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## The impact of military work experience on later hiring chances in the civilian labour market: Evidence from a field experiment

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## **The Impact of Military Work Experience on Later Hiring Chances in the Civilian Labour Market. Evidence from a Field Experiment**

*Stijn Baert and Pieter Balcaen*

**Abstract**

This study directly assesses the impact of military work experience compared with civilian work experience in similar jobs on the subsequent chances of being hired in the civilian labour market. It does so through a field experiment in the Belgian labour market. A statistical examination of our experimental dataset shows that in general we cannot reject that employers are indifferent to whether job candidates gained their experience in a civilian or a military environment.

**JEL** C93 J24 J45 J71

**Keywords** Field experiments, hiring discrimination, economics of defence

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# 1 Introduction

For decades, researchers have been studying the relationship between military experience and (later) civilian labour market outcomes. From a theoretical point of view, following human capital theory both general and specific training received in the military environment, as opposed to that received in the civilian environment, may affect productivity (see, e.g., Bryant and Wilhite, 1990; Hartley and Sandler, 1995). In addition, military experience may also influence one's social capital (Lin, 1999; Portes, 1998). Furthermore, military experience may be used as a screening device for productivity determining physical and psychological traits (De Tray, 1982; Teachman and Tedrow, 2007). Finally, following Becker's (1957) theory on the economics of discrimination, there also exists a taste-based motivation for unequal treatment of workers with a military employment background on the one hand and a civilian one on the other.<sup>3</sup> This last factor may be related to the armed forces' image in the region (both in general and specific as an employer).

The empirical literature on the relationship between military experience and civilian labour market outcomes has focused on the effect of three types of military experience on later civilian wage outcomes: war experience, conscription and regular military work experience. First, the empirical evidence on the effect of fighting in a war on later wage levels is mixed, with findings varying according to the "popularity" of the war under investigation and the socio-economic status of the veteran (Angrist, 1990; Angrist and Krueger, 1994; Berger and Hirsch, 1983; Rosen and Taubman, 1982). Second, studies

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<sup>3</sup> The aforementioned screening theory is closely related to the classical counterpart of Becker's (1957) theory of taste based discrimination, which is the theory of statistical discrimination (Arrow, 1971).

dedicated to the causal identification of the impact of conscription<sup>4</sup> find a neutral or negative effect of this military service on later wage outcomes if it is performed unwillingly and a neutral or positive effect if it is performed willingly (Angrist, 1998; Imbens and van der Klaauw, 1995).<sup>5</sup> Findings on the wage effect of regular military work experience (i.e. working for the armed forces without having any war experience) compared with civilian work experience in similar jobs are mixed and seem to vary according to the particular function performed in the armed forces (Bryant and Wilhite, 1990; Goldberg and Warner, 1987).

The abovementioned studies are limited in two respects. First, as they focus on the wage effects of military experience, they may suffer from selection bias due to non-random selection into employment of workers with and without military experience respectively. In this context, investigating the relationship between military experience and (instead of wages) later, civilian, employment chances is fruitful. However, this approach has received scant attention in the economic literature. With respect to the impact of war experience, D'Anton (1983) reports that white (black) Vietnam veterans had worse (better) hiring chances than comparable non-veterans in the United States. With respect to the impact of conscription, Daymont and Andrisani (1986) find negative effects of conscription in the United States Armed Forces in the 1960s and 1970s on later civilian employment chances. In line with this result, Wing et al. (2009) show that those who had done military service in the United States Armed Forces had higher unemployment rates than those who had not. With respect to the impact of regular military work experience on later civilian employment chances, to the best of our knowledge no empirical evidence is available.

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<sup>4</sup> Conscription was abolished (or suspended) in the US and most European countries during the second half of the 20th century.

<sup>5</sup> An exception to this correlation is Hanes et al. (2010), who find a positive effect on later earnings for subgroups of men involuntarily assigned to military service in Sweden.

Second, all the above studies rely on survey or administrative data. Researchers using these non-experimental data possess far less information than employers making their hiring decision do. According to these data, employees with a civilian employment background may appear similar to those with a military employment background, whereas they may be very different from the employers' perspective. Two exceptions of studies using experimental data are the field experiments conducted by Bordieri and Drehmer (1984) and Kleykamp (2010) in the United States. In the former study, lower employment prospects in the civilian labour market were found for Vietnam veterans. In the latter study, higher prospects were found for Iraq veterans.

To the best of our knowledge, this paper is the first to compare directly the impact of regular military work experience and that of civilian work experience in similar jobs on the chances of being hired thereafter. It reports on a correspondence test in the Belgian labour market.<sup>6</sup> We sent out pairs of fictitious job applications from individuals with two years of relevant work experience to real job openings. The members of each pair differed only by whether their two years of work experience were gained in the military or in the civilian labour market. Consequently, by monitoring the subsequent callback from the employer side, we were able to identify preference for workers with military experience or for those without it.

This article is structured as follows. In the next section we provide the reader with some institutional information on the Belgian Armed Forces. In Section 3 we outline our experimental research design.

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<sup>6</sup> To the best of our knowledge, all studies on the relationship between military experience and subsequent (civilian) employment chances (as opposed to wages) and also all studies using experimental data to investigate the effects of military experience on later labour market outcomes have been conducted in the United States. Our contribution to the literature is therefore even broader in that we provide the first evidence in these two respects for Europe. This is particularly relevant in the light of the differential confidence levels regarding the armed forces in the two regions (cf. *infra*).

Subsequently, in Section 4, we present and discuss the statistical examination of the resulting dataset. A final section concludes.

## 2 Institutional Settings: the Belgian Armed Forces

The Belgian Armed Forces were abruptly established in 1830 as a result of the Belgian revolution of independence. Nowadays they are engaged in both domestic and foreign operations, the latter being conducted under the command of supranational organisations such as the NATO and the UN. They have been fully professional armed forces since conscription was suspended in 1992 – the last conscripts ended their service in 1994. Since the end of conscription the number of active troops has decreased from about 50,000 to about 30,000. These troops are divided into four components: the land component, the air component, the naval component and the medical component. Each component comprises combat units, combat support units and support units. Moreover, all components use the same three military ranks: the rank of “volunteer”, the rank of “non-commissioned officer” and the rank of “officer”, each made up of various subranks. Individuals with a secondary education qualification (or lower) enter the armed forces as a volunteer, those with a Bachelor’s degree as a non-commissioned officer and those with a Master’s degree as an officer.<sup>7</sup> At the start of their career all military ranks attend a training course aimed at giving them the general knowledge and skills needed for their integration in the military environment. The extent of further military training throughout their career depends on the specific function they fulfil. Among combat units, the focus is on military training. Among support

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<sup>7</sup> The first of these qualifications corresponds to the ISCED 3 level, the latter two to the ISCED 5 level. ISCED stands for International Standard Classification of Education.

units, on the other hand, the focus is on various dedicated tasks comparable to those in civilian employment.<sup>8</sup>

To illustrate the possible existence of the armed forces as a screening device and taste-based discrimination against or in favour of ex-military employees, we briefly present some recent statistics on the image of the Belgian Armed Forces (in general and as an employer). Bonneu and Lecoq's (2011) exploration of the (internal and external) image of the Belgian Armed Forces found that 75% of their (Belgian) respondents perceived this image as generally good and 78% were satisfied with the work of the armed forces. These numbers are lower than satisfaction in Belgium with public services such as the fire brigade and the municipal administration but higher than satisfaction with several other services such as the police, the education system and the national railway company. Nevertheless, statistics from the European Values Study (EVS) and the World Values Survey (WVS) show that confidence in the Belgian Armed Forces is rather low when compared with confidence levels in other countries. When asked to rate their degree of confidence in the armed forces, 50% of Belgian respondents answered "not very much" or "not at all", compared with 16% in the United States, 48% in the Netherlands, 44% in Germany and 28% in France.<sup>9</sup> With respect to the armed forces as an employer, Bonneu and Lecoq (2011) show that 85% of the Belgian military are satisfied with their jobs. Furthermore, military personnel are perceived as cooperative (91% of Belgian respondents answered "yes" to the question of whether they are on average cooperative), conscientious (91%) and brave (90%). At the same time a substantial proportion of these respondents believed that the military tend to act in an

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<sup>8</sup> Source: the website of the Belgian Armed Forces (<http://www.mil.be>).

<sup>9</sup> These statistics are based on the most recent information provided at the websites of the European Value Study (<http://www.europeanvaluesstudy.eu>) and the World Value Survey (<http://www.wvsevsdb.com>). The year of data gathering is 2009 for Belgium, 2006 for the United States, 2008 for the Netherlands, 2008 for Germany and 2008 for France.

authoritarian manner (63%), display machismo (33%) and drink too much (30%).

### **3 Methodology**

#### **3.1 Measuring Unequal Treatment by a Correspondence Test**

Correspondence experiments to test for hiring discrimination on grounds such as ethnicity, gender, beauty and sexual orientation have been extensively used and refined during the last century (Bertrand and Mullainathan, 2004; Petit, 2007; Rooth, 2009; Drydakis, 2009). Within these field experiments, pairs of fictitious written job applications are sent to real job openings. The two applications within each pair are similar, except for the single characteristic that is to be tested. By monitoring the subsequent callback, i.e. the reaction from the employer side, unequal treatment based on this characteristic can be identified.

These field experiments have been widely viewed as providing the most convincing evidence of unequal treatment in hiring decisions (Riach and Rich, 2002). Unless such experimental data is used, researchers possess far less data than employers do. Employees that appear similar to researchers based on standard non-experimental data may look very different to employers. With a correspondence test, in contrast, selection on the basis of individual unobservable characteristics is eliminated since all the information received by the employer is controlled by the researcher. Thereby, strict equivalence between fictitious applicants is ensured and employer discrimination is disentangled from alternative explanations of differential hiring rates such as differential employee preferences and network effects.

Our experiment was conducted between November 2012 and May 2013 in Flanders, the northern and economically more prosperous half



of Belgium. Two applications, identical except that one indicated two years of civilian employment experience and the other two years of military employment experience, were sent out to each of 348 vacancies. All these vacancies were taken from the database of the public employment service of Flanders (VDAB), which is the major job search channel in Flanders. From this database, we randomly selected vacancies of private employers requiring no more than two years of relevant work experience, in two (middle-)low-skilled occupations (warehouse worker and administrative clerk) and two (middle-)high-skilled occupations (laboratory and electronic technician).<sup>10</sup> We opted for these occupations because similar occupations exist within the military environment and a sufficient number of vacancies were available. Moreover, all these occupations were characterised by a low degree of customer contact so that potential evidence of unequal treatment could not be related to customer discrimination. Labour market tightness was high for electronic technicians and low for the other occupations.<sup>11</sup> In what follows, we describe the construction of the fictitious job applications and the monitoring of employers' reactions. We end with an overview of the limitations of our design.

### 3.2 Construction of Fictitious Applications

We created two template types (Type 'A' and Type 'B') of resumés and cover letters for each of the four occupations listed in Section 3.1 above, each matching the general requirements of these occupations. Type A and Type B applications were, at the level of the occupation,

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<sup>10</sup> Private companies do not face any administrative difficulties when hiring ex-military employees in Belgium.

<sup>11</sup> In 2012 and 2013, the occupation of electronic technician was on the list of bottleneck vacancies (i.e. vacancies that are difficult to fill) that the public employment service of Flanders publishes each year. The other occupations were not on this list. Moreover, raw measures on the median duration times of vacancies for these others were lower than half that for electronic technician.

identical in all job-relevant characteristics but differed in inessential details and in lay-out. Several example applications of the VDAB, with different fonts and layouts, were used and calibrated for our purposes, so that our applications were realistic and representative.

All fictitious applicants were single males, born, living and studying in one of the suburbs of Ghent, the second largest city of Flanders. The candidates applying for the low-skilled (high-skilled) positions were 20 (23) years old. All candidates had two years of experience in the occupation for which they applied. This experience had been gained in a single job, which had ended in October 2012. In addition, the warehouse workers held a vocational secondary education certificate in woodworking, the administrative clerks a technical vocational certificate in commerce, the laboratory technicians a Bachelor's degree in chemistry and the electronic technicians a Bachelor's degree in electronics.<sup>12</sup> Type A and Type B applicants had all graduated from the same type of school, with a comparable reputation, in June 2010.

In addition we added to all applications the following features: Belgian nationality, Dutch mother tongue, adequate French and English language skills, driving licence, computer skills and summer employment experience. The cover letters indicated a person who was highly motivated and well organised. For the high-skilled candidates, sports club membership and student leadership were also added. Finally, we appended a fictitious postal address (based on real streets in middle-class neighbourhoods) and a date of birth to all applications. The resumé and cover letter templates are available on request.

We sent two applications, one of Type A and one of Type B, to each selected vacancy. In one member of each pair we indicated that the two years' work experience was gained in a private company. In the other, we indicated that this experience was gained in the armed

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<sup>12</sup> The former two degrees correspond to the ISCED 3 level, the latter two to the ISCED 5 level.

forces (without specifying which component) in a supporting unit, at the rank of volunteer for the low-skilled occupations and the rank of non-commissioned officer for the high-skilled occupations. We did not mention any military operations abroad.<sup>13</sup> In order to eliminate any possible effect on callbacks of the application type, we alternately assigned the civilian and the military source of experience to the Type A and Type B applications. Subsequently, we sent the resulting combinations in an alternating order to the employers, each time with about 24 hours in between.

### 3.3 Measurement of Callback

We registered two email addresses and mobile phone numbers, one for the individual with civilian work experience and one for the individual with military work experience. All applications were sent to the employer by email.<sup>14</sup> In order to avoid detection, we applied to no more than one vacancy from the same employer.

Callbacks were received by telephone voicemail or email. The content of the responses is available on request. Since we included postal addresses with a nonexistent street number in the applications, we could not measure callback by regular mail. However, several human resource managers confirmed that nowadays employers rarely, if ever, invite job candidates by regular mail for selection interviews. To minimise inconvenience to the employers, we immediately declined invitations to job interviews. All callbacks received longer than 30 days

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<sup>13</sup> This is realistic given the limited time the candidates had purportedly spent in the military. Besides, nowadays only a small fraction of the Belgian Armed Forces is deployed in foreign missions (at the time of writing, a mere 558 soldiers were deployed over 7 foreign counties).

<sup>14</sup> We chose “Joris Bertels” and “Thomas De Backer” as the names of the candidate with the civilian and the military work experience respectively. We checked that these names did not represent a difference in socio-economic background based on a Dutch study linking the (suffix of the) name parents choose for their children with their (own) wage (Jobat, 2013).

after sending out the application were discounted (this, however, turned out to be an unnecessary restriction since we did not receive any positive callbacks after 30 days).

In our analysis we distinguish between two definitions of positive callback. *Positive callback sensu stricto* means the applicant is invited for an interview concerning the job for which he applied. *Positive callback sensu lato* also includes, in addition to the former definition, the receipt of an alternative job proposal and the request to provide more information or to contact the recruiter.

### **3.4 Research Limitations**

Before reporting and discussing the results of our research, we mention here two limitations in our research design. For an in-depth discussion of the strengths and weaknesses of correspondence tests, see Bertrand and Mullainathan (2004), Pager (2007) and Riach and Rich (2002). For an elaboration on the ethical aspects of this kind of field experiments, see Riach and Rich (2004).

First, our design can be effective only in demonstrating unequal treatment at the initial stage of the selection process. Since we simply measure callbacks for first interviews, we cannot translate our research results into divergences in job offers, let alone into divergences in wages. However, Bertrand and Mullainathan (2004) argue that to the extent that the selection process has even moderate frictions, one would expect that reduced interview rates would translate into reduced job offers and lower earnings.

Second, we test for unequal treatment only within the chosen occupations and only within the vacancies posted on the VDAB database. It is possible that unequal treatment is more or less apparent in sectors other than those covered and is more or less apparent among employers who rely on other channels (such as social networks) for filling their vacancies.

## 4 Results and Discussion

Table 1 presents the main experimental results, adopting the *sensu stricto* definition (Panel A) and the *sensu lato* definition (Panel B) of positive callback. We follow the literature by providing the reader with two statistical measures: the net discrimination rate and the positive callback ratio.

Since two applications were sent to each vacancy there are four possible outcomes: (i) positive callback for neither candidate, (ii) positive callback for both candidates, (iii) positive callback only for the candidate with work experience in a civilian job (“civilian candidate”) and (iv) positive callback only for the candidate with work experience in the armed forces (“military candidate”). Overall, in 76 (112) of the 348 vacancies at least one candidate received a positive callback *sensu stricto* (*sensu lato*). 16 (24) cases resulted in a positive callback for just the civilian candidate and 15 (20) for the military candidate only. The *net discrimination rate* is calculated by reducing the number of applications for which the civilian candidate was preferred by the number of applications for which the military candidate was preferred and this difference is then divided by the number of applications for which at least one of them received a positive callback. Overall the net discrimination rate is 0.01 (0.04) adopting the *sensu stricto* (*sensu lato*) definition of positive callback. Based on a standard  $\chi^2$  test, we cannot reject the hypothesis that the candidates of both employment backgrounds were equally often treated unfavourably.

If the net discrimination rate is broken down by occupation level, we see that, on the one hand, the civilian candidates were treated unfavourably more frequently in the laboratory jobs and that, on the other hand, the military candidates were treated unfavourably more frequently in the jobs for electronic technicians. However, for none of the occupations is the net discrimination rate significantly different from zero.

Table 1: Main Research Results

Occupations	Jobs	Neither candidate positive callback	Both candidates positive callback	Only civilian candidate positive callback	Only military candidate positive callback	Net discrimination rate	$\chi^2$	Positive callback ratio	t
	(No.)	(No.)	(No.)	(No.)	(No.)				
<b><i>A. Positive callback sensu stricto</i></b>									
All occupations	348	272	45	16	15	0.01	0.03	1.02	0.10
Warehouse workers	90	77	6	3	4	-0.08	0.14	0.90	0.24
Administrative clerks	94	87	2	2	3	-0.14	0.20	0.80	0.34
Laboratory technicians	74	49	18	3	4	-0.04	0.14	0.95	0.18
Electronic technicians	90	59	19	8	4	0.13	1.33	1.17	0.66
<b><i>B. Positive callback sensu lato</i></b>									
All occupations	348	236	68	24	20	0.04	0.36	1.05	0.35
Warehouse workers	90	69	7	8	6	0.10	0.26	1.15	0.41
Administrative clerks	94	82	3	5	4	0.08	0.11	1.14	0.27
Laboratory technicians	74	40	28	1	5	-0.12	2.67	0.88	0.66
Electronic technicians	90	45	30	10	5	0.11	1.67	1.14	0.75

The net discrimination rate is calculated by reducing the number of applications for which the civilian candidate was preferred by the number of applications for which the military candidate was preferred and this difference is then divided by the number of application pairs in which at least one received a positive callback. The chi-square test for the net discrimination rate tests the null hypothesis that both candidates are treated unfavourably just as frequently. \*\*\* indicates significance at the 1% significance level, \*\* at the 5% significance level and \* at the 10% significance level.

The positive callback ratio is calculated by dividing the percentage of applications for which civilian candidates received a positive callback by the corresponding percentage for military candidates. The t-test for the positive callback ratio tests the null hypothesis that the probability of a positive answer is the same for candidates from both groups. Standard errors are corrected for clustering of the observations at the vacancy level. \*\*\* indicates significance at the 1% significance level, \*\* at the 5% significance level and \* at the 10% significance level.

The *positive callback ratio* is obtained by dividing the percentage of applications for which candidates with a civilian employment background received a positive callback by the corresponding percentage for the candidates with a military employment background. The values for this statistic presented in Table 1 confirm the findings based on the net discrimination rate. Overall, the positive callback rate following the *sensu stricto* (*sensu lato*) definition is 0.18<sup>15</sup> (0.26) for civilian candidates and 0.17 (0.25) for military candidates. The resulting positive callback ratio is 1.02 (1.05), indicating that the military candidates had to send out on average 2% (5%) more applications in order to get the same amount of positive callback. These ratios are not significantly different from one. The same is true when we break down the positive callback ratio into the various occupational groups. As by construction observable characteristics are equal for both the civilian and the military candidates for each vacancy, regression analysis leads to the same statistical conclusions.

In addition to the statistics obtained by occupation, we also inspected heterogeneity in unequal treatment by the gender of the recruiter (when revealed in the vacancy) as there is evidence that males on average discriminate more when hiring (see, e.g., Carlsson and Rooth, 2007) than females and as the image of the armed forces (in general and as an employer) may differ according to gender. We also investigated heterogeneity by the province of the employer, as it was possible that confidence in the armed forces correlated with the concentration of military bases in the province. However, we find no statistical evidence for heterogeneity in unequal treatment of civilian and military candidates along these dimensions.

Furthermore, following Kaas and Manger (2012), we checked how long civilian and military candidates had to wait for the employer's reaction. Overall, a callback was, on average, received after 4.93 days when positive (*sensu lato*) and after 7.80 days when not positive. An

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<sup>15</sup>  $0.18 = (45 + 16)/348$ .

applicant with a military background waited on average slightly longer for a positive callback (duration of 5.48 days versus 4.41 days for an applicant with a civilian employment background). For non-positive callback, the difference in durations was even smaller (7.70 days for military background applicants and 7.89 for civilian background applicants). Neither difference is significant.

The upshot of our results is that we do not detect any statistical evidence for unequal treatment in the civilian labour market of job candidates with similar prior work experience gained in a private company on the one hand and in the armed forces on the other. At least for the occupations under investigation in the Flemish labour market, characteristics which may count in favour of or against candidates with a military background related to (perceived) physical and psychological traits, training, social capital, image of the armed forces and closeness to the civilian labour market either seem to have no important effect on hiring decisions or to counterbalance each other out. This conclusion is relevant from a policy point of view because military personnel, in a job market in which, as in Belgium and other OECD countries, on the one hand, the armed forces are undergoing substantial cutbacks and, on the other hand, ageing workforces are resulting in increasing demand in the civilian labour market, will have incentives to make a transition to the civilian labour market. Based on our results this transition should, at least for young military personnel in supporting functions, not be hampered by employer discrimination. Stated otherwise, an individual's choice of a professional engagement within the armed forces should, in this respect, not stand in the way of a later civilian career in similar occupations. In addition, from a broader perspective, policy investments aimed at enhancing equal treatment in the labour market should in the first place be targeted at other areas (based on the substantial evidence of discrimination found in the literature).



## 5 Conclusion

To the best of our knowledge, this study is the first to directly assess the impact of regular military work experience compared with civilian work experience in similar jobs on subsequent employment prospects in the civilian labour market. Having sent out 696 fictitious job applications differing only in source of job experience to real vacancies in the Belgian civilian labour market and having analysed the results of this exercise, we cannot reject the hypothesis of equal treatment of candidates with a civilian employment background and candidates with a military employment background.

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