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EVALUATION

**Should sickness insurance and
health care be administrated
by the same jurisdiction?
An empirical analysis**

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Should sickness insurance and health care be administrated by the same jurisdiction? An empirical analysis ^a

by

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Abstract

Sweden has obligatory sickness and disability insurance which is both financed (from payroll taxes) and administered by the government. In order to receive sickness benefits, insured individuals must have certificates issued by a medical doctor. Since health care is administered at the county level, this means that monitoring is, to some extent, decentralized at a lower jurisdictional level than the funding and governance of the insurance. This paper studies one consequence of such decentralization: the effect on individual sickness absence when such certificates are not approved by the Sickness Insurance Agency (SIA) and are instead re-remitted to the doctor for completion and, potential, reapproval by the SIA. We find that this re-remission increases the length of sickness absence spells by an average of 30 percent. A suggestive test of the reason for the observed effect indicates that it is due to a decrease in health caused by increased stress related to the uncertainty about entitlement and future sickness benefits. Given that added resources improve the quality of the patients' medical certificates, directed intergovernmental grants from the state to the counties would be cost saving.

Keywords: Monitoring, moral hazard, public social insurance, cost-benefit, intergovernmental grants.

JEL-codes: H51, H55, J22

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1 Introduction

Sweden has obligatory sickness and disability insurance which is both financed (from payroll taxes) and administered by the government. In order to receive sickness benefits from the Sickness Insurance Agency (SIA) the insured individual must have a certificate issued by a medical doctor (MD). For the government, it is important to have low and stable take-up rates as this ensures sustainable funding of the insurance. Health care is, however, administered at the county level, which means that monitoring is, to some extent, decentralized at a lower jurisdictional level than the funding and governance of the insurance. The advantage of this decentralization is the low cost to the government for monitoring. However, as the objective of health care providers is to allocate resources according to needs, rather than taking potential economic costs for the individuals or costs to the society into account, this may lead to the non-optimality (for government or society) of the amount of resources spent on monitoring the sick-listed individuals.

For the government it is important to have well-motivated certificates, as this reduces the monitoring cost for the SIA caseworkers. Writing well-motivated certificates may take time from the doctors' main tasks. Since there is no special time devoted to the writing of certificates the motivation for spending time on the documentation and formulation of high quality certificates is often limited (see e.g. Alexanderson et al. 2009). If a case-worker does not have the necessary information in the certificate, he/she can re-remission the certificate back to the MD for completion. In addition to the extra cost for caseworkers and doctors, the re-remission process also incurs costs for the sick-listed individual as there are uncertainties about the payments of sickness benefits during the completion period. This could cause stress and potentially lead to longer sickness absences for the affected individual.

The purpose of this paper is not to perform a cost–benefit analysis of the decentralized monitoring system. It is rather more limited. The purpose is to analyze whether there are costs for the sick-listed individuals from having low quality certificates or, more precisely, of having the certificate re-remitted to the MD. If referring a certificate back prolongs the sickness absence there could be gains for both the government and for society to introduce

incentives for doctors to write better certificates. To this end we use combined register and survey data. We find that the re-remitting is correlated with the quality of the certificate, and moreover the length of the spell. Thus, this study also provides some evidence about the consequences of certificate quality. As far as we know, this is the first paper that addresses these issues. There are, however, previous studies of the quality of medical certificates. The main conclusion from these studies is that the provided information often is insufficient and of poor quality (see e.g. Einarsson 2007). It has also been shown that doctors find it difficult to carry out their function as gatekeepers (see e.g. Arrelöv 2003, Englund 2008). Patients may claim sickness absence for very vague symptoms and the MD may have very limited knowledge about the patients' job, so the degree of reduced work capacity may be difficult to assess. Furthermore, MD's have in general a limited knowledge of sickness and disability insurance regulations and on how the certificates are being used (e.g., by case workers) (SBU 2003).

We begin the paper by documenting that when we control for the diagnosis of the sick-listed individual there are no mean differences across socioeconomic status in re-remitting rates and quality. Next, we study the effect of requirement of completion on sickness absence. We find that the re-remitting on average prolongs the sick-spell by approximately 30 percent. Our data allows us to perform suggestive tests of the reason for the observed effect. The results from these informal tests lead us to believe that the effect is due to decreased health caused by an increased stress related to uncertainty concerning current and future sickness benefit entitlement.

The yearly cost of low quality certificates in Uppsala County is approximately 10 million (M) US\$ (72 M Swedish kronor (SEK)). The yearly cost of doctor visits related to sickness absence is around 4 M US\$. This suggests that giving doctors more in-patient time by, for instance, providing intergovernmental grants for high quality certificates would recoup these costs.

The remainder of this paper is structured as follows. Section 2 gives a brief summary of the Swedish sickness insurance system and the sick-listing process; Section 3 presents the empirical setup together with a description of the data; Section 4 gives the results together with a short discussion of the economic consequences; Section 5 concludes.

2 The Swedish sickness insurance system

The sickness insurance system replaces income for individuals who cannot perform their usual work because of temporary illness. The level of sickness benefits and the employer's liability for sickness benefits has fluctuated in recent years. At the time of this study, employer's pay sickness benefits were equivalent to 80 percent of the worker's salary subject to a ceiling of \$90 (655 SEK) per day during days 2–14 of the period of sick leave (SIA 2008). After this period the responsibility for sickness benefits is transferred to the SIA.

During the first seven days of a sick leave, it is up to the individual to decide whether (s)he is ill and the extent to which this warrants absence from work. The individual merely has to inform the employer or the SIA that (s)he is sick. As of the eighth day, a medical certificate is required. For sick leave that continues longer than two weeks, the employer notifies the SIA that the sick leave will continue. The SIA sends a letter to the insured with a form and a request for a medical certificate. A medical certificate is required for continued payment from the SIA (see Appendix A for an example of a medical certificate). The doctor indicates in the certificate the length and extent of the sick leave needed. Based on the medical certificate, the SIA determines the right to sick leave—a process that normally takes one to two weeks after the end of the employer period. When this first sick leave period with benefits from the SIA has expired, a renewal certificate is issued if necessary. The renewal certificate is also sent to the SIA and a new assessment about the right to sickness benefits is conducted. If the renewal certificate expires and the insured is still sick, the process is repeated.

Based on the information in the medical certificate the SIA decides whether the illness causes reduced work capacity. For those who have a job, the reduced work capacity is based primarily on their current job. For those who are unemployed the reduced work capacity should be assessed against jobs ordinarily available in the labor market. However, the proportion of cases in which the SIA decides against the doctor's recommendation is small. During 2006, the request for sickness benefits was rejected in 1.5 percent of all new cases. The percentage of rejections increased to 1.7 percent in 2008 (SIA 2007).

The assessment of entitlement is based on a guide (SIA 2004). The guide describes what information must be included in the medical certificate for the individual to be entitled to sickness benefits and to enable assessment of the need for rehabilitation. The SIA uses a support method in working with sick leave where a distinction is made between information that is “mandatory” and that which is “desirable” in the medical certificate. In situations where the case worker finds that the medical certificate does not contain sufficient information, they should re-remission the certificate back to the MD for completion.

Mandatory information is: the patient’s name and social security number, the MD’s name and clinic/office hours, the diagnosis or symptoms which are the basis for the reduced work capacity, and the diagnosis code according to ICD-10¹. In addition there should be a description and medical assessment of the reduced work capacity. The doctor must also indicate findings from their examination in support of the diagnosis and the assessed requirement for vocational rehabilitation, if any. The medical certificate must also state whether the doctor’s information is based on personal contact, telephone contact, journal entries, or other sources. The doctor should also give reasons why part-time sick leave (i.e., 25 percent, 50 percent or 75 percent reduced work capacity) and/or workplace rehabilitation is not possible. Finally, there should be a prognosis as to the insured’s potential for regaining the capacity to work. Included under “desirable” information are such things as case history, i.e., the insured’s description of the illness and events that might have caused it (SIA, 2004). The Social Insurance Agency is not able to make a decision about eligibility if any of the *compulsory* information is missing and thus, the certificate should be referred back to the MD. In connection with the requirement of more information by the MD, the claimant is informed that his/her certificate has been returned to the MD and that no decision about sickness benefits can be made until the certificate is completed.

A return of the medical certificate means that the sick-listing process comes to a halt. Until a complete certificate reaches the case worker at the SIA, no decisions can be made about sickness benefit eligibility or potential rehabilitation. This may result in a locking-

¹ICD-10, “International statistical classification of diseases and related health problems, tenth revision” is a coding of diseases and signs, symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or diseases, as classified by the World Health Organization (WHO).

in effect for the claimant, thereby prolonging the absence spell. However, it is not fully apparent how important waiting time is for sick-absence. From Alexanderson et al. (2005) it may be concluded that physicians, as well as other occupational groups in the medical service, believe that waiting times do have consequences for patients. The waiting times are mostly associated with reappointment, treatment, and rehabilitation but also contact with case workers are considered problematic. Another negative aspect is that the uncertainty concerning entitlement may lead to the increased stress about potentially not receiving sickness benefits. This may affect the sick-listed individuals health negatively, thus prolonging the sickness absence.

3 Data

In this study we use data from two evaluations conducted by local social insurance office in the county of Uppsala. The aim of these evaluations was to examine the quality of medical certificates received by the office (see Appendix A for an example certificate). The reviewers examined all certificates received by the social insurance office in Uppsala during a two week period in 2006 and 2007. These certificates contain detailed information about diagnosis, recommended length of sickness absence, issuer, and, most importantly, information about whether the certificate was re-remitted for completion or not.

Certificates that contain all *compulsory* information are considered to be of *High Quality (HQ)* by the reviewers. No consideration was given to the information contained in such certificates.

The first evaluation took place during March 13–24 2006. During this period 786 certificates were collected and reviewed (Claesson 2006). In the other evaluation, 1,127 certificates were examined during March 5–16 2007 (Einarsson 2007). In total, we have information on 1,913 certificates, concerning 1,239 individuals. As certificates for prolonging a sickness absence spell are very different from new sick-listing, we removed these certificates from the analyses. After removal of the renewal certificates, 974 certificates remained. Out of these, 143 were re-remitted for completion.

We match (via a personal identification number) the information from the certificates

with data from a set of administrative registers compiled by Statistics Sweden and the SIA. The data contains, beside a set of individual background characteristics, information about the total length of the sickness absence for the individual in connection with the studied certificate.²

3.1 Descriptive statistics

Table 1 presents descriptive statistics for the socioeconomic and sickness-spell specific variables culled from the certificate. The descriptive statistics are presented separately for the group of individuals with re-remitted (column 2) and not re-remitted (column 1) certificates and for *HQ* (column 3) and not *HQ* (column 4) certificates.

From the top panel of *Table 1* one can see that the only statistically significant differences in means between the individuals with re-remitted and not re-remitted certificates concerns *education unknown*.³ From the bottom panel, where we have the sickness-spell specific variables, we find several statistically significant mean differences between the groups (see columns 1–2). For instance, the share of unemployed individuals is larger in the re-remission group. This difference comes as no surprise. It is, most likely, more difficult to assess the work capacity for unemployed individuals as their work capacity should be evaluated against the whole labour market.

Furthermore, re-remitted certificates are more often issued by occupational health care centers and less often issued at hospitals. One potential explanation for these mean differences is that patients in occupational health care centers have illnesses with more vague diagnoses than patients from hospitals. In this case, the work capacity in relation to the diagnosis needs to be better documented. In the bottom panel, the diagnosis distribution is presented: the share of certificates with (i) mental and behavioral disorders (*behavioral*), (ii) musculoskeletal system and connective tissue disorders (*musculoskeletal*), (iii) other disorders (*other*) and (iv) *diagnosis missing*.

We can see that the share with a *behavioral* diagnosis is almost three times as large for the re-remission group than for the non re-remission group and that there are statistically

²Remember that the studied medical certificate is just the first certificate, hence the subscribed length in this certificate does not need to be the length of the sickness absence. The individuals are allowed to return early to work but can also stay on longer by using a prolonging certificate

³It is worth pointing out that the level of education is unknown only for three individuals in the sample.

significant smaller shares of *other* disorders in the re-remission group than in the non re-remission group. Since behavioral diagnoses often are vague, this result was expected.

Turning to the quality indicator (columns 3 and 4), in *Table 1* we find unexceptionable many *HQ* certificates in the municipality of Tierp. Looking at the sickness-spell specific variables, we find a somewhat different pattern compared to the re-remission–non re-remission differences. The recommended sick leave is significantly shorter among the *HQ* certificates while there is no difference in employment status. *HQ* certificates are more often issued by occupational or primary health care physicians, and less often issued at a hospital. It is worth noting that for some of the *HQ* certificates, the issuer is unknown. The reason why these certificates still are judged as *HQ* could be that the reviewer was uncertain to what category the issuer belonged, and therefore reported it as unknown (Einarsson 2007).

Looking at diagnoses, we see that the share of *behavioral* and *musculoskeletal* diagnoses are significantly higher among the *HQ* certificates. These differences could potentially stem from the fact that MDs know from experience that the caseworkers are stricter when it comes to these diagnoses. By being extra thorough when completing the certificate, MDs might hope to avoid a requirement of re-remission. It is slightly surprising that there is no statistically significant difference between the groups when it comes to *missing* diagnosis. A possible explanation of this is that the diagnosis may be indicated somewhere else on the certificate.

Table 1: Descriptive statistics of socioeconomic variables

	Re-remitted		HQ	
	No	Yes	No	Yes
Men	0.39	0.36	0.41	0.37
Age	45.5 (11.8)	43.8 (12.0)	45.3 (12.1)	45.2 (11.7)
Married	0.49	0.50	0.50	0.48
<i>Municipality</i>				
Uppsala	0.51	0.44	0.50	0.50
Häbo	0.081	0.098	0.082	0.084
Älvkarleby	0.031	0.035	0.037	0.028
Tierp	0.073	0.063	0.045**	0.091**
Enköping	0.13	0.15	0.15	0.13
Östhammar	0.078	0.10	0.097	0.072
Heby	0.026	0.049	0.037	0.024
Knivsta	0.045	0.035	0.037	0.047
Children 0–3	0.12	0.13	0.11	0.13
Children 4–6	0.097	0.11	0.085	0.11
Children 7–10	0.097	0.12	0.11	0.096
Children 11–15	0.20	0.22	0.18	0.21
Children 16–17	0.088	0.070	0.065	0.100
Children in household	0.39	0.44	0.38	0.41
Primary School	0.19	0.18	0.20	0.18
High School	0.54	0.48	0.54	0.53
Upper Secondary	0.27	0.32	0.26	0.29
Education unknown	0.0012*	0.014*	0.0025	0.0035
Full time sick leave	0.87	0.85	0.89	0.86
Rec. sick-listing (days)	28.4 (25.3)	32.3 (28.2)	31.1* (26.8)	27.5* (25.0)
Unemployed	0.060*	0.11*	0.052	0.079
<i>Issuer</i>				
Occupational physician	0.057*	0.10*	0.045*	0.077*
Hospital physician	0.37**	0.24**	0.42***	0.30***
Primary Healthcare physician	0.39	0.47	0.30***	0.47***
Private physician	0.084	0.077	0.065	0.096
Issuer unknown	0.097	0.10	0.17***	0.051***
<i>Diagnosis type</i>				
Behavioral	0.13***	0.34***	0.11***	0.19***
Musculoskeletal	0.25	0.24	0.22*	0.28*
Other diagnosis	0.61***	0.41***	0.65***	0.53***
Diagnosis missing	0.011	0.0070	0.017	0.0052
observations	974		974	

Note: mean coefficients; standard errors in parentheses. *, ** and *** indicate significance at 10, 5 and 1 percent level, respectively.

3.2 Whose certificate is re-remitted?

A requirement for re-remission of a certificate is at the discretion of the case worker at the SIA. Because of this, there is a potential problem that the requirement of re-remission is being based on individual characteristics because of e.g. statistical or preference discrimination.

In *Table 2* we cross-tabulate *re-remitted* against *HQ*, where *re-remitted* takes the value 1 if the certificate is re-remitted for completion and 0 if not, and *HQ* takes the value 1 if the certificate is a *HQ* and 0 if not. The result from the cross tabulation is shown in *Table 2*. We see that the variables are not highly dependent.⁴ The χ^2 - test of independence is statistically significant at the 10 percent level only. As shown from this table, only about 59 percent of the certificates in the sample contains all compulsory information. In spite of this, only about 15 percent of the certificates are re-remitted. 7.7 percent of the *HQ* certificates are re-remitted in contrast with about 7 percent of the non *HQ*. This result is however not surprising since *HQ* is, basically, a minimum level of quality, often more information than this is needed for the entitlement decision. The reason for the 51 percent of certificates not re-remitted despite not being *HQ* is more difficult to explain. Einarsson (2007) suggests that the case worker could have received information from other sources than the certificate⁵, allowing the case worker to make a decision about entitlement.

Table 2: Distribution between level and treatment

		Re-remitted		Total
		No	Yes	
⊖	No	34.29	6.98	41.27
⊕	Yes	51.03	7.70	58.73
Total		85.32	14.68	100.00
chi2	2.727			
p	0.0987			

In order to study the more interesting conditional dependence (i.e., the dependence of the quality and re-remission when conditioning on the covariates) and to study if the decision of re-remission depends on socioeconomic factors (suggesting discrimination)

⁴We have also estimated a regression model where we regressed HQ on Re-remission and R^2 is only 0.7 % in the regression.

⁵For instance from the claimant, their employer, or from the certificate, just not from the designated box.

we estimate three different logistic regression models.

The first model includes all socioeconomic and sickness-spell specific variables (see *Table 1*), except diagnosis and *HQ*. The second model adds the diagnoses and in the third model we also include *HQ*.

The first column of *Table 3* presents the odds ratio from the first model specification. We can see that *age*, *education unknown*, *unemployed* and *recommended sick-listing* are statistically significant. Older individuals' certificates are less likely re-remitted while certificates for *unemployed*, those with *education unknown* and with long *recommended sick-listing* are more likely to be re-remitted for completion. However when we add the diagnosis (see column 2), all individual factors except *education unknown* are statistically insignificant and only certificates with a *Behavioral* diagnosis are more often re-remitted. In other words, when conditioning on relevant information about the sickness, the claimant's socioeconomic background does not influence the caseworker's decision. The result that certificates with a behavioral diagnosis are more often re-remitted for completion than other certificates, all else being equal, is not very surprising. Behavioral diagnoses could be characterized as more diffuse and vague than other diagnoses. Previous studies have also found large variation in MD's sick-listing practices for these particular diagnoses. There is also a lack of knowledge of adequate treatments and rehabilitation for many behavioral diagnoses (Alexanderson et al. 2005, SBU 2003, Socialstyrelsen 2003). From the third column of *Table 3* we can see that when controlling for relevant socioeconomic variables as well as variables from the specific sickness absence, the *HQ* certificate has a significantly lower probability of being re-remitted.

To conclude, we find no support for the hypothesis that the individual's socioeconomic background affects the discretionary decision of re-remission by the caseworker. There is a strong conditional association between *HQ* and *re-remitted* which is why we believe *re-remitted* provides a (noisy) measure of the quality of the medical certificates.

Table 3: Probability of re-remission

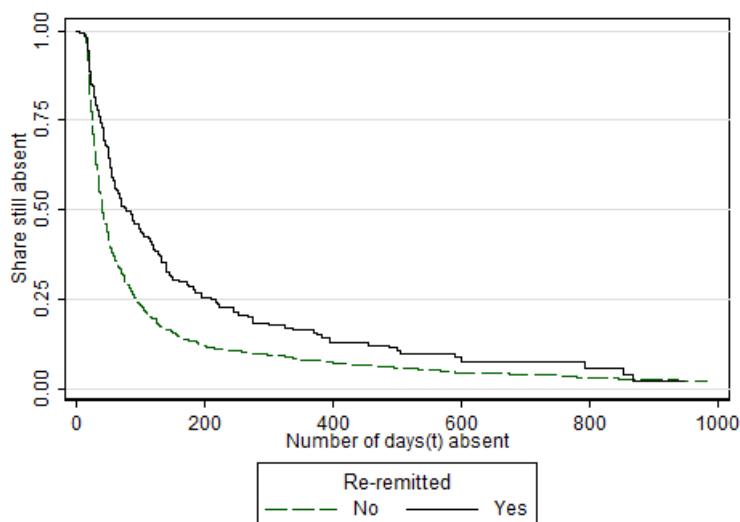
	(1) Re-remission	(2) Re-remission	(3) Re-remission
Age	0.981* (0.00917)	0.982 (0.00953)	0.983 (0.00959)
Men	0.934 (0.189)	0.923 (0.189)	0.918 (0.189)
High School	0.831 (0.216)	0.827 (0.220)	0.845 (0.227)
Upper Secondary	1.272 (0.372)	1.182 (0.357)	1.218 (0.371)
Education unknown	12.65* (16.16)	18.90* (24.42)	20.92* (27.04)
Unemployed	2.002* (0.641)	1.639 (0.544)	1.696 (0.568)
Primary Healthcare physician	1.411 (0.520)	1.307 (0.492)	1.303 (0.491)
Occupational physician	2.109 (0.979)	1.559 (0.741)	1.517 (0.723)
Hospital physician	0.593 (0.228)	0.725 (0.287)	0.675 (0.268)
Issuer unknown	0.958 (0.425)	1.023 (0.463)	0.837 (0.386)
Full time sick leave	1.130 (0.315)	1.165 (0.327)	1.128 (0.316)
Rec. sick-listing	1.021* (0.00896)	1.015 (0.00911)	1.014 (0.00921)
Behavioral		3.484*** (0.868)	3.735*** (0.944)
Musculoskeletal		1.294 (0.319)	1.345 (0.335)
Diagnosis missing		0.934 (1.018)	0.849 (0.923)
HQ			0.601* (0.124)
Observations	973	973	973

Note: Odds ratio; Standard errors in parentheses. *, ** and *** indicate significance at 10, 5 and 1 percent level, respectively.

4 Re-remission and sickness absence

This section estimates the impact of a re-remission for completion on sickness absence. *Figure 1* shows the estimated Kaplan and Meier survival functions for the samples of re-remitted and non re-remitted certificates, respectively (Kaplan & Meier 1958). From the figure we can see that from day 20 of the sickness absence spell, the survival function for the individuals with re-remitted certificates is above that for individuals with certificates that are not re-remitted. This implies that the duration of sickness absence is, on average, longer for individuals with a re-remitted certificate compared to those whose certificates are not re-remitted. If treatment is the only thing differentiating the two groups, the difference between the survival functions could be interpreted as the effect of re-remission on the sickness absence duration. However, we have learned from Section 3 that there are observable differences between the two groups. These differences may also affect the sickness absence. In the following sub-section we will control for these observed differences by estimating Cox proportional hazard models (Cox 1972).⁶

Figure 1: Fraction still absent due to sickness.



⁶The model is semiparametric since the baseline hazard (the hazard in the absence of a re-remission requirement) does not need to be specified. An advantage of this model/estimator is that it allows right censored data, i.e., claimants whose sick-spell has not ended during the observation (until Sept. 2008). 3.7 percent of the sample is right censored. Estimation is performed with a partial maximum likelihood estimator.

4.1 Estimation and results

Table 4 show the estimated effect from three different model specifications. The estimations are presented as hazard ratios, i.e., the relative risk of ending a sick spell.

In the first specification, the Cox regression model is estimated without any control variables. With this specification, re-remission reduces the probability of ending a sickness-absence by, on average, 30 percent.

A key assumption in the proportional hazard model is that the hazards of the two groups are proportional at all durations. We know from *Table 1* that *recommended days of sick-listing* on average is longer among the re-remitted certificates than among the non re-remitted ones. Recommended days could be viewed as a proxy for the severity of the illness, i.e., the longer the recommended sick-listing, the worse the illness. Hence, we find it plausible that the length of the sick-listing recommendation influences the probability of ending the sick-spell on a given day, all else equal. Thus, this violates the proportionality assumption. In order to handle this potential problem we stratify on *recommended days of sick-listing*. That is to say that we allow for separate baseline hazard functions for each value of the variable. Using this within recommended sick-listing variation enables us to compare the duration of re-remitted and non re-remitted individuals. The result from this stratified analysis is shown in column 2. From this column we can see that the estimate gets slightly smaller, i.e., the re-remission effect increases.

For the last model specification we also add the control variables displayed in *Table 1* into the model. The estimates from the stratified partial maximum likelihood estimator, including all control variables, are presented in column 3 of *Table 4*.⁷ Based on these results we conclude that re-remitting the certificate for completion reduces the probability of ending a sick-spell by approximately 28 percent.

⁷The key assumption of proportionality is tested by analyzing the Schoenfeld residuals by following the generalization by (Grambsch & Therneau 1994). The resulting test shows that the proportional hazard assumption cannot be rejected.

Table 4: Estimates of the effect of re-remission using Cox proportional hazard method.

	(1) No controls	(2) No controls†	(3) Controls†
Re-remission	0.682*** (0.0638)	0.658*** (0.0704)	0.716*** (0.0805)
Observations	974	973	973

†Stratified on recommended sick-listing.

Note: Hazard ratios. Controls include gender, marital status, number of kids in different age groups, level of education, immigrant status, age, residence municipality, employment status, diagnosis group, certificate issuer, recommended sick-listing, and degree of sick leave (full time / part time). Standard errors in parentheses. *, ** and *** indicate significance at 10, 5 and 1 percent level, respectively.

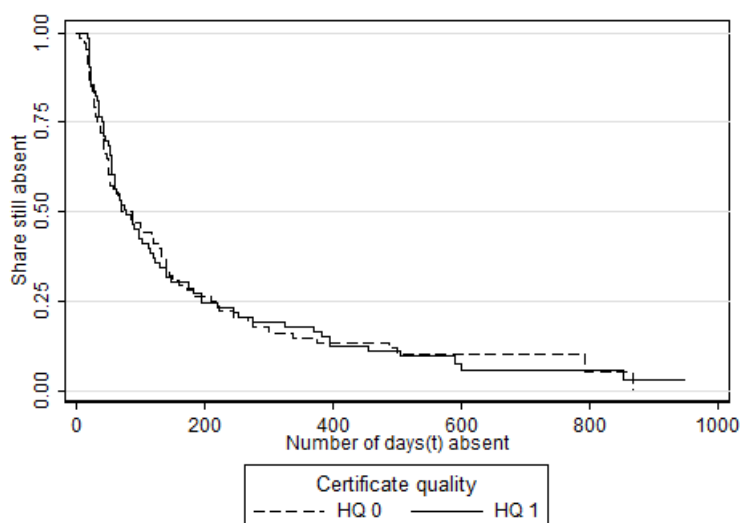
4.2 What drives the results?

We think of two, non-exclusive, reasons why the re-remission has such a large effect on the duration of the sickness absence. The first possible reason is that any decisions about rehabilitation or workplace adjustments cannot be made until the SIA has determined the entitlement. Thus, the re-remission could have a locking-in effect. The second possible reason is that individuals' health may be affected when they are informed that their certificates are re-remitted for completion. This information may create an uncertainty about the payment of sickness benefits and this could affect their health, which in turn may affect the length of the sickness absence. Below, we suggest two informal tests of these hypotheses.

The locking-in effect is tested by estimation of separate survival functions and hazard regression models for HQ equal to one and zero, respectively. The idea is the following: in contrast to the high quality certificates, the low quality certificates lack some compulsory information. A re-remission of a high quality certificate is thus more likely to depend on things that can be difficult to assess (e.g., how the patient's condition restricts their work ability or why they need to be on full time sick leave) and, hence, takes more time for the MD to do. This type of re-remission should reduce the outflow more from the sickness absence if the effect is due to a locking-in effect.

Figure 2 displays the estimated survival functions based on the two classes of referred certificates. As before, we use the Kaplan–Meier estimator to estimate the survival functions (Kaplan & Meier 1958).

Figure 2: Fraction still absent due to sickness.



The estimates from the proportional hazard model are presented in *Table 5*. We see that the estimate is positive when the controls are excluded from the model and negative when they are added. Neither of them, however, are statistically significant. Thus, we find no support for the hypothesis of a locking-in-effect.

Table 5: Estimates of the effect of HQ-certificates, conditional on re-remission, using Cox proportional hazard method.

	(1) No controls	(2) Controls
HQ	1.140 (0.309)	0.986 (0.237)

Note: Hazard ratios. Stratified on recommended sick-listing. Controls include gender, marital status, number of kids in different age groups, level of education, immigrant status, age, residence municipality, employment status, diagnosis group, certificate issuer, recommended sick-listing, and degree of sick leave (full time / part time). Standard errors in parentheses. *, ** and *** indicate significance at 10, 5 and 1 percent level, respectively.

If the results are caused by stress due to the uncertainty about sickness benefit entitlement, we believe that the re-remission effect should be larger for those with stress related or behavioral disorders. We test this hypothesis by estimating separate proportional hazard models for each diagnosis group. The results are presented in *Table 6*. From this table we see that the effect is large and statistically significant for those with a behavioral diagnosis. The hazard rate from sickness absence decreases by about 57 percent on average for this type of diagnosis if the certificate is re-remitted. This effect is almost twice as large as in the main analysis. For those with an *other diagnosis* the re-remission

effect is also negative and statistically significant, while the estimate is positive but insignificant for those with a musculoskeletal diagnosis. These results support, though not conclusively, the idea that the re-remission effect stems from a health effect.

Table 6: Estimates of the effect of re-remission using Cox proportional hazard method, divided by diagnosis.

	(1) Behavioral	(2) Musculoskeletal	(3) Other diagnosis
Re-remission	0.428* (0.146)	1.142 (0.357)	0.603** (0.113)

Hazard ratios. Stratified on recommended sick-listing. The regression include controls for gender, marital status, number of kids in different age groups, level of education, immigrant status, age, residence municipality, employment status, diagnosis group, certificate issuer, recommended sick-listing, and degree of sick leave (full time / part time). Standard errors in parentheses. *, ** and *** indicate significance at 10, 5 and 1 percent level, respectively.

4.3 Economic cost of re-remission

The yearly cost for Uppsala County, in terms of added sickness benefits, for re-remitting medical certificates back for completion is calculated to be \$10M (72 M SEK).⁸ This is almost 7 percent of the total sickness benefits paid out in Uppsala County.⁹ The yearly cost of doctor visits related to sickness absence is around \$3.8M (27 M SEK).¹⁰

The average consultation time with a MD, including administrative work, was estimated to 32 minutes (Socialstyrelsen 2005). Assuming that by increasing the consultation time by 10 minutes, MDs should be able to properly fill in the certificates and thus reduce the need for re-remission by 50 percent.¹¹ For Uppsala County this would imply an increased yearly cost of \$1.2M (8.6 M SEK). This is considerably lower than the estimated cost of \$5M (36 M SEK) from prolonged sickness absence due to re-remitted certificates.

⁸Re-remitted sick spells have an expected duration of 180 days. The expected duration for the non-completion group is 116 days, a difference of 64 days. Taking the year 2006 as reference, there are 17,325 sick spells requiring a medical certificate. Fourteen percent (see *Table 2*) of these certificates are expected to be re-remitted for completion. This means that 2245 ($0.14 \times 17,325$) certificates are estimated to be sent back for completion. The average sickness benefit during the period was \$64 (464 SEK).

⁹During 2006, Uppsala County paid out almost \$148 M (1,070 M SEK) in cash sickness benefits (SIA 2011-11-26).

¹⁰According to The Swedish Medical Association about 15 percent of all visits to primary health care physicians are related to sickness insurance (Jansson & Johansson 2003). In Uppsala County, the number of visit in 2006 was 303,331 (SKL 2007). This means approximately 45,500 ($0.15 \times 303,331$) visits to primary health care are related to sickness insurance. The average cost of a doctor's visit in 2006 was \$84 (604 SEK) (Socialstyrelsen 2005).

¹¹We consider re-remission as the lower bound of certificate quality

This then implies that there is room to allocate more working time for doctors for writing clear and well motivated certificates.

Since time is restricted, it is possible that MDs are unable to increase the consultation time and still fulfill their obligation to the other patients. Instead, the county could hire more MDs. The yearly cost of a full time MD was \$117,000 (842,000 SEK) in 2006.¹² Even though other costs, such as administrative staff and local cost, may occur there is a still opportunity to allocate more working time for writing certificates and hire more MDs.

A directed intergovernmental grant with the aim of increasing the quality of the certificates would most likely mitigate the spillover effect and reduce the total cost for sickness absence in society.

5 Conclusions

Sweden has an obligatory sickness and disability insurance which is both financed (from payroll taxes) and administered by the government. However, in order for a sick individual to receive sickness benefits, (s)he needs a medical certificate issued by a MD. Based on the information in the certificate, a caseworker at the SIA decides whether the illness cause a reduced work capacity or not. If the caseworker does not have the necessary information in the certificate, they can re-remitted the certificate back to the doctor for completion.

The main purpose of this paper has been to estimate the effect on sickness absence duration of having the medical certificate re-remitted to the doctor. The main result is that if a certificate is re-remitted, the sickness absence duration increases by on average 28 percent. Why do we find these large effects? We informally test for two causes: (1) decisions about rehabilitation or adjustments of the work place cannot be made until the SIA has determined the claimant's eligibility. In this context, the re-remission could be considered as a locking-in effect; and (2) the uncertainty concerning eligibility affects the recipient's health, thereby prolonging the sickness absence spell.

¹²A monthly wage of \$6958 (50,100 SEK) plus taxes (SCB 2012).

The locking-in effect is tested by estimating separate hazard regression models for those certificates that contain all compulsory information and for those who do not. The idea is that it should be easier to complete a certificate that lacks some compulsory information than certificates that contain all the compulsory information. A re-remission of a certificate that contains all the compulsory information is more likely to depend on things that can be more difficult to assess and, hence, take more time for the MD (e.g., how the patient's condition restricts their work ability, or their need to be on full time sick leave). We find no support for this hypothesis.

The health effects hypothesis is tested by estimation of separate models for those with behavioral disorders or not. The idea is the following: if uncertainty about entitlement to sickness benefits affects the health status and thereby prolongs the sickness absence, we believe that this effect would be largest for those with a stress related or behavioral diagnosis. We find that the conditional probability of ending a sick-spell is 57 percent lower if the certificate is re-remitted for an individual with a behavioral diagnosis. The re-remission effect is almost twice as big in comparison with the full sample. Taking the maintained assumption of a larger effects for those with behavioral disorder, we believe that there is a "stress-effect" associated with having the certificates re-remitted for completion.

As we have shown, re-remission of the MD's certificate reduces the probability of ending a sickness absence spell. This however does not imply that SIA's role as gatekeeper in the social insurance system should be removed. Without this control mechanism the moral hazard problem associated with the insurance scheme would increase dramatically. This would have a long run negative effect on both the incidence and the prevalence of sickness absences. Such a development would be very costly for the government.

Instead, we propose the creation of directed intergovernmental grants from the state to the counties allowing MDs to spend more time with sickness absence patients. This allows the health care system to incorporate the cost of sickness absences into their decision making.

Additionally, it may be beneficial to cease informing claimants that their certificates have been re-remitted to the physician for completion. Since most claimants are eligible


for sickness benefits once their certificate is completed, the risk of erroneous payments should be small. However, in case the claimant is not eligible, even after certificate completion, the claimant should be liable for reimbursement of the money. This situation of uncertainty with respect to payment would reduce the moral hazard in the sickness insurance and would increase the outflow especially among individuals with the best health. The reason for the last effect is simply that the cost for waiting (i.e. not working) for the final decision is higher for those with good health than for those with bad health given that the two groups have the same time preferences (Parsons 1991).

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Appendix A



Försäkringskassan
Hjälper och stödjer dig och din familj

MEDICINSKT UNDERLAG
 - för bedömning av rätt till sjukpenning
 och eventuellt behov av rehabilitering.
Patientens personnummer 1 (2)

Patientens namn

Läkartyg enligt 3 kap. 8§ lagen om allmän försäkring.
Du kan även använda blanketten för avstängning enligt smittskyddslagen (SML)

1 Avstängning enligt SML på grund av smitta (försätt till punkt 2)

Medicinsk bedömning
Vid bedömningen ska du bortse från arbetsmarknadsrättsliga, ekonomiska, sociala och liknande förhållanden.

2 Diagnos(er) eller symptom till grund för den nedskatta förmågan/aktivitetsbegränsningen	Diagnoskod enligt ICD 10 <small>(Inom parentes)</small>
3 Anamnes (aktuellt sjukdom)	minst tre positioner
4 Status, objektiva undersökningsfynd	Uppgiftens baseras på <input type="checkbox"/> Personlig kontakt <input type="checkbox"/> Telefonkontakt <input type="checkbox"/> Journaluppgifter Annat (ange vad under punkt 13)
5 Hur begränsar sjukdomen patientens förmåga/aktivitet?	
6 Föreskrift - behandling eller åtgärd som är nödvändig för att förmågan ska kunna återställas	
<input type="checkbox"/> Följa given ordination (ange vilken) _____ <input type="checkbox"/> Fortsatt poliklinisk kontakt _____ <input type="checkbox"/> Undvika viss belastning (ange vilken) _____ <input type="checkbox"/> Besöka arbetsplatsen _____ <input type="checkbox"/> Väntar på åtgärd inom sjukvården (ange vilken) _____ <input type="checkbox"/> Väntar på annan åtgärd (ange vilken) _____ <input type="checkbox"/> Övrigt (ange vad) _____	

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Rev 7263 Föreskriftsbeskrivning
 Medicinsk bedömning 10/10

Personnummer

2 (2)

7 Är arbetsvinklad rehabilitering aktuell?
 Ja Nej Kan inte bedömas för närvarande Behov av kontakt med förelagshälsovård

8 Medicinsk bedömning av i vilken grad funktionsnedsättningen begränsar patientens förmåga
 att utföra sina vanliga arbetsuppgifter (ange arbetsuppgifternas art): _____

om patienten är arbetslösa; att söka/kunna utföra arbete som är normalt förekommande på arbetsmarknaden

om patienten är föräldradraged med föräldrapenning; att vårda sitt barn

Arbetsförmågan bedöms _____ f.o.m. (år, mån, dag) _____ längst t.o.m. (år, mån, dag)

delvis nedsatt med 1/4 _____ f.o.m. (år, mån, dag) _____ längst t.o.m. (år, mån, dag)

delvis nedsatt med 1/2 _____ f.o.m. (år, mån, dag) _____ längst t.o.m. (år, mån, dag)

delvis nedsatt med 3/4 _____ f.o.m. (år, mån, dag) _____ längst t.o.m. (år, mån, dag)

helt nedsatt _____ f.o.m. (år, mån, dag) _____ längst t.o.m. (år, mån, dag)

(om helt nedsatt, besvara frågorna nedan)

- Kan deltid vara olämplig av psykosociala skäl? Ja Nej
- Kan anpassade arbetsuppgifter möjliggöra sysselsättning på deltid/heltid? Ja Nej
- Kan deltid vara skadlig för sjukdomens förlopp? Ja Nej
- Kan deltid i nuvarande sysselsättning vara möjlig med hänsyn till symtom? Ja Nej
- Kan deltid förbättra prognosen för återgång i arbete? Ja Nej
- Kan deltid/arbete på annat sätt vara skadligt? Ja Nej

9 Prognos - bedöms patienten kunna få tillbaka sin förmåga till arbete/aktivitet?
 Ja, helt Ja, delvis Nej

10 Kan resor till och från arbetet med annat förskott än till patienten normalt använder göra det möjligt att återgå i arbete? Ja Nej

11 Önskar kontakt med Försäkringskassan Ja Nej

12 Önskar avstämningemöte Ja Nej

13 Övriga upplysningar

Underskrift

14 Datum (år, mån, dag) _____

15 Läkarens namnteckning _____

16 Namn, mottagningens adress, telefonnummer (öven riktnr) i kläret (om ej övert)

Blanketten och mer information finns på www.forsakringskassan.se

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