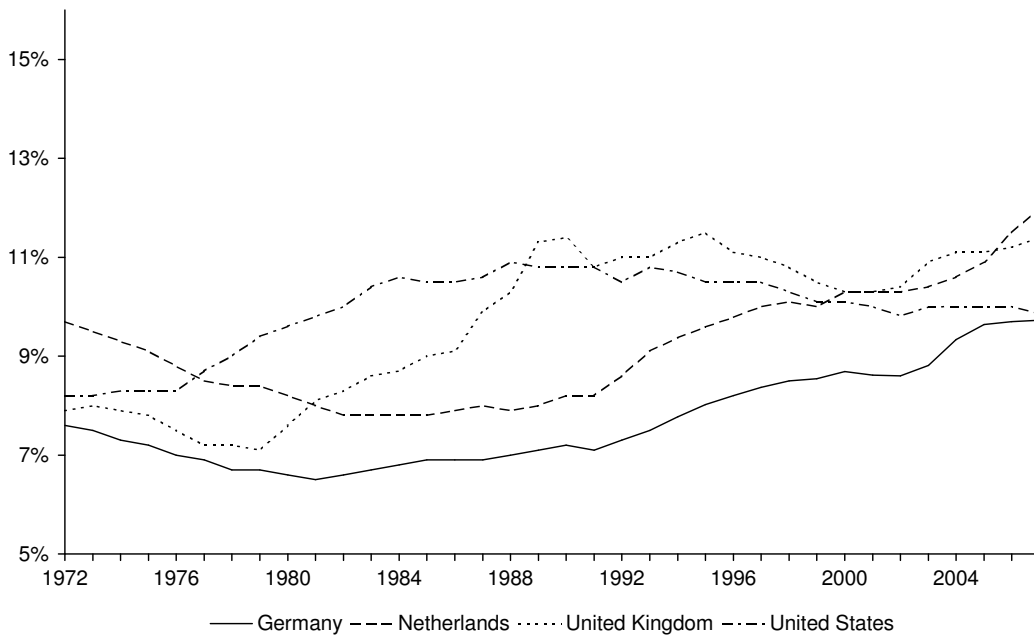
3 Self-employment in the Netherlands

The development of the non-agricultural self-employment rate in the Netherlands, Germany, the UK, and the US is shown in figure 3.1. Clearly, the growth of self-employment did not start at the same time in these countries. The rise in the US and the UK started in the 1970s. For the US it stopped in the mid-1980s, whereas growth in the UK continued until the 1990s. Both countries have witnessed a downward trend in self-employment since then, but this has been reversed in the UK since the early 21st century. In the Netherlands and Germany, the growth only started in the early 1990s, and continues until present-day. Compared to other countries, the Netherlands faced the highest increase of the self-employment rate since 1990: from 8.2% in 1990 to 12.0% in 2006. The reasons behind the different developments in the four countries are hard to identify. Perhaps the improved reputation of self-employment plays some role: whereas in the US and UK self-employment was regarded as a good alternative to paid employment, in Western Europe it was often associated with greed, exploitation, etcetera. This image seems to have changed during the 1990s. The relatively steep rise in the Netherlands could as well be related to some of the policy measures that have been taken most recently:

- The *Labour Contract Certificate* (in Dutch: ‘Verklaring Arbeidsrelatie’ or ‘VAR’) was introduced in 2001 and improved in 2005. The VAR makes clear in advance how the contract between the self-employed and the customer is structured. This way, individuals are certain about how their income is handled by the tax authorities. This is especially important for customers of self-employed without employees, because it is not always clear whether they have to pay social premiums and taxes for them.
- The introduction and intensifying of various tax deductions for self-employed in the early 21st century has made self-employment financially more attractive.
- Starting in 2006, unemployed who start a business are allowed to keep their unemployment benefits during the start-up phase. Dependent on the income from the new business the unemployed person must pay back (part of) the unemployment benefits after about two years.
- The reduction of administrative burdens since 2000 has made self-employment more attractive.² Examples are less strict business licensing and changes in the bankruptcy law.

² In this year the ‘Actal Institute’ was founded, which coordinates the reduction of administrative burdens and monitors government policies.

Figure 3.1 Development of the non-agricultural self-employment rate in some OECD countries, 1972-2007



Source: Entrepreneurs International (Compendia)

4 Data

We use data from the Dutch Labour Force Survey 1992-2006 (DLFS; in Dutch 'Enquête Beroepsbevolking'). The DLFS is a yearly held survey among about 1% of the Dutch population of 15 years and older. This repeated cross-section data set contains information on the individual labour market situation, as well as individual and household characteristics. For our purpose, we focus on men and women between the ages of 15 and 65, who are employed in one of the following industries: Industry, Construction, Trade, Hotel and Catering Industry, Transport and Communication, Finance, Business Services, Health and Culture. Workers in the agricultural sector are dropped, because that industry differs fundamentally from the other industries and self-employment is the 'natural' kind of employment there. The following industries are left out of the empirical analysis because self-employment is very rare: Water and Energy, Government, Education, International Community Organs and Household Personnel. By excluding these sectors, we lose 2% of the male observations in self-employment, and 5% of the female observations. The resulting data set includes 353,480 observations for men and 232,525 for women.

A person is defined as being self-employed if he either

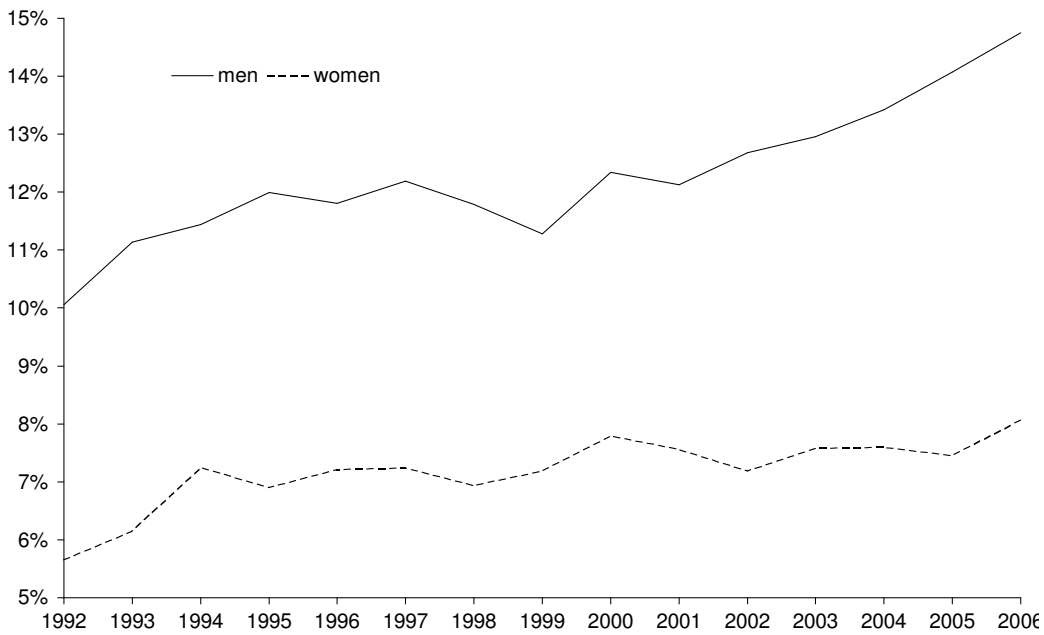
1. Owns his own business, or
2. Satisfies the two following conditions: he is (i) not an employee, and (ii) not an unpaid family worker.

The second category contains amongst others freelancers and a large part of the growing category of 'dependent self-employment' (see section 2.4). The share of the labour force that is self-employed increased steadily over the period under study (figure 4.1). Note that the computed self-employment rates differ from OECD figures in figure 3.1 due to different definitions. For men, the share of self-employed increased from 10.1% in 1992 to 14.8% in 2006. The self-employment rate of women rose from 5.7% to 8.1%. Apart from the structural increase, there appears to be a business-cycle effect for men, because in 1996, 1998, 1999 and 2001 the self-employment percentage decreased. Apart from 2001, these years were part of an economic upturn, which hints at a role for push-factors to become self-employed. For women there does not seem to be a business-cycle effect.

Summary statistics are reported in table 4.1. We report these for men and women separately, as we will also perform separate decompositions. Women are more often secondary earners, and may therefore react differently on changing circumstances than men (Cowling et al., 1997). One might therefore expect different results for men and women when decomposing the growth in self-employment. All variables in table 4.1 are dummy variables. The observations are almost evenly spread over the years 1992-2006, especially for men. The age statistics show that the

men are on average older than the women, which is related to the relatively low participation rates of older cohorts of women. The household, education and ethnicity statistics show only minor differences between men and women. A separate dummy for having a minor child in 1994 will be included in the econometric model in the next section, because the exact age of the youngest child was not observed in 1994. Finally, men are relatively more often employed in the Manufacturing, Construction and Transport and Communication industries, whereas women are more often employed in the health and culture sectors.

Figure 4.1 Self-employment rate for men and women, weighted



The development over time of the workforce composition according to sector is shown in table 4.2. The most important observation for men is that on the one hand the Manufacturing sector is becoming relatively smaller, and that on the other hand the Business Services sector is increasing. The share of women working in the Manufacturing sector is shrinking as well, and so is the share of women working in the Trade sector. The most important increase for women is seen in the Health sector, and to a lesser extent in the Culture sector. These sectoral shifts could possibly explain the rise in self-employment. The self-employment rate of men in the Business Services sector is above average, and in the Manufacturing sector below average. The self-employment rate of women in the Culture sector is above average, and in the Manufacturing sector below average. However, the self-employment rate of women in both the Health and Trade sectors hardly differ from the aggregate female self-employment rate, so that these sectoral shifts would not explain the rising aggregate self-employment rate of women.

Table 4.1 Summary statistics, weighted, # observations: Men = 353,480, Women = 232,522

Dependent variable	Men		Women			Men		Women	
	Mean	Sd.	Mean	Sd.		Mean	Sd.	Mean	Sd.
Self-employed	0.12	0.33	0.07	0.26					
Age groups					Years				
15-24	0.11	0.32	0.16	0.37	1992	0.06	0.24	0.05	0.23
25-34	0.29	0.45	0.32	0.47	1993	0.06	0.24	0.05	0.23
35-44	0.28	0.45	0.27	0.44	1994	0.06	0.24	0.06	0.23
45-54	0.23	0.42	0.20	0.40	1995	0.06	0.24	0.06	0.23
55-64	0.08	0.28	0.05	0.23	1996	0.06	0.25	0.06	0.24
					1997	0.07	0.25	0.06	0.24
					1998	0.07	0.25	0.07	0.25
Household situation					1999	0.07	0.25	0.07	0.25
Cohabiting or married	0.72	0.45	0.71	0.45	2000	0.07	0.26	0.07	0.26
Minor child age 0-3	0.14	0.35	0.12	0.33	2001	0.07	0.26	0.07	0.26
Minor child age 4-11	0.14	0.35	0.13	0.34	2002	0.07	0.26	0.08	0.26
Minor child age 12-17	0.11	0.31	0.11	0.32	2003	0.07	0.25	0.08	0.26
Two minor children	0.18	0.39	0.16	0.37	2004	0.07	0.25	0.07	0.26
Over two minor children	0.07	0.26	0.05	0.22	2005	0.07	0.25	0.07	0.26
Minor child in 1994	0.03	0.16	0.02	0.13	2006	0.07	0.25	0.08	0.26
Education					Industries				
Low educated ^a	0.32	0.47	0.28	0.45	Manufacturing	0.26	0.44	0.10	0.30
Medium educated ^a	0.44	0.50	0.49	0.50	Construction	0.13	0.34	0.01	0.12
High educated ^a	0.24	0.43	0.24	0.42	Trade	0.18	0.38	0.19	0.40
					Hotel and				
Ethnicity					Catering	0.03	0.17	0.04	0.20
Native	0.87	0.33	0.88	0.33	Transport and				
Western immigrant	0.05	0.22	0.06	0.24	Communication	0.10	0.30	0.05	0.21
Immigrant in 1992	0.00	0.07	0.00	0.06	Financial	0.04	0.21	0.05	0.22
Immigrant in 1994	0.01	0.07	0.00	0.07	Health	0.06	0.25	0.35	0.48
Immigrant in 1996	0.01	0.08	0.01	0.07	Business				
Non-western, low					Services	0.15	0.36	0.14	0.34
educated	0.03	0.16	0.02	0.14	Culture	0.04	0.20	0.06	0.25
Non-western, medium									
educated	0.02	0.14	0.02	0.15					
Non-western, high									
educated	0.01	0.10	0.01	0.09					

^a The education levels are defined as follows: 'Low' = only primary or lower secondary education, or lower vocational training (in Dutch: Basisonderwijs, VMBO, LBO); 'Medium' = higher secondary education or advanced vocational school (in Dutch: HAVO, VWO, MBO); 'high' = higher vocational school or academic education (in Dutch: HBO, WO).

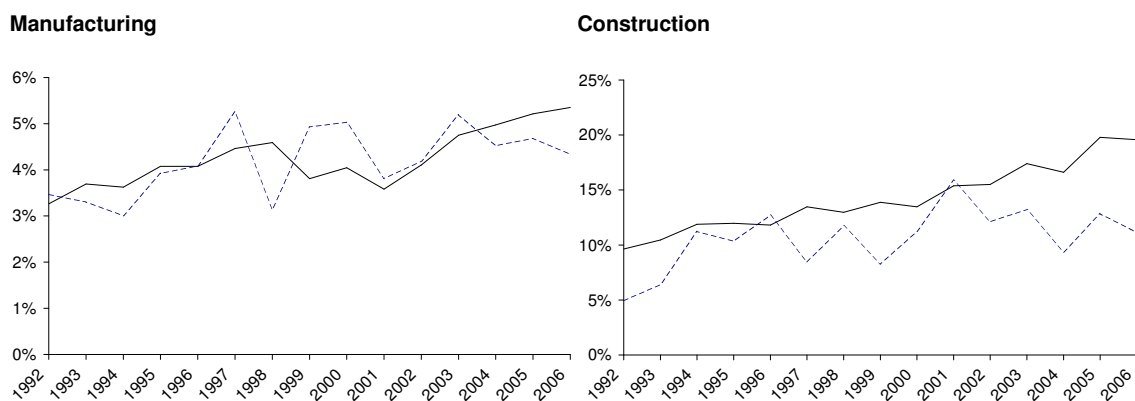
Table 4.2 Workforce composition according to sector

	Men		Women	
	1992	2006	1992	2006
Manufacturing	0.31	0.24	0.13	0.08
Construction	0.13	0.14	0.01	0.02
Trade	0.18	0.17	0.21	0.18
Hotel and Catering	0.02	0.03	0.04	0.05
Transport and Communication	0.10	0.10	0.04	0.04
Financial	0.04	0.04	0.05	0.05
Business Services	0.11	0.16	0.13	0.13
Health	0.06	0.07	0.34	0.39
Culture	0.03	0.04	0.04	0.06

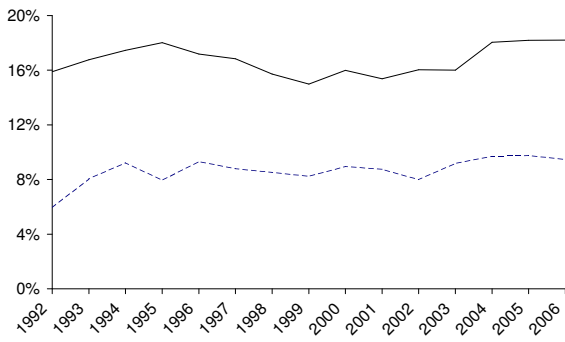
Figure 4.2 shows the difference among industries for men in more detail. The self-employment rate is between 25 and 35% in the Hotels and Catering sector, whereas it is only between 3 and 6% in the Manufacturing sector. In his survey of the literature, Le (1999) also finds high self-employment rates for Hotel and Catering, Business Services, Construction and Trade. Changes over time within industries are clearly larger in some industries (e.g., Finance) than in others (e.g., Culture). In Manufacturing, Construction, Transport and Communication and Culture the self-employment rate seems to have an upward trend over time, while in the others there does not appear to be a time trend.

The self-employment rate for women is lower than for men in all industries except for Manufacturing and Culture. Just as for men, self-employment is most common in the Hotel and Catering, Construction, Business Services and Culture industries. The upward trends for men in some industries are also present for women, although they appear to be less steep.

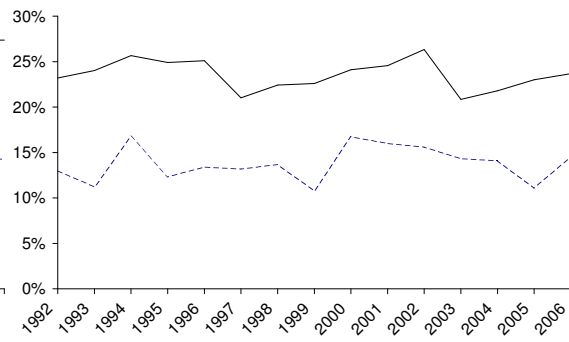
Figure 4.2 Self-employment rate among men (solid line) and women (dashed line) by industry, weighted



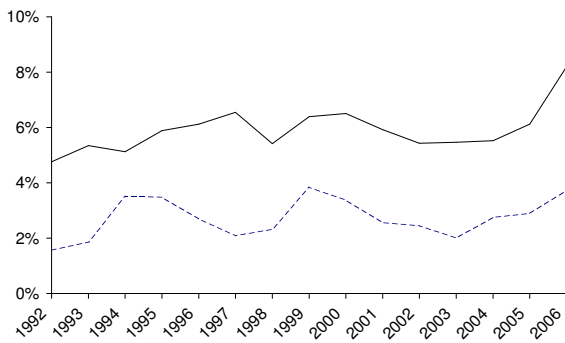
Trade



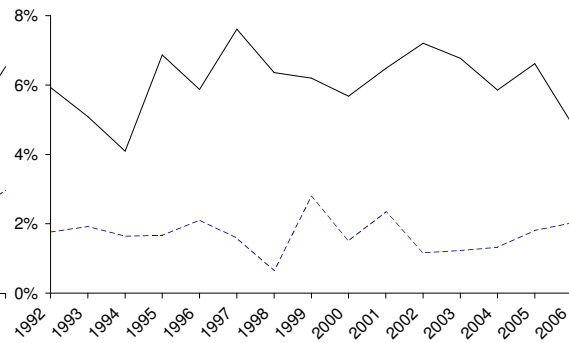
Hotel and Catering



Transport and Communication



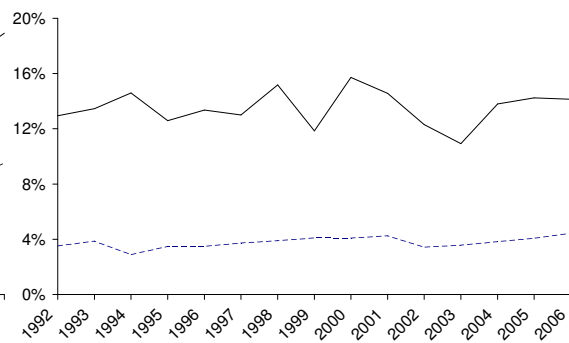
Financial



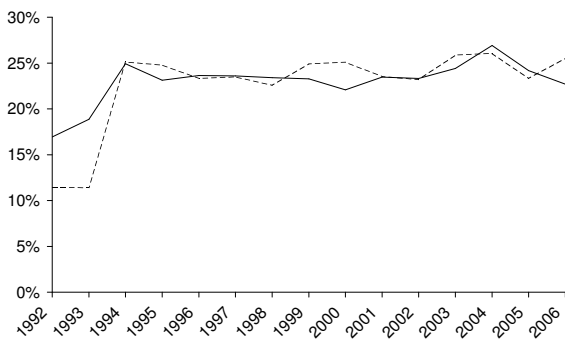
Business Services



Health



Culture



5 Analysis

5.1 Estimation of Logit model

We employ a Logit model, where the probability of being self-employed is specified as a function of personal characteristics, industry, and year of observation. In addition, we include interaction terms to control for several trends. Apart from the general time trend, all year dummies are interacted with industry, age and education dummies. Through this very flexible approach we are able to unveil nonlinearities in the time trends of industry, age and education. We estimate the model for both men and women. A summary of the estimation results is given in table 5.1. The complete estimation results of the Logit model (in terms of marginal effects) can be found in the appendix.

Coefficients on individual characteristics are quite similar for men and women, although household characteristics are a little more important for women and ethnicity is a more important factor for men. Married or cohabiting individuals have a higher (1-1.5 percentage point) probability to be self-employed. Both men and women with minor children have a higher probability to be self-employed. This could be explained by the wish of parents to have flexible working hours to take care of their children. Self-employment increases the possibilities to choose one's own working hours, holidays, etcetera. This argument is supported by the observation that the coefficient is relatively high for individuals with younger children, because younger children generally need more care than older children. Immigrants have a smaller probability to be self-employed, although the effect is rather small. This contradicts with the ethnic enclave argument of Le (1999), but this could be related to the lower presence of ethnic enclaves in the Netherlands compared to the UK and the US. The probability to be self-employed increases significantly with age for both sexes. Men between the ages of 55 and 64 have a 42.3 percentage point higher probability to be self-employed than men between the ages of 15 and 24, whereas this difference is 40.9 for women. The age coefficients increase steadily with age. Higher education implies a higher probability to be self-employed, which points at a larger role of pull-factors than push-factors in the choice for self-employment. This finding somewhat contradicts the results of Dunn and Holtz-Eakin (2000) on US data, who find a U-shaped relation between self-employment and education. Finally, the industry the individual works in has a large effect on the probability to be self-employed. Note that the baseline category is Manufacturing, which (for men) has the lowest self-employment rate of all industries. For both men and women, Hotel and Catering is the industry with the highest probability to be self-employed followed by Business Services, Trade and Culture.

Table 5.1 Effect on propensity to be self-employed^a

	Men	Women
Individual characteristics		
Single	-	-
Children in household	+	+
Immigrant	-	-
Age	+	+
Education	+	+
Sector of industry^b	yes	yes
General time trend	+	+
Other time trends^{b, c}		
Age 25-44	(+)	-
Age 45-54	0	-
Age 55-64	0	(-)
Medium educated	-	-
High educated	-	(-)
Construction	+	(+)
Trade	-	+
Hotel and catering	-	0
Transport and Communication	0	(+)
Financial	-	0
Business services	(-)	0
Health	-	0
Culture	0	+

^a Full estimation results of the underlying Logit model can be found in the appendix.

^b Reference categories for dummy variables: age 15-24, low educated, Manufacturing industry.

^c A '-' or '+' indicates that a time trend is observed and that the end year effect is significantly different from zero at a 5% confidence level. A '(+)' or '(-)' indicates that a time trend can be observed, but that the effect in the end year does not statistically differ from zero at a significance level of 5%. A '0' indicates that no time trend is observed and there is no significant end year effect.

The general time trend of the self-employment rate is clearly positive. This trend is especially strong during the last three years of our sample (2004-2006). The general time trend appears to be stronger for men than for women. The coefficients of the education interactions are in most cases significant and negative. This means that controlling for a general time trend, medium and highly educated individuals are increasingly less likely to become self-employed. This holds both for men and women. We also observe a negative trend for women between the ages of 25 and 54. The self-employment propensity per age remains more or less constant for men. It is striking that the intra-industry development of self-employment is mainly positive for women, whereas it is negative for men. The only exception is the Construction sector, where more men went into self-employment. Self-employed men have become more rare in the Trade, Hotel and Catering, Financial and Health sectors. Self-employed women have become more common in the Trade and Culture sectors.

5.2 Decomposition

Using the results of the Logit estimations, we are able to make a decomposition of the development of the self-employment rate in the period 1992-2006 for both men and women. The contribution C of a group of variables X is calculated using the equation

$$C(X) = \text{Logit}(\alpha + \beta X_{2006} + \delta S_{1992}) - \text{Logit}(\alpha + \beta X_{1992} + \delta S_{1992})$$

where S is a vector containing all explanatory variables except those in X , β and δ are vectors of coefficients corresponding with X and S respectively, and α is a constant term. The vectors X and S both contain average values for one particular year, which is indicated by the subscript. In order to maintain precision, we prefer to make the decomposition on basis of the Logit function rather than using the marginal effects reported in the appendix. A decomposition on basis of marginal effects implies linear approximation, whereas the Logit function is nonlinear. Large changes in the X -variables could therefore imply large second order errors as a result of nonlinearities. The results of the decomposition are shown in table 5.2.

In the period 1992-2006, the self-employment rate increased by 4.8 percentage points for men and 2.5 percentage points for women (see section 4). The decomposition shows that results are rather different for men and women. First of all, the industrial structure of the economy plays a limited role in explaining total growth for men, whereas it is much more important for women. For men, the industry dummies and interaction variables only explain 0.3 percentage points of the total upturn of 4.8%, whereas for women these variables explain 1.5 percentage points on a total of 2.5%. For men, the industry effect is nearly a pure composition effect. The share of the working population in the Business Services sector has increased from 11 to 16% between 1992 and 2006 (table 4.2), and this sector has traditionally seen a high self-employment rate. In figure 4.2, it was seen that the self-employment rate in the Business Services sector was nearly twice as high as in other sectors. A similar, but much smaller effect took place in the Hotel and Catering industry, where the share of the working population rose from 2 to 3%. The interaction variables of the sectors of industry with time only play a minor role for men. The propensity to be self-employed has increased within the Construction sector, but this effect is largely offset by negative growth in other sectors. For women, the story is completely opposite. The sectoral shift of female labour hardly had an effect on the self-employment rate. As was seen in table 4.2 the most important sectoral shifts were seen in the Health and Trade sectors (and also in the Manufacturing sector, which is the reference industry in the context of our model), and the self-employment rates in these sectors are practically in line with the aggregate self-employment rates for women. The industry effect for women is thus a consequence of the intra-industry developments which were discussed earlier in the previous subsection. That is, it has become more common for women to become self-employed within particular sectors of industry, e.g. the Trade and Culture sectors.

Table 5.2 Decomposition of the development of the self-employment rate in the period 1992-2006

	Men	Women
	in %-points	
Composition and trend effects	0.5	1.0
of which age	1.5	- 0.4
household	0.0	0.3
education	- 1.1	- 0.3
migrant	- 0.1	- 0.1
industry	0.3	1.5
Year effects	4.2	1.5
Total	4.8	2.5

Compared to the industrial structure, the ageing of the labour force explains much more of the upturn of self-employment for men than for women. For men, the higher share of older workers increases the aggregate self-employment rate by 1.5 percentage points, whereas it decreases the rate for women by 0.4 percentage points. The lower effect for women is mainly caused by the interaction variables of the age groups with the time trend. Older women do have a higher propensity to be self-employed than younger women, but the difference with younger generations of women has become smaller and smaller over time.

The education level of the labour force has had a negative effect on the change in the self-employment rate of both men and women, although the effect is much higher for men. This effect is mainly related to the interaction variables. In particular the medium educated workers have become self-employed less often over time. For women this effect is also present, but much less clear. Household and ethnic characteristics only play a minor role for both men and women.

The year dummies have a very large impact on the self-employment rate. For men, a large part of the 4.8 percentage point increase since 1992 can be related to year effects and for women more than half of the 2.5 percentage point increase. These large year effects imply that most of the observed growth cannot be explained by changes in sector composition and individual and household characteristics. Unobserved individual characteristics could play a role, but given the large year effects in the final years of our sample (2004-2006) it is likely that government policies have played a significant role in the upturn of self-employment. Cultural developments (improved reputation of the self-employed) may have played a role as well. However, we are not able to identify these effects with our dataset.

6 Conclusion

In this paper, we decompose the rise of self-employment in the Netherlands in the period 1992-2006. The observed upturn is remarkable, as it contrasts with the decline in earlier decennia. Using a Logit model we first try to identify the most important determinants of this new development. Second, we decompose the observed rise in the aggregate self-employment rate using the Logit estimates. We focus on (i) sector composition effects, (ii) business cycle effects, and (iii) individual and household composition effects. The differences between men and women are substantial. For men, we find that the aging of society is an important cause of the observed increase, as the elderly are self-employed more often. This effect is however largely undone by the higher education level of younger generations. Medium and highly educated men are increasingly likely to be self-employed compared to low educated men. The industrial composition only plays a small role in explaining the upturn. This contrasts with findings for other countries, such as the US. The unexplained part of the rise in self-employment for men is large (89%). For women, we find that intra-sectoral developments have been important in spurring self-employment. In particular, it has become more common for women to be self-employed in the Trade and Culture sectors. As with men, sectoral shifts play a limited role in explaining the rising self-employment rate. The unexplained part of the growth in the self-employment rate of women is also large (62%).

As our model controls for individual and household characteristics, and for time trends in individual and household characteristics, we interpret the 'unexplained part' as a 'generic time trend'. It seems likely that this generic trend is either related to generic government policies and/or a socio-economic trend. The latter could be related to the improved reputation of self-employed. The large role for generic effects could also be related to policy. During the period 2000-2006 many policy measures were taken (section 3) and the strongest effects are seen during these years precisely. We postulate that generic policy effects have been the most important cause of the increase in self-employment. The largest effects were seen just in the last few years of our sample (2004-2006), which appears to be inconsistent with the notion of a longer lasting socio-cultural trend. The year effects do not display a clear correlation with the business cycle, suggesting that the aggregate impact of the business cycle on self-employment is small. This does not mean that the business cycle does not play any role. It is well possible that push and pull effects cancel out (section 2.3).

An avenue for future research would be to shed more light on the composition of the generic year effects. In particular, it would be useful to split up the year effects into the effects of generic government policies and a socio-cultural trend. This would add more explanatory power to the results found in this paper. Finally, the conclusion that composition effects have played a limited role in the growth of self-employment leaves room for two explanations which are particularly relevant for policymakers. First, the social security system could be undermined in case individuals with low unemployment, sickness and disability risks evade the social

security system through self-employment (adverse selection). Second, it could be that employers push their employees into 'dependent self-employment', because they want to get rid of employer obligations such as employment protection, and sickness and disability insurance. These issues should be studied further.

References

- Audretsch, D. and M. Keilbach, 2004, Entrepreneurship capital and economic performance, *Regional studies*, vol. 38, no. 8, pp. 949-959.
- Autor, D., 2003, Outsourcing at will: The contribution of unjust dismissal doctrine to the growth of employment outsourcing, *Journal of Labor Economics*, vol. 21, no. 1, pp. 1-42.
- Blanchflower, D., 2000, Self-employment in OECD countries, *Labour Economics*, vol. 7, pp. 471-505.
- Blau, D., 1987, A time-series analysis of self-employment in the United States, *Journal of Political Economy*, vol. 95, no. 3, pp. 445-467.
- Collins, H., 1990, Independent contractors and the challenge of vertical integration to employment protection laws, *Oxford Journal of Legal Studies*, vol. 10, no. 3, pp. 353-380.
- Cowling, M., M. Taylor and P. Mitchell, 1997, Entrepreneurial women and men: two different species?, CSME Working paper 49.
- Dawson, C., A. Henley and P. Latreille, 2009, Why do individuals choose self-employment?, IZA Discussion Paper 3974.
- Dunn, T. and D. Holtz-Eakin, 2000, Financial capital, human capital, and the transition to self-employment: Evidence from intergenerational links, *Journal of Labor Economics*, vol. 18, no. 2, pp. 282-305.
- Duggan, C., 1998, *Self-employment in the United Kingdom and Ireland. Current trends, policies and Programmes*, paper presented at the OECD-Conference on self-employment, Burlington, 24-26 September 1998.
- Edwards, L. and E. Field-Hendrey, 2002, Home-based work and women's labor force decisions, *Journal of Labor Economics*, vol. 20, no. 1, pp. 170-200.
- EIM, 2008, *Bedrijvendynamiek en werkgelegenheid*, Zoetermeer.
- Evans, D. and B. Jovanovic, 1989, An Estimated Model of Entrepreneurial Choice under Liquidity Constraints, *Journal of Political Economy*, vol. 97, no. 4, pp. 808-827.

Fairlie, R. and B. Meyer, 2000, Trends in self-employment among white and black men during the twentieth century, *Journal of Human Resources*, vol. 35, no. 4, pp. 643-669.

Hout, M. and S. Rosen, 2000, Self-employment, family background, and race, *Journal of Human Resources*, vol. 15, no. 4, pp. 670-692.

Hurst, E. and A. Lusardi, 2002, Liquidity constraints, household wealth and entrepreneurship. *Journal of Political Economy*, vol. 112, pp. 319-347.

Kamhi, N. and D. Leung, 2005, Recent developments in self-employment in Canada, Bank of Canada Working paper 2005-8.

Lazear, E., 2005, Entrepreneurship, *Journal of Labor Economics*, vol. 23, no. 4, pp. 649-80.

Le, A., 1999, Empirical studies of self-employment, *Journal of Economic Surveys*, vol. 13, no. 4, pp. 381-416.

Leoni, T. and M. Falk, 2010, Gender and field of study as determinants of self-employment, *Small Business Economics*, forthcoming.

Lindsay, C. and C. Macaulay, 2004, Growth in self-employment in the UK, *Labour Market Trends*, vol. 112, no. 10, pp. 399-404.

Meagre, N., 1994, Self-employment schemes for the unemployed in the European Community, in G. Schmid, ed., *Labour market institutions in Europe: a socioeconomic evaluation of performance*, pp. 183-242, Sharpe, New York.

Nanda, R. and J. Sorensen, 2009, Peer effects and entrepreneurship, Harvard Business School Entrepreneurial Management Working Paper No. 08-051.

OECD, 2000, *Employment Outlook 2000*, Paris.

Praag, M. van and P. Versloot, 2007, What is the value of entrepreneurship? A review of recent research, *Small Business Economics*, vol. 29, pp. 351-382.

Robson, M. and C. Wren, 1999, Marginal and average tax rates and the incentive for self-employment, *Southern Economic Journal*, vol. 65, no. 4, pp. 757-773.

Roman, C., E. Congregado, and J. Millan, 2010, Dependent self-employment as a way to evade employment protection legislation, *Small Business Economics*, forthcoming.

Schuetze, H., 2000, Taxes, economic conditions and recent trends in male self-employment: a Canada-US comparison, *Labour Economics*, vol. 7, no. 5, pp. 507-544.

Torrini, R., 2005, Cross-country differences in self-employment rates: the role of institutions, *Labour Economics*, vol. 12, no. 5, pp. 661-683.

Wellington, A., 2006, Self-employment: The new solution for balancing family and career? *Labour Economics*, vol. 13, pp. 357-386.

Weiss, Y. and C. Fershtman, 1998, Social status and economic performance: A survey, *European Economic Review*, vol. 42, pp. 801-820.

Wit, G. de and F. van Winden, 1989, An empirical analysis of self-employment in the Netherlands, *Small Business Economics*, vol. 1, no. 4, pp. 263-272.

Appendix A. Complete estimation results

Table A.1 Probability of being self-employed, complete estimation results (marginal effects) of Logit model

	Men		Women	
	Estimate	Standard error	Estimate	Standard error
Age groups				
15-24				
25-34	0.076	(0.015)	0.082	(0.017)
35-44	0.159	(0.019)	0.157	(0.025)
45-54	0.253	(0.025)	0.261	(0.038)
55-64	0.423	(0.035)	0.409	(0.062)
Household situation				
Single				
Cohabiting or married	0.010	(0.001)	0.015	(0.001)
No minor children				
Minor child age 0-3	0.019	(0.002)	0.013	(0.002)
Minor child age 4-11	0.011	(0.002)	0.018	(0.002)
Minor child age 12-17	0.004	(0.002)	0.005	(0.001)
Two minor children	0.003	(0.001)	0.007	(0.001)
Three or more minor children	0.025	(0.002)	0.024	(0.002)
At least one minor child in 1994	0.005	(0.004)	0.020	(0.005)
Education				
Low educated				
Medium educated	0.059	(0.005)	0.033	(0.004)
High educated	0.075	(0.008)	0.084	(0.010)
Ethnicity				
Native				
Western immigrant	- 0.006	(0.002)	- 0.001	(0.002)
Immigrant in 1992	- 0.002	(0.008)	0.000	(0.007)
Immigrant in 1994	- 0.009	(0.007)	0.001	(0.006)
Immigrant in 1996	- 0.021	(0.006)	- 0.007	(0.005)
Non-western immigrant. low educated	- 0.014	(0.003)	- 0.011	(0.003)
Non-western immigrant. medium educated	- 0.021	(0.003)	- 0.013	(0.003)
Non-western immigrant. high educated	- 0.004	(0.005)	- 0.005	(0.003)
Year dummies				
1992				
1993	0.000	(0.017)	0.004	(0.016)
1994	- 0.012	(0.016)	0.008	(0.017)
1995	0.029	(0.020)	0.008	(0.017)
1996	0.015	(0.019)	0.029	(0.021)
1997	0.013	(0.019)	0.035	(0.023)
1998	0.003	(0.018)	- 0.012	(0.012)
1999	- 0.041	(0.012)	0.008	(0.016)
2000	- 0.002	(0.017)	0.021	(0.019)
2001	0.018	(0.019)	0.013	(0.018)

2002	- 0.003	(0.017)	0.017	(0.019)
2003	- 0.002	(0.017)	0.013	(0.018)
2004	0.048	(0.022)	0.007	(0.016)
2005	0.026	(0.020)	0.029	(0.021)
2006	0.055	(0.023)	0.016	(0.019)

Industry dummies

Manufacturing				
Construction	0.155	(0.015)	0.002	(0.016)
Trade	0.238	(0.015)	0.023	(0.009)
Hotel and Catering	0.485	(0.032)	0.124	(0.025)
Transport and Communication	0.044	(0.013)	- 0.030	(0.007)
Financial	0.040	(0.017)	- 0.027	(0.006)
Business Services	0.252	(0.017)	0.064	(0.013)
Health	0.156	(0.019)	- 0.024	(0.006)
Culture	0.204	(0.025)	0.024	(0.012)

Interaction terms

1993 x Construction	- 0.003	(0.010)	0.033	(0.034)
1994 x Construction	0.008	(0.011)	0.063	(0.043)
1995 x Construction	- 0.004	(0.009)	0.056	(0.039)
1996 x Construction	- 0.002	(0.010)	0.069	(0.044)
1997 x Construction	0.007	(0.010)	0.007	(0.022)
1998 x Construction	0.002	(0.010)	0.120	(0.059)
1999 x Construction	0.021	(0.012)	0.035	(0.033)
2000 x Construction	0.012	(0.011)	0.052	(0.037)
2001 x Construction	0.042	(0.014)	0.136	(0.061)
2002 x Construction	0.024	(0.012)	0.063	(0.040)
2003 x Construction	0.032	(0.013)	0.081	(0.046)
2004 x Construction	0.011	(0.010)	0.052	(0.037)
2005 x Construction	0.032	(0.012)	0.071	(0.042)
2006 x Construction	0.025	(0.012)	0.059	(0.040)
1993 x Trade	- 0.004	(0.008)	0.038	(0.016)
1994 x Trade	0.002	(0.009)	0.035	(0.016)
1995 x Trade	- 0.007	(0.008)	0.020	(0.012)
1996 x Trade	- 0.004	(0.008)	0.023	(0.013)
1997 x Trade	- 0.009	(0.008)	0.005	(0.009)
1998 x Trade	- 0.015	(0.007)	0.039	(0.017)
1999 x Trade	- 0.005	(0.009)	0.024	(0.013)
2000 x Trade	- 0.006	(0.008)	0.016	(0.011)
2001 x Trade	- 0.006	(0.009)	0.033	(0.015)
2002 x Trade	- 0.009	(0.008)	0.020	(0.012)
2003 x Trade	- 0.013	(0.008)	0.019	(0.012)
2004 x Trade	- 0.014	(0.007)	0.030	(0.014)
2005 x Trade	- 0.011	(0.008)	0.033	(0.014)
2006 x Trade	- 0.020	(0.007)	0.031	(0.014)
1993 x Hotel and Catering	0.005	(0.015)	0.007	(0.013)
1994 x Hotel and Catering	0.020	(0.017)	0.024	(0.017)
1995 x Hotel and Catering	- 0.009	(0.013)	0.000	(0.011)
1996 x Hotel and Catering	- 0.003	(0.014)	0.002	(0.011)
1997 x Hotel and Catering	- 0.020	(0.011)	- 0.007	(0.009)
1998 x Hotel and Catering	- 0.007	(0.013)	0.019	(0.016)

1999 x Hotel and Catering	0.004	(0.015)	- 0.003	(0.010)
2000 x Hotel and Catering	- 0.004	(0.013)	0.005	(0.011)
2001 x Hotel and Catering	- 0.007	(0.013)	0.011	(0.013)
2002 x Hotel and Catering	0.016	(0.016)	0.014	(0.013)
2003 x Hotel and Catering	- 0.016	(0.012)	0.010	(0.013)
2004 x Hotel and Catering	- 0.026	(0.010)	0.012	(0.013)
2005 x Hotel and Catering	- 0.019	(0.011)	- 0.006	(0.009)
2006 x Hotel and Catering	- 0.025	(0.010)	0.013	(0.013)
1993 x Transport and Communication	- 0.001	(0.013)	0.025	(0.033)
1994 x Transport and Communication	- 0.005	(0.013)	0.070	(0.047)
1995 x Transport and Communication	- 0.007	(0.012)	0.055	(0.041)
1996 x Transport and Communication	0.005	(0.013)	0.018	(0.028)
1997 x Transport and Communication	- 0.004	(0.012)	0.002	(0.021)
1998 x Transport and Communication	- 0.013	(0.011)	0.051	(0.041)
1999 x Transport and Communication	0.012	(0.015)	0.058	(0.041)
2000 x Transport and Communication	0.010	(0.014)	0.036	(0.033)
2001 x Transport and Communication	0.010	(0.014)	0.043	(0.036)
2002 x Transport and Communication	- 0.003	(0.013)	0.035	(0.033)
2003 x Transport and Communication	- 0.010	(0.011)	0.010	(0.024)
2004 x Transport and Communication	- 0.022	(0.009)	0.042	(0.035)
2005 x Transport and Communication	- 0.016	(0.010)	0.045	(0.036)
2006 x Transport and Communication	0.004	(0.013)	0.070	(0.044)
1993 x Financial	- 0.018	(0.014)	0.020	(0.027)
1994 x Financial	- 0.035	(0.012)	0.005	(0.022)
1995 x Financial	- 0.009	(0.015)	- 0.002	(0.018)
1996 x Financial	- 0.007	(0.016)	0.011	(0.022)
1997 x Financial	0.000	(0.016)	- 0.008	(0.015)
1998 x Financial	- 0.014	(0.014)	- 0.022	(0.012)
1999 x Financial	0.008	(0.018)	0.011	(0.022)
2000 x Financial	- 0.003	(0.016)	- 0.013	(0.014)
2001 x Financial	0.006	(0.018)	0.022	(0.025)
2002 x Financial	0.012	(0.018)	- 0.010	(0.014)
2003 x Financial	0.000	(0.016)	- 0.018	(0.011)
2004 x Financial	- 0.028	(0.012)	- 0.015	(0.013)
2005 x Financial	- 0.014	(0.014)	0.000	(0.017)
2006 x Financial	- 0.037	(0.011)	- 0.001	(0.017)
1993 x Business Services	0.001	(0.010)	0.008	(0.011)
1994 x Business Services	- 0.010	(0.009)	- 0.008	(0.008)
1995 x Business Services	- 0.015	(0.008)	- 0.013	(0.007)
1996 x Business Services	- 0.013	(0.008)	- 0.016	(0.006)
1997 x Business Services	- 0.018	(0.008)	- 0.023	(0.004)
1998 x Business Services	- 0.026	(0.007)	- 0.006	(0.008)
1999 x Business Services	- 0.021	(0.008)	- 0.017	(0.006)
2000 x Business Services	- 0.010	(0.008)	- 0.018	(0.005)
2001 x Business Services	- 0.010	(0.009)	- 0.008	(0.007)
2002 x Business Services	- 0.007	(0.009)	- 0.010	(0.007)
2003 x Business Services	- 0.016	(0.008)	- 0.015	(0.006)
2004 x Business Services	- 0.018	(0.007)	- 0.013	(0.006)
2005 x Business Services	- 0.014	(0.008)	- 0.011	(0.007)
2006 x Business Services	- 0.015	(0.008)	- 0.002	(0.008)
1993 x Health	- 0.007	(0.011)	0.018	(0.013)
1994 x Health	0.002	(0.012)	- 0.003	(0.009)

1995 x Health	- 0.022	(0.009)	- 0.002	(0.009)
1996 x Health	- 0.011	(0.010)	- 0.004	(0.008)
1997 x Health	- 0.017	(0.010)	- 0.011	(0.007)
1998 x Health	- 0.009	(0.011)	0.013	(0.012)
1999 x Health	- 0.017	(0.010)	0.002	(0.009)
2000 x Health	- 0.003	(0.011)	- 0.005	(0.008)
2001 x Health	- 0.009	(0.011)	0.014	(0.012)
2002 x Health	- 0.017	(0.010)	0.000	(0.009)
2003 x Health	- 0.030	(0.008)	- 0.004	(0.008)
2004 x Health	- 0.025	(0.008)	- 0.001	(0.008)
2005 x Health	- 0.022	(0.009)	0.008	(0.010)
2006 x Health	- 0.028	(0.008)	0.013	(0.011)
1993 x Culture	0.006	(0.014)	0.018	(0.016)
1994 x Culture	0.050	(0.020)	0.125	(0.036)
1995 x Culture	0.029	(0.016)	0.116	(0.032)
1996 x Culture	0.037	(0.017)	0.101	(0.030)
1997 x Culture	0.029	(0.016)	0.071	(0.024)
1998 x Culture	0.027	(0.016)	0.118	(0.034)
1999 x Culture	0.052	(0.020)	0.133	(0.035)
2000 x Culture	0.043	(0.018)	0.106	(0.030)
2001 x Culture	0.059	(0.020)	0.125	(0.034)
2002 x Culture	0.042	(0.018)	0.103	(0.030)
2003 x Culture	0.033	(0.017)	0.108	(0.030)
2004 x Culture	0.029	(0.016)	0.123	(0.032)
2005 x Culture	0.023	(0.015)	0.115	(0.031)
2006 x Culture	0.011	(0.014)	0.136	(0.035)
1993 x Age 25-34	0.018	(0.019)	- 0.010	(0.010)
1994 x Age 25-34	0.042	(0.023)	- 0.012	(0.009)
1995 x Age 25-34	0.012	(0.017)	- 0.007	(0.011)
1996 x Age 25-34	0.021	(0.019)	- 0.013	(0.009)
1997 x Age 25-34	0.028	(0.020)	- 0.015	(0.008)
1998 x Age 25-34	0.043	(0.023)	- 0.004	(0.012)
1999 x Age 25-34	0.112	(0.035)	- 0.009	(0.010)
2000 x Age 25-34	0.039	(0.021)	- 0.016	(0.008)
2001 x Age 25-34	0.023	(0.018)	- 0.011	(0.009)
2002 x Age 25-34	0.062	(0.025)	- 0.018	(0.008)
2003 x Age 25-34	0.071	(0.026)	- 0.011	(0.010)
2004 x Age 25-34	0.015	(0.017)	- 0.010	(0.010)
2005 x Age 25-34	0.036	(0.021)	- 0.021	(0.007)
2006 x Age 25-34	0.018	(0.017)	- 0.016	(0.008)
1993 x Age 35-44	0.013	(0.018)	- 0.011	(0.010)
1994 x Age 35-44	0.036	(0.022)	- 0.013	(0.009)
1995 x Age 35-44	0.004	(0.015)	- 0.007	(0.010)
1996 x Age 35-44	0.011	(0.017)	- 0.020	(0.007)
1997 x Age 35-44	0.015	(0.018)	- 0.018	(0.007)
1998 x Age 35-44	0.039	(0.022)	- 0.004	(0.012)
1999 x Age 35-44	0.091	(0.032)	- 0.017	(0.008)
2000 x Age 35-44	0.027	(0.019)	- 0.016	(0.008)
2001 x Age 35-44	0.010	(0.016)	- 0.019	(0.007)
2002 x Age 35-44	0.037	(0.021)	- 0.020	(0.007)
2003 x Age 35-44	0.043	(0.022)	- 0.012	(0.009)

2004 x Age 35-44	0.007	(0.015)	- 0.010	(0.010)
2005 x Age 35-44	0.034	(0.020)	- 0.021	(0.007)
2006 x Age 35-44	0.018	(0.017)	- 0.021	(0.007)
1993 x Age 45-54	0.010	(0.017)	- 0.012	(0.010)
1994 x Age 45-54	0.034	(0.022)	- 0.012	(0.009)
1995 x Age 45-54	- 0.002	(0.015)	- 0.005	(0.011)
1996 x Age 45-54	0.011	(0.017)	- 0.017	(0.008)
1997 x Age 45-54	0.017	(0.018)	- 0.012	(0.009)
1998 x Age 45-54	0.034	(0.021)	- 0.005	(0.012)
1999 x Age 45-54	0.078	(0.030)	- 0.013	(0.009)
2000 x Age 45-54	0.018	(0.018)	- 0.014	(0.008)
2001 x Age 45-54	- 0.003	(0.014)	- 0.017	(0.008)
2002 x Age 45-54	0.024	(0.019)	- 0.020	(0.007)
2003 x Age 45-54	0.028	(0.020)	- 0.014	(0.009)
2004 x Age 45-54	- 0.011	(0.013)	- 0.014	(0.009)
2005 x Age 45-54	0.018	(0.018)	- 0.022	(0.007)
2006 x Age 45-54	- 0.006	(0.014)	- 0.022	(0.007)
1993 x Age 55-64	0.007	(0.018)	- 0.004	(0.013)
1994 x Age 55-64	0.015	(0.020)	- 0.007	(0.012)
1995 x Age 55-64	0.002	(0.016)	- 0.002	(0.014)
1996 x Age 55-64	0.015	(0.019)	- 0.007	(0.012)
1997 x Age 55-64	0.008	(0.018)	- 0.004	(0.013)
1998 x Age 55-64	0.037	(0.023)	- 0.002	(0.014)
1999 x Age 55-64	0.064	(0.030)	- 0.001	(0.014)
2000 x Age 55-64	0.009	(0.018)	- 0.004	(0.013)
2001 x Age 55-64	- 0.013	(0.013)	- 0.006	(0.012)
2002 x Age 55-64	0.011	(0.018)	- 0.016	(0.009)
2003 x Age 55-64	0.006	(0.018)	- 0.001	(0.014)
2004 x Age 55-64	- 0.018	(0.012)	- 0.003	(0.013)
2005 x Age 55-64	0.005	(0.016)	- 0.015	(0.009)
2006 x Age 55-64	- 0.022	(0.012)	- 0.014	(0.010)
1993 x Medium educated	- 0.007	(0.006)	- 0.006	(0.005)
1994 x Medium educated	- 0.011	(0.006)	- 0.007	(0.005)
1995 x Medium educated	- 0.014	(0.005)	- 0.006	(0.005)
1996 x Medium educated	- 0.019	(0.005)	- 0.007	(0.005)
1997 x Medium educated	- 0.013	(0.006)	- 0.004	(0.005)
1998 x Medium educated	- 0.022	(0.005)	- 0.002	(0.006)
1999 x Medium educated	- 0.018	(0.005)	- 0.007	(0.005)
2000 x Medium educated	- 0.021	(0.005)	- 0.008	(0.005)
2001 x Medium educated	- 0.031	(0.004)	- 0.013	(0.004)
2002 x Medium educated	- 0.023	(0.005)	- 0.007	(0.005)
2003 x Medium educated	- 0.021	(0.005)	- 0.014	(0.004)
2004 x Medium educated	- 0.025	(0.005)	- 0.013	(0.004)
2005 x Medium educated	- 0.032	(0.004)	- 0.017	(0.004)
2006 x Medium educated	- 0.030	(0.004)	- 0.012	(0.004)
1993 x High educated	0.001	(0.008)	- 0.005	(0.006)
1994 x High educated	- 0.008	(0.007)	- 0.006	(0.006)
1995 x High educated	- 0.014	(0.007)	- 0.008	(0.005)
1996 x High educated	- 0.015	(0.007)	- 0.009	(0.005)
1997 x High educated	- 0.011	(0.007)	- 0.006	(0.006)
1998 x High educated	- 0.015	(0.007)	- 0.001	(0.006)

1999 x High educated	- 0.009	(0.007)	- 0.004	(0.006)
2000 x High educated	- 0.015	(0.006)	- 0.007	(0.005)
2001 x High educated	- 0.019	(0.006)	- 0.013	(0.004)
2002 x High educated	- 0.022	(0.006)	- 0.003	(0.006)
2003 x High educated	- 0.016	(0.006)	- 0.008	(0.005)
2004 x High educated	- 0.015	(0.006)	- 0.010	(0.005)
2005 x High educated	- 0.025	(0.006)	- 0.012	(0.005)
2006 x High educated	- 0.020	(0.006)	- 0.007	(0.005)
Log likelihood	- 116704.32		- 52225.42	
# observations	353480		232525	

