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Immigrant Consumption of Sickness Benefits in Sweden, 1981 – 1991

Tommy Bengtsson & Kirk Scott

This study identifies factors influencing the differences in utilization of sickness benefits between immigrants and natives in Sweden. The main conclusion is that the differences in consumption of sickness benefits between foreign born and Swedes, as well as between various immigrant groups are large and persist after accounting for standard human capital factors. Immigrants from traditional labour-sending countries exhibit much higher levels of sickness benefit consumption than Swedes, while immigrants from refugee-sending countries lie in between. This study utilizes a register-based panel containing economic and demographic information on a sample of 110,000 Swedes and immigrants from 16 countries.

1. Introduction

While the income performance of immigrants is of vital importance to an understanding of their economic assimilation, another aspect may well shed light on their societal assimilation. We are speaking here of the prevalence of workplace absence. If an individual is repeatedly absent from work because of sickness, this could be a sign of somatic illness, but it could also be a sign of maladjustment to the labour force or to society at large. The alternative paths for adult immigrants in Sweden, as for natives themselves, consist of gainful employment in the labour market and dependence upon societal transfers, or some combination of the two.[1] The Swedish social welfare system is a cash system in which a person should be able to have a reasonable standard of living whether employed

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[1] Here we are assuming that the individual is not pursuing educational opportunities.

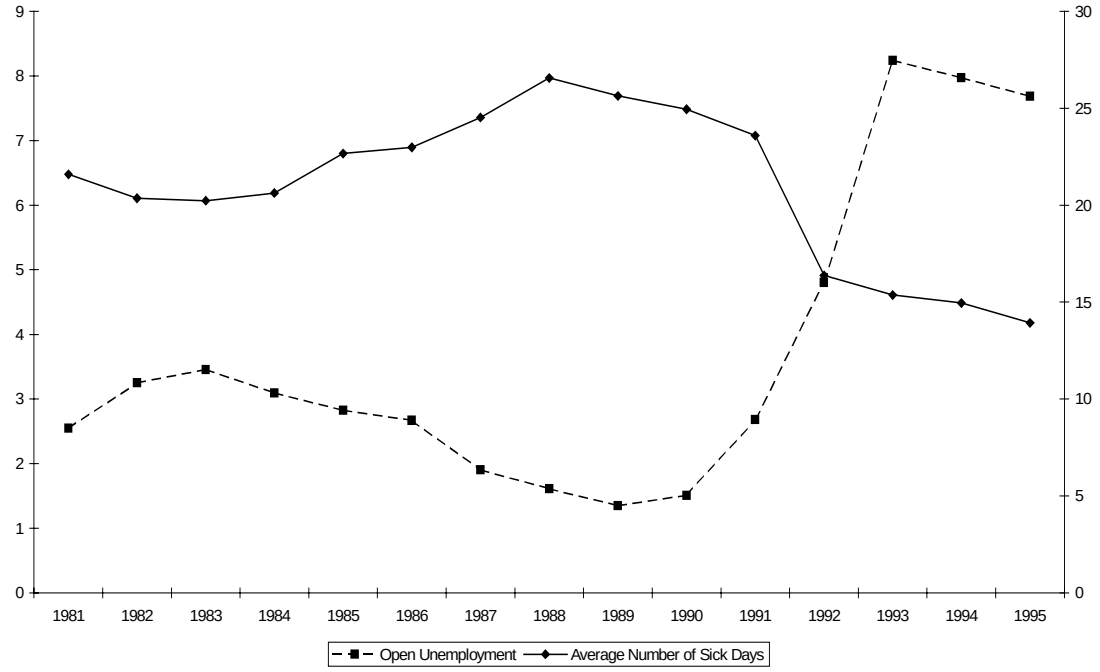
or not. An employed person who becomes ill or receives an injury at work should be able to maintain approximately the same standard of living as when working full time. This system was formally introduced with the inception of public sickness insurance in the 1950s and since then it has evolved into its present form. The benefits are related to income and should largely compensate for income loss during periods of illness and retirement (Hammarstedt 1998).

Many studies, using various sources of Swedish data, have showed that labour force attachment among immigrants has been weakening over the past three decades, and the relative incomes earned by those immigrants actually in the labour force have been declining. Prior to 1970, immigrants exhibited economic performance similar to, if not better than, native-born Swedes with the same occupations. After 1970, there are indications that this shifting immigrant labour market performance is not merely a reflection of shifting quality of immigrant cohorts, but also of shifting labour market conditions which adversely affect all migrants, even those from cohorts which were fairly successful in earlier years (Scott 1999; Rosholm, Scott, and Husted 2001; Ekberg and Gustafsson 1995; Rooth 1999; Bevelander and Nielsen 2001; Bengtsson and Scott 1998). The consumption of sickness benefits may be seen as a symptom of the problem of weak labour market attachment or unsatisfactory employment conditions. If this is true, then immigrant consumption of these benefits should exceed that of natives employed in the same positions.

The fact that the connection between sickness benefit consumption and the general economic climate, seen in Figure 1, is an almost perfect mirror image leads one to believe, *prima facie*, that the consumption of sick days is largely influenced by the business cycle. This figure charts the unemployment rate together with the average number of sick days.

The possible reasons for this inverse relationship are many. One reason may be that slacking increases when demand for labour is high and employees are relatively secure in their jobs. As unemployment increases, there may occur an increased feeling of insecurity, prompting workers to reduce the number of sick days, and possibly attending work during periods although they are actually ill enough to stay at home. (Shapiro and Stiglitz 1984; Lantto and Lindblom 1987; Bäckman 1998; Arai and Skogman Thourise 2001) One study (Ruhm 2000) actually finds positive health effects of cyclical downturns, at least regarding mortality, which may also account for some of this inverse relationship.

Figure 1. *Unemployment and average number of sick days.*



Source: Swedish National Insurance Board. Average number of days calculated as total sick days /labour force.

This study charts the differences between the sickness benefit consumption of immigrants and Swedes, and sheds light on certain factors which influence these differences.

2. Background and Previous Research

The Swedish sickness benefit system is a compulsory system, dating back to 1955. It is jointly paid for by the employee (the qualifying period), the employer (the employer period) and Social Insurance Offices (the public period). The idea is to give the employee a high degree of compensation while maintaining an incentive to go to work and an incentive to the employer to get him back to work. Currently, the compensation rate is 80 percent of the SGI (*sjukpenninggrundade inkomst*)[2] after a one-day qualifying period. The employer then pays the first 14 days of eligible assistance per sick period. Thereafter the public insurance system takes over the responsibility. The employee needs to be examined by a doctor to receive compensation after the seventh day. There is also an upper limit to the benefits but not to the payments, which is proportional to the

[2] SGI is the term for the income upon which health benefits are paid. It is generally considered to be the expected yearly earnings from employment, but income above a fixed ceiling is not included.

salary. Despite recent restrictions, the sickness insurance system is still quite generous up to a certain income level.

From its inception, the sickness insurance system became gradually more generous. The increase in benefits is reflected in an almost monotonic increase in the average number of sick days per insured from the 1950s through the late 1980s. Consequently, the economic pressure on the insurance system increased, and this was compounded by the economic recession of the early 1990s. The compensation rate was therefore lowered several times and the qualifying period increased from zero to one day or two days (depending on the year) during the period 1991 to 1996. As the compensation decreased so did the average number of sick days. As a result of economic pressures, a major change in the system took place in 1992, when the employer assumed responsibility for the first two weeks of sick leave. From this point, the number of sickness days reported to the Insurance Board as well as the income from sick leave reported to the tax authorities is no longer easily interpreted, an issue we will return to in our analysis.

The literature concerning the sickness benefit system has been centered around the system itself, whether it is socially optimal, if it provides adequate incentives for individuals to return to work after illness and for employers to get workers back after a prolonged duration of sick leave (Brown and Sessions 1996; Bäckman 1998; Rikner 2001). Most studies focus on the reports of number of sick days, few on the received benefits, and changes in the insurance system. The reforms in the period up to 1987 were followed by increases in the average number of sick days (Lantto and Lindblom 1987; Bäckman 1998), while the reforms of the 1990s gave the intentional results of decreasing the number of sick days (Johansson and Palme 1996; Cassel et al 1996; Edgerton et al 1996).

Turning to the medical literature on health of immigrants, epidemiologists in the United States, Australia, Canada and Great Britain show that in the 1950s and 1960s the health conditions among immigrants differed from those who remained in the sending countries (Hjern 1995). Immigrant children grew taller and disease patterns differed between the populations. Many of the early studies of the influence of changes in life style factors on cancer and coronary-heart diseases use data on immigrants since they provide a ‘natural experiment,’ where effects of environment prior to immigration can be isolated from the effects after immigration. Typical to those studies is the comparison between those who migrated and those who stayed. Later research has instead focused on the difference between immigrants and natives.

Knowledge about the health of immigrants is, however, still limited in Sweden (Riksförsäkringsverket 1996). Few studies have been done with a

'natural experiment' approach.[3] The rather limited studies have instead been on how the health of immigrants compares with natives. Still, few studies have been done and a more general study of mortality and causes of death has not been done for immigrants. The one exception is a smaller study of Stockholm County, which shows a higher mortality below 65 years of age for immigrants (Diderichsen 1989). Studies of perinatal and infant mortality show small differences between immigrants and natives (Aurelius and Ryde-Blomqvist 1978; Mjönes and Koctürk 1986).

The difference in health between immigrants as a group and native-born Swedes is rather small, while the differences within the group of immigrants are rather large. Screening of asylum seekers show that they have higher prevalence of infections and parasitical diseases. Tuberculosis is more frequent among immigrants than natives. Genetic disposition for age-diabetes exists in some of the home countries of the immigrants. Differences are also found in cancer of the gastrointestinal system (Hjern 1995). Asylum seekers also show higher prevalence of psychological diseases than natives (due to torture and traumatic events) and immigrants from Eastern Europe, former Yugoslavia and the Mediterranean countries have higher incidence of suicide than Swedes. Somatic damages from the home country (war, torture) are likely to be important but the diagnoses for those arriving in 1988–90 do not show any proof (Riksförsäkringsverket 1996).

The proportion early retired of the population in ages 16–64 years also varies strongly with birth country and over time. While about 6 percent of Swedish born males and 8 percent of the females had early pensions in 1994, the figures for immigrants from the other Nordic countries were 11–12 percent for males and again slightly higher for females after standardizing for age composition (Riksförsäkringsverket 1996: 50). The group with the highest degree of early retirement is labour immigrants from the former Yugoslavia, Greece, and Turkey. For these countries 15–17 percent of the males and 20–26 percent of the females had early retirement.

Well-defined somatic diseases are of minor importance for differences in sickness leave and early retirement between various immigrant groups and natives. Early retirement is instead often due to somatic disorders of the locomotive system caused by monotonic jobs (Riksförsäkringsverket 1996). It is also likely that general labour market conditions - unemployment, closing of factories, investment in new

[3] The studies of coronary-heart diseases among immigrants from Finland to Sweden are exceptions (Alfredsson et al 1982).

machinery, etc – are of great importance for early retirement.[4] Thus, the differences of early retirements between nationalities are not only a result of differences in health but also in employment conditions and the labour market in general. The dependency of sickness benefits and early retirement pensions among immigrants are therefore net indicators of a mixture of health and integration at the workplace.

3. Foundations and hypothesis

In a world where the incidence of sick leave from work was totally dependent upon non-work-related somatic illness, we would expect the rate of sickness benefit consumption to be somewhat constant. There would quite probably be a long-term improvement in public health, but this is measurable in terms of decades or more, and thus beyond the range of this study. Seasonal variations may occur due to varying virulence patterns, and some shocks may cause spikes in consumption due to epidemics, but overall the average level of consumption would be more or less constant.

Given the facts that workplace injuries are not randomly distributed throughout the labour force and that types of jobs change over time, however, there is reason to believe that some groups of individuals would have a higher rate of benefit consumption than others. This is due to the simple fact that they may be employed in more "high risk" occupations. If immigrants tend to be employed in these occupations to a higher degree than natives are, then it would be reasonable to expect them to also have higher mean sickness benefit consumption.

Table 1 shows that the mean number of sick days varies considerably among the different immigrant nationalities. The fact that the numbers differ so greatly leads us to assume that there are some fundamental differences between workers with different national heritages.

While the differences in mean number of sick days are apparent, it is unclear what is driving this. It is possible that an equal share of natives and immigrants report sick days, but that immigrants are absent longer on average. On the other hand, natives may have longer periods of sick leave on average, but fewer instances. Table 1 also shows that the case is that immigrants are absent from work more often, and that these absences are likely to result in a greater number of sick days than for natives.

[4] The exception is the immigrants who retired after a short stay in Sweden (less than 5 years). They often have a specific disease panorama (psychological diseases or retardation), Riksförsäkringsverket 1996.

Table 1. *Descriptives, 1981 and 1991.*

	Mean number of sick days			*Share reporting sick days*			*Mean number of sick days, of those reporting*		
	1981	1991	% Change	1981	1991	% Change	1981	1991	% Change
Sweden	10	15	47	0.45	0.56	26	23	27	17
Denmark	19	24	27	0.55	0.63	13	34	38	12
Finland	27	33	18	0.69	0.67	-2	40	48	21
Norway	22	25	15	0.55	0.62	11	39	40	3
Germany	13	17	35	0.51	0.53	3	25	32	31
USA	10	17	80	0.42	0.54	29	23	32	40
Poland	28	32	15	0.67	0.68	2	42	47	13
Czech	15	21	40	0.57	0.60	5	26	35	34
Turkey	36	46	26	0.77	0.75	-3	47	60	30
Greece	45	42	-7	0.72	0.67	-8	63	63	1
Yugoslavia	41	53	29	0.80	0.76	-5	51	69	36
Italy	22	22	3	0.60	0.63	5	36	35	-1
Iran	11	26	134	0.49	0.62	25	22	42	88
Iraq	23	47	103	0.68	0.76	11	34	62	83
Ethiopia	13	22	71	0.56	0.66	19	23	33	44
Vietnam	10	22	125	0.57	0.81	43	17	27	59
Chile	19	30	60	0.65	0.76	17	28	39	38

Source: Swedish Longitudinal Immigrant Database (SLI), see Section 4.

There are three possible options to explain these variations in sickness benefit consumption. The first is that the various nationalities are employed to differing degrees in occupations with a high rate of injury or work-related illness. The second is that there are some culturally determined factors which influence the number of sick days an individual is willing to, or must, take. The third is that sick leave may be a measurable effect of poor economic assimilation. This would be the case if immigrants from certain countries were employed to a larger extent in occupations that they consider unpleasant or undesirable. The concept of dual labour markets illustrates the possibility for an individual to enter the labour market in one of two "tracks." The first track can be considered "normal," with access to training and promotion, while the second track can be seen as a dead end, with no or very little possibility for upward movement.[5] It may be the case that immigrants are more likely than natives to enter into this second type of employment, and thus be unable to realize their goals, leading to dissatisfaction.

The idea that the sick days may be determined by the type of occupation is given some support by Table 2.

[5] For a basic review of segmented labour market theories and criticisms, see Cain (1976), Piore and Berger (1980).

Table 2. *Mean number of sick days by educational attainment*

	1981		1991	
	Native	Foreign Born	Native	Foreign Born
Primary or less	13.0	30.1	17.0	41.3
Secondary	6.4	20.3	16.0	29.5
University	10.0	25.9	10.6	22.4

Source: SLI, see Section 4.

If one is to assume that more hazardous or strenuous jobs are largely occupied by individuals with lower educational levels, then the figures here yield the expected results. Here we can see that the average number of sick days decreases as educational level increases, which could well be a result of the type of job, but the causality could go in the other direction – healthier individuals may be more likely to invest in higher education than those who are sick often.

4. Data and Method

This paper aims to examine the determinants of sickness benefit consumption by adopting an approach typical in the analysis of economic assimilation. Here we will assume that excessive consumption of sickness benefits is a function of various socioeconomic factors, in much the same way as other studies have seen wages as a function of individual-specific and macro factors. Since the occasional sick day is not seen as a problem, this study will only examine the occurrence of a large number of sick days per year, defined as more than 25 days *without* the individual being placed on long-term sick leave.

The data used in this analysis comes from the Swedish Longitudinal Immigrant Database (SLI). The SLI is essentially a register-based panel containing economic and demographic data on a sample of 110,000 Swedes and immigrants from 16 countries during the period 1968 – 1996. The SLI also has detailed information from immigration files on a sub-sample of nationalities representing the diversity of the immigrants in Sweden[6]. The countries in the sub-sample are *Germany, Turkey, Greece, Yugoslavia, Poland, Iran, the USA, and Chile.* The nationalities in the database cover all types of immigrants, from traditional labour migrants from the 1960s through refugees and tied movers from the 1980s, as well as a wide geographic spread. The sub-sample will be used to examine the role of visa category in sickness benefit consumption, while the full sample will be used in most of the analysis.

[6] The information used here consists of self-reported education in the home country and formal purpose of entry into Sweden (initial visa status).

Due to the construction of the sickness benefits system as an income replacement scheme, the panel has been restricted to those individuals reporting positive earnings from employment. Self-employed individuals are omitted, to allow for greater compatibility within the panel. In addition, the stipulation of positive earnings is tightened through the inclusion of only those reporting earnings greater than 3 ½ base amounts[7] and less than 7 ½ base amounts (a range of approximately SEK 60 550 – 129 750 in 1981 prices). The lower bound will ensure that the individuals have been fairly active in the labour market during the year. The upper bound is included because the Swedish sickness benefit scheme reimburses to a maximum income of 7 ½ base values. Individuals above this income ceiling face increasing costs for sick days, and can be assumed to search for alternative solutions.

The register data available does not have information on the actual number of sick days, but rather on the amount of sickness benefits paid out in a given year. To transform this value into something approximating sick days, the income (SGI) upon which benefits are based was calculated for each individual, and the daily sickness compensation rate was derived from this figure. While this may not give an exact number of sick days, it is felt that the approximation should be quite close. Also, since this study looks at the probability of having an "excessive" number of sick days and not at the actual number, this problem should be of minor character. A sensitivity analysis using various values for the definition of "excessive" yielded no great differences attributed to this method.

Given the panel construction of the data, and the fact that the topic of interest is a binary variable (i.e. the case of having more than 25 sick days in a year, or not), the choice of estimators was fairly clear. In this case we use a random effects logit, which gives us the benefit of both a panel-wide and an individual-specific error term. Using such a method, we account for unobserved heterogeneity in the sample.

[7] "Many of the benefits within social insurance are linked to the so-called base amount. The base amount is also used to calculate the pensionable income, pension points and maximum levels within social insurance. It is an index of price movements, which means that benefits follow price trends. Price trends are measured in the consumer price index." National Social Insurance Board web page: http://www.rfv.se/english/social/base_k.htm

5. Analysis

Tables 3 through 6 show selected results of a random effects probit modelling the probability of having more than 25 sick days in a given year. The full regression results are presented in the appendix. This study does not account for previous sickness history in an attempt to capture the effects of long-term or chronic illness. This is because of two factors: the time period with useful information is already quite short, and the use of lagged variables would necessarily shorten this period, and we are not able to differentiate between repeated short term absence and long term absence, and thus cannot identify chronic illness.

Table 3 shows the main effects of country of birth on the probability of incurring more than 25 sick days in a given calendar year. The full regression is found in Appendix, Table A2, and controls for the basic demographic and human capital variables. All nationalities return statistically significant coefficients. Individuals from Germany and the United States yield a propensity for excessive sick days that is only slightly greater than natives. Those southern Europeans who arrived in Sweden as labour migrants (Greece, Turkey, and Yugoslavia), or relatives to labour migrants, show significantly *higher* probabilities of being away from work for more than 25 days per year.

Due to the prevalence of labour immigrants in more physically demanding employment, while other western immigrants have an occupational structure more similar to natives, we expect these immigrants to have a higher average number of sick days than natives. The results for the labour-sending countries corresponds with *a priori* expectations, while the other Western countries, as expected, display patterns similar to natives.

Table 3 *Effect of being born outside of Sweden on Prob(sick days > 25). Reference category: Sweden. Controlling for human capital and time effects. Odds ratios.*

	Coefficient		Coefficient
Chile	4.74**	Iraq	16.48**
Czech	2.39**	Italy	2.20**
Denmark	2.41**	Norway	2.22**
Ethiopia	3.40**	Poland	5.37**
Finland	3.74**	Turkey	10.01**
Germany	1.24**	USA	1.29**
Greece	10.70**	Vietnam	3.28**
Iran	3.45**	Yugoslavia	11.97**

Note: Full regression results in Table A2. ** - 5% * - 10%.

The true surprise in this table comes from the coefficients yielded by immigrants from refugee countries. It could be expected that trauma from the home country, coupled with less-than-desirable employment situations in Sweden should lead to a greater number of sick days than natives, probably along the same levels as labour migrants. This is contradicted in the data at this level, but a closer look at visa category will be carried out below. The only refugee country which conforms to expectations is Iraq, with the highest probability of reporting excessive sick days relative natives. Given the fact that refugees have shown great difficulty in establishing themselves in the labour market, their sickness benefit consumption pattern may be merely the result of positive self-selection. This is due to the fact that we only examine employed persons in this study, and there is reason to suspect that refugees who obtain employment are more positively selected than native employees.

One obvious argument here is found in the lack of occupational data in this study. Since workplace injuries are included in this data, it could be said that individuals from different nationalities are selected into occupations which have a higher rate of injury. If this is true, then the nationality effect could simply be an occupational effect. There is no way to tackle this problem directly, since workplace injuries are included in general sickness benefits statistics until 1991, and after 1991 it is impossible to correctly identify the number of sick days taken by an individual. An indirect test was carried out to give an indication of the seriousness of the problem. Using another database[8] which allows for a splitting of workplace injury payments from general sickness benefits from 1992 onwards, a probit model was estimated with the same regressors as in the sickness benefits model, but with the independent variable being defined as receiving positive transfers for workplace injury in 1992. The results are shown in table A4 in the appendix. An examination of the marginal effects shows that although there are significant differences between immigrants and natives, these differences are generally quite small. Given this, it is concluded that the occupational effect, while surely not non-existent, is not a driving force behind the nationality coefficients.

The effects of education for the total population, as shown in Table 4, yield the expected results, with a negative effect of both secondary and university education, with the magnitude increasing with educational level.

[8] LINDA – Longitudinal INdividual DAta for Sweden. Unfortunately, LINDA cannot be used for more detailed analysis, due to data problems in the sickness benefit variable from 1992 onwards.

Table 4 *Effect of educational level on Prob(sick days > 25). Reference category: primary education. Controlling for human capital and time effects. Odds ratios.*

	Coefficient
Secondary	0.55**
University	0.11**

Note: Full regression results in Table A2.
** - 5% * - 10%.

This may be a reflection of several processes, however. The first is that increased educational level *may* lead to increased job satisfaction, and therefore an incentive to go to work. The second is that increased education *may* increase the probability of having employment with flexible working hours, which could include the ability to regulate hours individually without reporting in sick. The third aspect is that, since sickness benefits account for less that 100 percent of pay, sick days have a higher absolute cost for those earning higher salaries – a condition which should be positively correlated with education. The final reason that education may have a limiting effect on sickness benefits is that education *may* be a revealed portion of the otherwise unobserved characteristics *ability* or *initiative*. In this respect, individuals with a higher educational level may be more motivated and thus less likely to stay home from work.

Now that it has been established that differences in sickness benefit consumption do exist among individuals with different national backgrounds, we will take a closer look at the determinants of high sickness benefit consumption. As mentioned above, it is believed that the greatest flexibility is found in the estimation of country-specific regressions. Again, note that the coefficients are not directly comparable between nationalities, but the direction of the coefficients can be compared.

Table 5 shows the effects of visa status on the probability of having more than 25 sick days in a given calendar year. While there are many sub-categories in the visa classification nomenclature, these have been grouped into three major categories: labour migrants, tied movers, and refugees. Labour migrants are all individuals who reported employment motivation in their application for residence permit, tied movers are those who reported their primary reason for coming to Sweden as being the existence of a close relative in the country, and refugees are those who entered Sweden either as Geneva Convention refugees or through the broader classification used by the Swedish government (referred to occasionally as humanitarian or *de facto* refugees).

Table 5 *Effect of visa status on Prob(sick days > 25). Reference group: labour migrants. Controlling for human capital and time effects. Odds ratios.*

	Refugee	Tied Mover
Germany	NA	2.776**
USA	NA	1.036
Poland	2.728	3.746*
Chile	0.694	0.461*
Turkey	2.319**	1.809*
Greece	0.695	1.145
Yugoslavia	1.414	1.022
Iran	4.413**	2.494*

Note: Full regression results in Table A3.
** - 5% * - 10%

It should be noted that some categories are extremely small, and must be interpreted in this light. This is especially true for the refugee category, with no refugees from Germany and only a few from the US.[9] Most nationalities do have reasonably large populations in all visa categories, and in all years, however.

Most nationalities do exhibit variation in the effects of visa status on their propensity to consume an excessive number of sick days, but this variation is generally not significant. In general, given the lack of significance, it cannot be concluded that the formal reason for entrance to Sweden can be used as a predictor of sick day consumption. However, the same cannot be said for formal educational level, as shown in Table 6.

Table 6 *Effect of educational level on Prob(sick days > 25). Reference group: primary education. Controlling for human capital and time effects. Odds ratios.*

	Secondary	University		Secondary	University
Sweden	0.45**	0.10**	Iraq	0.63*	0.10**
Chile	0.59**	0.14**	Italy	0.84	0.12**
Czechoslovakia	0.52**	0.13**	Norway	0.62**	0.12**
Denmark	0.69**	0.11**	Poland	0.47**	0.10**
Ethiopia	0.67*	0.15**	Turkey	0.46**	0.06**
Finland	0.58**	0.10**	USA	0.52**	0.15**
Germany	0.57**	0.11**	Vietnam	0.89	0.27**
Greece	0.38**	0.07**	Yugoslavia	0.67**	0.11**
Iran	0.35**	0.06**			

Note: Full regression results in Table A1. ** - 5% * - 10%

[9] These individuals are most likely deserters from the Vietnam war.

Here we can clearly discern an inverse relationship between educational attainment and sickness benefit consumption. For almost all nationalities, educational level has an unambiguous effect, leading to fewer reported sick days, with the effect being of similar magnitude.

The final effect to be examined is that of "unfulfilling" employment. We do not have information on occupation in our data, so a proxy had to be found. Using the 1990 census we calculated the mean income for each educational category[10] and sex. These figures are then deflated or inflated using the consumer price index to obtain mean income levels for each year used in the study. We then created a variable "deviation" which records an individual's yearly earnings as a percent of the mean wage for his educational level. If we assume that an individual is working within his educational field, then we can use this as a rough measure of labour market miss-match. The next assumption necessary is that an individual feels dissatisfaction when his wage is lower than that of his peers. If this is so, and if sickness benefit consumption is partially a function of job dissatisfaction, then this variable should yield significant negative effects.

As Table 7 shows, the effects of income deviation from the mean are in most cases large and significant. When evaluating the magnitude of these effects, it is important to remember that the variable is measured in percent, so a value of 0.5 is equivalent to earning only half of the mean income. One point that must be made, however, is that the direction of causality is not completely clear. One may have a lower income because of a history of illness, causing the deviation variable to be a result, rather than a determinant.

***Table 7**. Effects of deviation from mean income of all with same educational level. Controlling for human capital and time effects. Odds ratios.*

	Coefficient		Coefficient.
Sweden	0.12**	Iraq	0.26**
Chile	0.14**	Italy	0.10**
Czech	0.33**	Norway	0.17**
Denmark	0.17**	Poland	0.25**
Ethiopia	0.50*	Turkey	0.22**
Finland	0.18**	USA	0.13**
Germany	0.20**	Vietnam	0.51
Greece	0.31**	Yugoslavia	0.20**
Iran	0.10**		

Note: Full regression results in Table A1. ** - 5% * - 10%

[10] The educational category used is the Swedish 5 digit SUN code. This allows for quite narrow definitions of education.

6. Conclusions

The purpose of this study is to identify various factors which influence the differential utilization of sickness benefits among individuals of different national origins. It is shown here that there do exist differences in sickness benefit consumption between natives and immigrants, and that these differences are in some cases large, and remain after controlling for the standard human capital and time effects.

A general conclusion of this study is that home country plays a role. Individuals from the United States and Germany have about the same number of sick days as natives, while those from the traditional labour-sending countries of Greece, Turkey and Yugoslavia exhibit much higher levels of sickness benefit consumption. Immigrants from predominantly refugee-sending countries fall somewhere in between natives and labour-export countries, with the exception of Iraq, which has the highest levels of all nationalities. This result is similar, but not identical, to findings regarding immigrant employment and income development (Scott 1999; Rosholm, Scott, and Husted 2001; Ekberg and Gustafsson 1995; Rooth 1999; Bevelander and Nielsen 1999; Bengtsson and Scott 1998). The differece is mainly that refugees coming after 1985 lie in between natives and the established immigrant groups concerning sickness benefits, but are at the bottom of the employment and income assimilation studies. We can speculate that this is because of two factors. The first is that the established immigrant groups have shown a tendency to be employed in traditional, monotonous industrial occupations abandoned by natives during the 1960s. The second factor is that those refugees who have found employment in the face of labour market obstacles are most likely a positively selected group, and thus perhaps more motivated to attend work, a fact which may bring down the average number of sick days for the group.

Turning to the role of educational level, there is a negative effect of higher educational attainment for all nationalities. The effect of visa category on the likelihood to consume sickness benefits was in almost all cases insignificant

Thus, the most important factors in identifying the propensity to consume a large number of sick days appear to be nationality and educational level. Both of these have an effect on the type of employment one obtains, and thereby possibly on job satisfaction as well. Further research into this topic is required, using data which includes information on occupation, but the available evidence does point towards a significant difference between nationalities regarding the propensity to consume sickness benefits.

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Table A1. *Random effects logit, Dependent variable > 25 sick days / year. Odds ratios.*

ind	Sweden	Chile	Czech	Denmark	Ethiopia	Finland	Germany	Greece	Iran
sec	0.45**	0.59**	0.52**	0.69**	0.67*	0.58**	0.57**	0.38**	0.35**
uni	0.10**	0.14**	0.13**	0.11**	0.15**	0.10**	0.11**	0.07**	0.06**
female	1.76**	2.38**	1.48**	2.02**	2.87**	1.55**	1.59**	4.09**	2.68**
metro	1.32**	0.93	1.06	0.76*	1.16	0.91	0.87	0.96	1.63**
age	0.89**	0.99	0.90**	0.97	1.06	0.92**	0.84**	0.96	1.05
age2	1.18**	1.03	1.20**	1.07	0.92	1.16**	1.26**	1.12**	0.94
marr	0.82	1.56**	1.35	1.36	1.46*	1.43**	1.46*	2.45**	1.84**
nkid	0.97	0.97	0.89	0.97	1.02	0.97	1.06	0.87**	0.96
ysm		1.24**	1.00	1.01	1.31**	1.01	1.02	1.12**	0.90**
ysm2		0.36**	0.98	0.95	0.27**	0.92**	0.98	0.70**	1.35
deviate	0.12**	0.14**	0.33**	0.17**	0.50*	0.18**	0.20**	0.31**	0.10**
yr1982	1.33*	1.44	0.88	1.57**	0.95	1.19	1.05	0.81	1.41
yr1983	1.36*	1.89**	1.02	1.56**	1.66	1.00	0.98	1.13	2.30
yr1984	1.91**	2.09**	1.49	2.30**	1.65	1.62**	1.42	1.01	3.41**
yr1985	2.43*	2.91**	1.68**	3.45**	2.66**	2.32**	1.62**	1.54**	3.22**
yr1986	2.42**	3.97**	1.86**	3.23**	2.70**	2.84**	2.37**	2.02**	6.36**
yr1987	3.53**	4.61**	2.63**	4.21**	3.37**	3.64**	3.03**	3.01**	4.68**
yr1988	6.68**	9.62**	4.10**	10.03**	4.75**	5.75**	5.09**	3.46**	9.09**
yr1989	7.93**	11.36**	5.85**	9.98**	7.06**	6.83**	5.24**	4.21**	13.54**
yr1990	9.18**	13.16**	5.80**	11.65**	8.31**	7.35**	5.37**	3.41**	15.84**
yr1991	9.46**	6.41**	3.00**	9.85**	2.54**	5.92**	4.41**	2.90**	13.46**
_cons	0.47	0.06**	0.37	0.09**	0.01**	0.56	0.83	0.17**	0.07
/lnsig2u	1.613941	1.334827	1.706946	1.620647	1.434101	1.671038	1.714961	1.205101	1.824385
sigma_u	2.241108	1.949189	2.347786	2.248635	2.048382	2.306011	2.357215	1.826772	2.489776
rho	0.604223	0.535933	0.626235	0.605826	0.560515	0.617793	0.628109	0.503563	0.653291

Table A1. *continued*

ind	Sweden	Iraq	Italy	Norway	Poland	Turkey	USA	Vietnam	Yugoslavia
sec	0.45**	0.63*	0.84	0.62**	0.47**	0.46**	0.52**	0.89	0.67**
uni	0.10**	0.10**	0.12**	0.12**	0.10**	0.06**	0.15**	0.27**	0.11**
female	1.76**	2.37**	1.29	1.82**	1.45**	2.95**	2.16**	1.65**	2.76**
metro	1.32**	1.18	1.45**	0.90	1.38**	1.57**	1.69**	1.13	1.40**
age	0.89**	0.97	0.90*	0.87**	0.95	0.88**	0.89*	0.98	0.88**
age2	1.18**	1.06	1.24**	1.22**	1.12**	1.21**	1.17**	1.01	1.24**
marr	0.82	1.46	1.54*	1.18	2.05**	1.90**	1.12	2.34**	1.66**
nkid	0.97	0.84**	0.88	0.85**	0.90*	1.06	0.98	0.87**	0.91**
ysm		0.90*	1.05*	0.99	1.06**	1.03	1.01	1.16**	1.08**
ysm2		1.07	0.84**	1.00	0.81**	0.90	0.94	0.52	0.68**
deviate	0.12**	0.26**	0.10**	0.17**	0.25**	0.22**	0.13**	0.51	0.20**
yr1982	1.33*	1.96	1.03	1.02	0.86	0.62**	1.21	3.54*	0.94
yr1983	1.36*	1.64	0.86	1.09	0.90	0.51**	0.92	7.73**	0.99
yr1984	1.91**	1.50	1.30	1.49*	1.49**	0.80	1.89	10.73**	1.14
yr1985	2.43*	2.28*	1.97**	1.65**	1.72**	0.99	1.73	8.89**	1.36**
yr1986	2.42**	4.10**	1.96**	2.20**	2.16**	1.36	3.88**	13.92**	2.13**
yr1987	3.53**	6.77**	2.96**	2.76**	2.85**	2.18**	2.64**	21.15**	2.74**
yr1988	6.68**	16.71**	4.81**	4.24**	4.84**	3.65**	7.39**	42.95**	4.80**
yr1989	7.93**	17.39**	6.16**	5.74**	4.89**	3.69**	13.95**	61.55**	5.26**
yr1990	9.18**	20.20**	7.98**	7.01**	5.57**	3.15**	13.98**	39.79**	4.88**
yr1991	9.46**	11.14**	6.00**	4.52**	3.69**	2.11**	9.91**	15.65**	3.72**
_cons	0.47	0.68	0.14	1.13	0.14**	2.28	0.21	0.01**	1.31
/lnsig2u	1.613941	1.50617	1.589435	1.692536	1.817587	1.420646	1.871017	1.307643	1.494096
sigma_u	2.241108	2.123541	2.213815	2.330931	2.481327	2.034649	2.548509	1.922875	2.11076
rho	0.604223	0.578184	0.598348	0.622856	0.65175	0.557198	0.663777	0.529166	0.575236

** - 5% * - 10%

Table A2. *Random effects logit, Dependent variable > 25 sick days / year.*

	Coeff.
sec	0.55**
uni	0.11**
female	2.11**
metro	1.16**
age	0.91**
age2	1.17**
marr	1.43**
ysm	1.03**
ysm2	0.90**
deviate	0.20**
Chile	4.74**
Czech	2.39**
Denmark	2.41**
Ethiopia	3.40**
Finland	3.74**
Germany	1.24**
Greece	10.70**
Iran	3.45**
Iraq	16.48**
Italy	2.20**
Norway	2.22**
Poland	5.37**
Turkey	10.01**
USA	1.29**
Vietnam	3.28**
Yugo	11.97**
yr1982	1.03
yr1983	1.03
yr1984	1.40**
yr1985	1.76**
yr1986	2.26**
yr1987	2.98**
yr1988	5.18**
yr1989	6.08**
yr1990	6.35**
yr1991	4.23**
_cons	0.13**
/lnsig2u	1.589
sigma_u	2.214
rho	0.598

** - 5%
* - 10%

Table A3. *Random effects logit, Dependent variable > 25 sick days / year. Odds ratios presented.*

	Chile	Greece	Iran	Poland	Germany	USA	Yugo	Turkey	Sweden
Secondary	0.720	0.438**	0.204**	0.281**	0.431**	0.338*	0.696*	0.515**	0.446**
University	0.127**	0.050**	0.043**	0.054**	0.084**	0.091**	0.093**	0.062**	0.104**
Female	2.908**	4.044**	3.197**	1.170	1.044	1.919	2.748**	4.220**	1.764**
Metro	1.077	1.299	2.307**	1.868**	0.553**	1.714	1.546**	1.572*	1.316**
Age	0.912	0.915	0.745*	0.869**	0.755**	0.823	0.735**	0.657**	0.890**
$Age^2/100$	1.131	1.180*	1.384*	1.262**	1.513**	1.309*	1.522**	1.712**	1.178**
Married	1.744**	1.647	1.405	1.023	0.869	1.037	1.493	0.974	0.818
No. Children	0.882*	0.957	1.076	0.842	1.179	1.029	0.859**	1.100	0.971
YSM	1.225**	1.067	0.921	1.125**	1.289**	0.960	1.216**	1.082	NA
$YSM^2/100$	0.381**	1.000	1.718	0.605**	0.283**	1.008	0.483**	1.103	NA
Refugee	0.694	0.695	4.413**	2.728	NA	NA	1.414	2.319**	NA
Tied	0.461*	1.145	2.494*	3.746*	2.776**	1.036	1.022	1.809*	NA
Deviation from mean wage	0.100**	0.254**	0.208**	0.100**	0.179**	0.051**	0.175**	0.210**	0.120**
yr1982	1.406	0.864	2.808	0.844	1.229	0.752	0.747	0.727	1.334*
yr1983	2.211**	1.221	3.763	0.943	0.955	1.288	0.919	0.648	1.365*
yr1984	2.256**	0.759	3.497	1.875*	1.807	2.383	1.023	1.176	1.905**
yr1985	3.609**	1.439	2.111	2.298**	1.708	0.898	1.072	1.545	2.428**
yr1986	5.923**	1.830*	5.145*	3.126**	2.107	4.403**	2.173**	1.733	2.422**
yr1987	6.443**	1.849*	2.669	4.492**	3.948**	2.192	2.388**	2.329**	3.534**
yr1988	12.921**	1.718*	4.308*	5.475**	4.271**	9.655**	4.488**	5.005**	6.685**
yr1989	18.499**	3.200**	7.283**	7.707**	4.810**	27.826**	5.482**	3.230**	7.935**
yr1990	19.905**	1.875*	7.916**	9.893**	5.915**	29.600**	4.323**	2.791**	9.179**
yr1991	11.255**	1.556	4.948	7.266**	4.340**	17.105**	3.166**	3.026**	9.462**
_cons	0.376	0.765	35.356	0.745	2.028	3.270	49.697**	269.294**	0.471
/lnsig2u	1.374	1.072	1.929	1.954	1.834	1.672904	1.492	1.436	1.613
sigma_u	1.988	1.709	2.624	2.657	2.502	2.308163	2.108	2.050	2.241
rho	0.546	0.470	0.677	0.682	0.655	0.618233	0.575	0.561	0.604

** - 5%
* - 10%

Table A4. *Probit, Dependent variable positive sick days due to workplace injury, 1992.*

	Coeff.	Marg. Effect
sec	-0.153	-0.004
	(0.011)	
uni	-0.674	-0.012
	(0.019)	
sex	0.018	0.000
	(0.010)	
metro	-0.270	-0.006
	(0.011)	
age	0.086	0.002
	(0.003)	
age2	-0.001	0.000
	(0.000)	
marr	-0.018	0.000
	(0.012)	
chile	0.103	0.003
	(0.045)	
czech	0.161	0.005
	(0.082)	
denmark	0.298	0.010
	(0.031)	
ethiopia	-0.120	-0.003
	(0.097)	
finland	0.358	0.013
	(0.013)	
germany	0.158	0.005
	(0.038)	
greece	0.476	0.021
	(0.050)	
iran	-0.115	-0.003
	(0.049)	
iraq	0.107	0.003
	(0.071)	
italy	0.406	0.016
	(0.078)	
norway	0.071	0.002
	(0.038)	
poland	0.316	0.011
	(0.035)	
turkey	0.229	0.007
	(0.043)	
usa	0.006	0.000
	(0.102)	
yugo	0.669	0.036
	(0.022)	
_cons	-4.114	
	(0.062)	

Table A5. *Pooled random effects logit, Dependent variable > 25 sick days / year. By education level. Odds ratios presented.*

	Primary Education	Secondary Education	University Education
Female	2.61**	1.64**	2.51**
Metro	1.20**	0.99	1.58**
Age	0.89**	0.94**	0.94*
Age2/100	1.19**	1.13**	1.11**
Married	1.43**	1.43**	1.66**
No.	0.95**	0.95**	0.95
YSM	1.05**	1.02**	1.00
YSM2/100	0.85**	0.91**	0.97
Deviation	0.12**	0.24**	0.21**
Chile	3.30**	5.49**	6.24**
Czech	1.99**	2.41**	3.15**
Denmark	1.82**	2.91**	2.58**
Ethiopia	2.47**	4.43**	2.95**
Finland	3.26**	4.13**	3.52**
Germany	1.07	1.48**	1.35
Greece	11.74**	7.29**	6.94**
Iran	4.26**	3.88**	3.54**
Iraq	12.93**	20.15**	17.19**
Italy	1.70**	2.82**	1.81
Norway	1.64**	2.74**	2.40**
Poland	3.84**	5.98**	6.75**
Turkey	8.95**	11.34**	5.14**
USA	0.78	1.39*	1.66*
Vietnam	2.14**	5.55**	4.23**
Yugo	9.84**	14.08**	9.78**
yr1982	1.11	0.95	1.03
yr1983	1.13*	1.06	1.04
yr1984	1.58**	1.41**	1.39*
yr1985	2.19**	1.73**	1.40**
yr1986	2.94**	2.05**	2.36**
yr1987	4.05**	2.77**	2.54**
yr1988	7.27**	4.59**	5.31**
yr1989	8.88**	5.54**	5.36**
yr1990	9.44**	5.72**	5.09**
yr1991	6.22**	3.60**	4.41**
_cons	0.25**	0.04**	0.01**
/lnsig2u	1.510735	1.657735	1.790751
sigma_u	2.128394	2.290723	2.448255
rho	0.579297	0.6146468	0.645634

** - 5%
* - 10%

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