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Immigrants and Natives

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Work and Health in Switzerland: Immigrants and Natives

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Abstract

This paper is concerned with a comparison of immigrants and Swiss citizens with respect to level of education, labor market outcomes and health care utilization. The evidence is based on data for 1999 from the first wave of the Swiss Household Panel. In order to control for confounding influences, linear and non-linear (negative binomial) regression models are used. The main result is that differences in economic position between immigrants and Swiss nationals tend to be smaller than those found in other countries. The observed differences (higher employment levels of immigrant women, lower earnings of immigrant men, higher health care utilization rates of all immigrants) tend to be no larger than those observed between Swiss citizens living in different parts of the country.

Keywords: Earnings differentials, doctor visits, Swiss Household Panel

JEL-Classification: I1, J3, J61

1 Introduction

Anyone interested in understanding diversity of economic opportunities, choices and outcomes in a given population will want to identify factors that contribute in a

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quantitatively important way to this diversity. Examples for such potential factors are gender, age, or socio-economic background. Another example, the subject matter of this paper, is the country of origin or citizenship. Following the extended literature on immigrants' socio-economic status in the host country (see Borjas, 1994), the total population is divided into two strata, immigrants and local citizens, and questions of the following kind are asked: Are the schooling levels of immigrants above or below those of local citizens? Are the labor force participation rates of immigrants above or below those of local citizens? Are the earnings of immigrant workers above or below those of domestic workers? Determining the economic success of immigrants can also be done indirectly by studying those who "fail": Are immigrants more or less likely than local citizens to be recipients of welfare benefits or other types of social transfers?

Answers to these questions are important for a rational immigration policy aimed at improving the well-being of the current constituency. They also inform about the motives underlying the individual migration decision and thus provide feedback for the modeling stage.

The paper considers the case of Switzerland, a country with a large immigrant population, using data from the first wave of the Swiss Household Panel. The prior studies that exist (Straubhaar and Weber, 1994, Golder and Straubhaar, 1999a, 1999b, Flückiger, 1998) use different data and methods. One interesting aspect of the Swiss experience lies in its multi-cultural native population (with four national languages), strict immigration control, and substantial immigration from neighboring countries¹. In such a setting, one would not necessarily expect to find disadvantaged relative economic outcomes similar to those for Hispanics in the U.S. or guest workers in Germany, say. Yet, it is hard to predict in which way the differences go, if any, and the approach adopted here is "to let the data speak".

¹36 percent of all immigrants hold passports from Germany, France, or Italy and are thus native speakers; other major countries of origin are Spain, Portugal and, more recently, former Yugoslavia.

After giving a brief overview of the relative labor market outcomes of immigrants, the paper focuses on one particular aspect of potential social transfers to immigrants, namely the utilization of health services. Expenditures on health care make up a large proportion of GDP, well beyond 10 percent in Switzerland. The system is financed mostly through a social insurance scheme, in which a flat rate provides basic insurance cover. Thus, heavy users are subsidized by low- and non-users, and it is of interest to establish whether or not immigrants draw disproportionately on this type of social benefit.

The adopted empirical methods are mostly standard. The main tool is regression analysis in order to allow for comparisons of otherwise similar (w.r.t the regressors) immigrants and natives. When modeling health care utilization, non-linear count data regressions are used, since the dependent variable is the number of doctor consultations during a given period of time.

A major argument in the literature has been about the extent that immigrants settle and “assimilate” to natives. Since only a single cross-section is available, statements on assimilation would require very strong identifying assumptions and this particular issue will not be considered in detail here.

2 The Swiss Household Panel

The data employed in this study are part of the first wave of the Swiss Household Panel collected in 1999 (SHP99). This dataset is comparable to other major European household surveys, such as the German GSOEP or the British BHPS. The data are distributed to researchers via CD-ROM for a nominal fee (<http://www.unine.ch/psm>). In the first wave, a total of 7799 individuals living in 5074 distinct households were interviewed. Individual records comprise 506 different variables each, and household records consist of 170 variables. The information was collected using computer assisted telephone interviews. This technique seems to reduce item non-response

substantially.

2.1 Who is an immigrant?

Everyone knows what is an “immigrant”, or do we? Upon closer inspection, it turns out that the rules used to distinguish immigrants from non-immigrants differ from country to country, and are very much a social phenomenon and a result of a country’s immigration history. As a rule of thumb, in all “classical” immigration countries (such as the USA, Canada, Australia and New Zealand), immigrants are mainly identified by their place of birth. People residing in these countries, who were born abroad, are “immigrants” in official statistics and elsewhere.² In other countries, a different principle, that of citizenship, or nationality, prevails. Official statistics on the proportion of the population born abroad are usually not available. Rather, one finds a separation of the resident population into locals (i.e., residents with local citizenship) and foreigners (i.e., residents with a different citizenship).

The differences in record-keeping are a reflection of different attitudes towards immigrants. In classical immigration countries, local citizenship can be acquired relatively easily, after a short period of residence (usually between 2-5 years) for 1st generation immigrants and by birth for 2nd generation immigrants. It also used to be taken for granted (the “melting pot” hypothesis) that 2nd immigrants, once educated in the local school system, are by and large indistinguishable from native residents. In the other group of countries, citizenship is often not as easy to obtain. Many rights and some duties are reserved to citizens, and people who live in such countries for the 2nd or 3rd generation are still classified as foreigners if the citizenship was not applied for and granted.³

²Hence, one also speaks of the “foreign-born” as opposed to the “native” population.

³The most important right usually reserved to citizens is that of voting. Exceptions can be found in classical immigration countries. In New Zealand, permanent residents have the full vote. Military service counts among the usual duties of (male) citizens. However, none of the “classical” immigration countries nowadays has a draft army.

Historically, most empirical contributions to the economic immigration literature have focused on the country of birth distinction. There are two main reasons for this. First, the literature has initially dealt with the US experience, where such an approach is natural, and a large part of the later literature has followed this initial design, even if dealing with different countries. Second, this approach fits the predominant theory in the area, the human capital theory, where (limited) transferability of human capital is the major explanation for initial shortfalls in economic position of immigrants in the host country before “assimilation” sets in. The place of birth usually determines what language one speaks and where one went to school, both important factors in this process. An alternative line of research has focused on the presence of discrimination against immigrants. This brings the nationality issue back to the forefront, because potential discriminatory measures, such as restricted access to the labor market, are naturally linked to citizenship status.

In either case, one would also need to take into account the residence status. Ideally, one would want to restrict the analysis to, in some sense, permanent settlers, and exclude, for example, young foreigners on study permits. One also should point out that the dichotomy between the “place of birth”- and the “nationality”- approaches are blurred by a recent literature on ethnicity effects and ethnic capital.

In the Swiss household panel, as well as in Switzerland generally, foreigners are identified by their nationality. Since the SHP collects no information on the place of birth, no distinction between first- and second-generation immigrants can be made on this ground. However, the survey contains a question on the duration of residence in Switzerland. Non-nationals whose age equals the duration of residence are thus born in Switzerland and hence second generation (or possibly even third). By excluding these non-nationals (17% of all non-nationals in the Swiss Household Panel), first-generation immigrants are properly identified.⁴ This will be the group studied in the

⁴Respondents with multiple nationalities are classified in the following as immigrants if their first nationality is non-Swiss

rest of the paper.⁵

2.2 Weighting in the SHP

In order to confidently extrapolate the relative economic outcomes of immigrants and Swiss found in the Swiss household panel to the entire population, the representativeness of the respective sub-samples is an issue. It is well-known that immigrants are under sampled in the SHP. For example, the share of non-nationals is 11.44 percent (or 9.21 percent if only first-generation immigrants are considered). According to the Swiss Statistical Yearbook 2001, 19.6 percent of the adult resident population was non-Swiss in 1999. To remedy this under sampling, cross-section sampling weights are provided in the SHP.

However, for the purpose of the present paper, the overall under sampling of non-nationals is not the real issue, since all results will condition on immigrant status. The bigger problem is that not all immigrants are included in the sample with equal probability. If one thinks about the reasons for non-inclusion, language problems come to mind first. The telephone interviews are conducted only in three languages (German, French and Italian). If a contact is not fluent in any of these languages, the interview will not materialize. Hence, one would expect that groups of immigrants with potentially lower fluency rates are underrepresented. This is indeed the case, as the following Table 1 shows.

The left two columns give the country of origin distribution of immigrants as observed in the SHP99, while the right two columns show the overall distribution in Switzerland from the statistical yearbook. There are major discrepancies between the two distributions. The SHP99 distribution is tilted in favor of its European neighbors Germany, France and Italy, and grossly underrepresents immigrants from

⁵It might be tempting to extend the analysis by considering second generation immigrants as a separate group. The preceding remarks might have made clear, however, that only a sub-group of the second generation is identified (namely those, who kept their nationality). Hence, such an analysis is not possible with data from the Swiss Household Panel.

	Swiss Household Panel		Statistical Yearbook	
	N	%	N	%
Italy	283	26.09	329773	23.44
Germany	119	15.54	103701	7.37
France	87	10.73	59879	4.26
Former Yugoslavia	78	9.83	337090	23.96
Portugual	74	9.19	135727	9.65
Spain	62	6.27	87624	6.23
Other	189	22.35	352836	25.08

Table 1: *Main Nationalities of Foreigners in Switzerland, Swiss Household Panel and Statistical Yearbook, 1999*

former Yugoslavia.

There are two ways to deal with this situation. First, one could perform all analyses conditional on the country of origin.⁶ The problems with this approach are two-fold. First, as the number of observations for such sub-populations would become small, the precision of the estimates suffers. Second, one can no longer make the comparison between a “typical” immigrant and a “typical” Swiss. But such statements may be of greater interest, in particular if it is unlikely that the country-of-origin mix of immigrants entering Switzerland can be significantly adjusted by policy or expected to change for some other exogenous reason in the future.⁷ Hence, it is the premise of this paper that the notion of a “typical” immigrant, defined by the mix of immigrants as present in 1999 in Switzerland, is a useful simplification for thinking about the effect of immigration on the Swiss economy and society.

The alternative to deal with the non-representativeness, rather than through conditioning, is through the use of sampling weights. Unfortunately, the weights that are

⁶This requires the weaker assumption that sampling within each country stratum is random.

⁷Of course, in the very long run, such shifts do occur, see the replacement of European immigrants by Hispanic immigrants in the U.S. and by Asian immigrants in Australia and New Zealand. But even in the long run, such changes are rather unlikely to occur in Switzerland, given its location in the center of Europe.

provided directly with the data do not adjust within the group of immigrants. Thus, own weights are use, where, based on Table 1, I adjust for the probability of inclusion in the sample by using weights equal to the ratio of the first and third columns. A first check of the weighting scheme is provided in Table 2, where I show the distribution of Type of residence permit using weighted SHP data and the comparison from the statistical yearbook. Three basic type of permits are available in Switzerland: seasonal permit (up to nine months, permit A), annual permit (permit B) and permanent residence permit (“permit C”).⁸ The table shows, that the SHP distribution is about right, with a slight over-representation of permit C, i.e. permanent residence.

	SHP99	Statistical Yearbook
Residential permit C	76.63	73.45
Annual permit B	23.19	25.08
Seasonal permit A	0.17	1.46

Table 2: *Relative Frequencies of Permit Type, Swiss Household Panel (weighted) and Statistical Yearbook, 1999*

3 Education and labor market outcomes

I will start the empirical analysis with various comparisons of education and labor market outcomes as they are performed routinely in the immigration literature.

3.1 Education

Table 3 shows the distribution of education levels for natives and immigrants in Switzerland. Here and elsewhere, men and women are treated separately. Rather than collapsing the schooling information into a single “years of schooling” variable, I use a nominal classification for highest qualification, with three possible outcomes

⁸See Golder and Straubhaar, 1999a, for a discussion of the immigration rules and regulations.

“school only”, “vocational” and “university”. The comparison of education levels between natives and immigrants is ambiguous, as it depends on the chosen category. If one focuses on university degrees, immigrants are more educated. For instance, 15 percent of all immigrant women have a university degree, compared to only 7 percent of Swiss native women. A gap exists for men as well, although it is much smaller (one percentage point). Vocational qualifications, on the other hand, are much more prevalent among Swiss men and women than among immigrants. One explanation is provided by the extensive apprenticeship system that, like in Germany, provides training for a large fraction of the youth.

	Men		Women	
	Immigrant	Native	Immigrant	Native
School degree	34.18	18.23	41.24	30.07
Vocational qualification	52.55	69.80	43.28	63.01
University degree	13.26	11.97	15.48	6.92

Table 3: *Highest qualification of immigrants and natives (in percent), by gender, weighted data.*

An overall judgment on relative education levels depends on the weights one attributes to different degrees. Simply adding up the proportion of men and women with *any* post-school qualification, the Swiss rate exceeds the immigrant rate by 11-16 percentage points. This result confirms findings of other studies that immigrants on average tend to have somewhat lower levels of human capital than Swiss nationals.

3.2 Employment

Table 4 shows two types of immigrant-Swiss differences in employment rates. A positive difference signifies that immigrants are more likely to be in that category than Swiss. The categories are full-time and part-time employment, separately for men and women. In each case, two types of differences are offered. Columns (1)

	Men		Women	
	(1)	(2)	(3)	(4)
Full-time employment	0.0194 (0.0301)	0.0115 (0.0280)	0.1180** (0.0315)	0.1196** (0.0311)
Part-time employment	0.0125 (0.0169)	0.0164 (0.0177)	-0.0594** (0.0283)	-0.0727** (0.0288)
Number of observations	2847		3713	

Table 4: *Unadjusted and adjusted percentage point differences in full-time and part-time employment to population rates between immigrants and Swiss. Adjustment (Models (2) and (4)) is based on linear probability model with additional controls for age and education. Data are weighted. Robust standard errors in parentheses; ** significant at 1% level*

and (3) show the (unadjusted) raw differences, whereas columns (2) and (4) show the (adjusted) differences that remain, after the effects of education and age have been accounted for using linear probability models.⁹

As far as men are concerned, with or without controls, the null-hypothesis of equal full-time and part-time employment rates for immigrants and Swiss men cannot be rejected. The point estimates are positive but very small (1-2 percentage points). For women, the picture is completely different as there is a full-time employment gap of 12 percentage points (highly significant) that is virtually unchanged once other factors are added to the model. The overproportional engagement in full-time work by immigrants women is somewhat offset by lower part-time employment rates, 7 percentage points lower in the case of adjusted rates. Overall, it appears that immigrants women are more closely attached to the labor market than Swiss women, but no such effect can be found for men.

⁹The linear probability model has been chosen to facilitate the interpretation of the coefficients - it gives the predicted percentage point difference between otherwise similar immigrants and Swiss. Robust standard errors correct for the inherent problem of heteroscedasticity in this model.

Alternatively, one could consider unemployment. The full set of results is not shown here. For men, unemployment rates are almost the same for immigrants and Swiss (around 2 percent). Immigrant women have a much higher unemployment rate (9 percent) than Swiss women (2 percent). However, it is unclear to what extent this is simply caused by the greater labor force attachment of immigrant women and therefore “hidden” unemployment among Swiss women. In any event, it would be highly misleading to focus on unemployment only, possibly even lumping men and women together, and conclude that immigrants have disadvantaged employment outcomes. A comparison of employment rates as shown in Table 4 is much more telling in my view.

3.3 Earnings

Given that immigrants have overall higher employment rates, what are then the earnings in the jobs they hold? Table 5 answers this question for the subset of all full-time employed workers. The dependent variable is the logarithm of annual earnings. Coefficients of any dummy variable d therefore estimate the approximate relative difference in expected earnings for $d = 1$ relative to $d = 0$.¹⁰ Columns (1) and (4) give the raw (or unadjusted) differentials between immigrants and Swiss. Immigrant men earn on average approximately 24 percent less, and immigrant women 10 percent less than native men and women, respectively (the latter differential is statistically insignificant). Columns (2) and (5) adjust for the potential effect of the life cycle (i.e., age) and education. Immigrants are younger, on average, and more likely to have a school degree only. These “endowment effects” might explain some of the income gap. Finally, columns (3) and (6) show an extended model that in addition controls for period of residence in Switzerland.

Consider first model (2) for men. A university degree raises expected earnings

¹⁰The exact relative difference, under some additional assumptions stated in Winkelmann 2001b, is given by $\exp(\beta) - 1$, which can be consistently estimated by $\exp(b_{ols}) - 1$.

	Men			Women		
	(1)	(2)	(3)	(4)	(5)	(6)
Immigrant	-0.2397** (0.0422)	-0.1860** (0.0414)	-0.2217* (0.0927)	-0.0991 (0.0530)	-0.0860 (0.0515)	-0.1332 (0.0986)
Age		0.0955** (0.0080)	0.0955** (0.0081)		0.0882** (0.0180)	0.0882** (0.0179)
Age ² /100		-0.0969** (0.0096)	-0.0971** (0.0096)		-0.0980** (0.0237)	-0.0983** (0.0237)
University degree		0.6188** (0.0513)	0.6215** (0.0511)		0.5167** (0.0863)	0.5246** (0.0850)
Vocational qual.		0.2876** (0.0446)	0.2884** (0.0443)		0.2673** (0.0556)	0.2668** (0.0558)
Years in CH			0.0020 (0.0035)			0.0035 (0.0051)
Constant	11.3160** (0.0145)	8.8384** (0.1810)	8.8434** (0.1826)	10.9401** (0.0247)	8.8925** (0.3357)	8.8966** (0.3355)
Observations	1649	1649	1649	667	667	667
R-squared	0.03	0.28	0.28	0.01	0.17	0.17

Table 5: *Dependent variable: log-earnings; full-time employees only; Weighted least squares with robust standard errors in parentheses. * significant at 5% level; ** significant at 1% level*

by approximately 62 percent over the earnings of workers with school qualifications only. The “return” to a vocational degree is half as high, approximately 29 percent. The estimated age-earnings profile is concave, with a peak at 47 years of age. Most importantly, though, an immigrant earnings differential remains. The point estimate is a 19 percent differential. From a statistical point of view, the immigrant dummy is highly significant. Thus, only part of the initial gap ($1 - 0.1860/0.2397 = 22$ percent) can be “explained” by differences in endowments between immigrant and Swiss men. The remaining 78 percent are due to other factors.

Column (5) gives the results for women. The age-earnings profiles are very similar to those of men. The returns to education are slightly smaller. Again, controlling for

endowment effects reduces the (insignificant) immigrant-Swiss wage gap for women, if only slightly. If one expands the models to include a variable for duration of residence in Switzerland, I find that the assimilation terms have the “right” sign but are insignificant and very small (0.0020 for men and 0.0035 for women). Based on the point estimates, parity in incomes between immigrants and the Swiss is not reached for men during lifetime. For women, it takes 38 years to reach parity.

One common explanation for immigrant-native earnings differentials is “discrimination” (see Golder and Straubhaar, 1999b). However, such a conclusion may be premature. There can be a number of other good reasons, why earnings of immigrants and Swiss might differ as long as we control only for age and education. In particular, I will put forward an alternative simple explanation that is based on the observation that earnings of Swiss workers vary substantial by region of residence. Taking the major division of Switzerland into a German speaking, a French speaking and an Italian speaking part, it is well known that the Italian part is rather “poor”, the German part is the “richest” and the French part is somewhere in between.¹¹

Consider a simple standard earnings function for Swiss workers only that is augmented by two regional indicators depending on the main language spoken in the region, “French” and “Italian” (Ticino), with “German cantons” as omitted reference group. As we see in Table 6, Swiss men in Ticino earn 20 percent less than Swiss men in German speaking cantons, all else equal (significant at the 10% level). Swiss men in French speaking cantons earn 9 percent less than Swiss men in German speaking cantons, again all else equal. The corresponding differentials for women are 19 and 6 percent, respectively. Thus, differences between immigrants and Swiss are no larger than regional earnings differentials of Swiss workers.

These regional differences naturally affect the earnings of immigrants as well. Can these regional differences account for the immigrant differential? Columns 3 and 4 of

¹¹Of course, together with economic potential, cost of living may vary accordingly, and the nominal earnings differentials are not necessarily indicative of differences in standard of living.

	Swiss only		Swiss and Immigrants	
	men	women	men	women
French speaking canton	-0.0902** (0.0294)	-0.0609 (0.0497)	-0.0716** (0.0265)	-0.0292 (0.0439)
Italian speaking canton	-0.2004 (0.1053)	-0.1885* (0.0790)	-0.2740* (0.1277)	-0.0856 (0.0914)
Immigrant			-0.1748** (0.0381)	-0.0856 (0.0524)
Observations	1467	588	1649	667
R-squared	0.27	0.17	0.29	0.17

Table 6: *Dependent variable: log-earnings; model with regional indicators; controls for age and education are included. Weighted least squares with robust standard errors in parentheses. * significant at 5% level; ** significant at 1% level*

Table 6 show that the differentials are reduced once the regional controls are added to the model, but not by very much, relative to the results from Table 5 without control for region. There is a drop by 1 percentage point for men, and half a percentage point for women. It is indeed the case that immigrants are disproportionately clustered in “poorer” regions: the shares for Ticino, Swiss Romand and Deutsch-Schweiz in the data are 24 percent, 20 percent and 14 percent, respectively. But these differences apparently cannot account for much of the differential. Regressions (not shown here) controlling for actual language spoken at home rather than language spoken at the canton have a somewhat larger effect in reducing the remaining immigrant-Swiss earnings gap.

I conclude this section on earnings with two further considerations. The first question is whether residence status has an independent influence on earnings. It is to be expected that workers on non-permanent resident permits may on average have lower earnings than those with permanent residence. There should be a correlation between residence status and job/occupation characteristics. Moreover, permanent residents on average have spent more time in the country (it is usually issued only after

a period of several years in the country). The extended model in addition controls for the type of household a person lives in. Define a “mixed household” as one, where the partner has Swiss citizenship. 21 percent of all immigrants live together with a Swiss partner; the remaining 79 percent either are single or have a foreign partner.

	Men	Women
Immigrant	-0.1617** (0.0363)	-0.0427 (0.0503)
Non-permanent Permit	-0.1574 (0.1220)	-0.1488 (0.1042)
Swiss Partner	0.0701 (0.0572)	0.0576 (0.0587)
Number of observations	1649	667
R-squared	0.26	0.17

Table 7: *Dependent variable: log-earnings; full-time employees only; controls for age and education are included. Weighted least squares with robust standard errors in parentheses. * significant at 5% level; ** significant at 1% level*

The results in Table 7 show earnings differentials of full-time employed immigrants and Swiss men and women. In this specification, the immigrant coefficient estimates the earnings gap between permit-C immigrants and Swiss natives. Relative to Table 5, there is an improvement indeed, although it is not very large. Moreover, one cannot reject the hypothesis that the earnings of permanent and non-permanent immigrants are the same. The same also holds for any possible additional effect of a Swiss partner. This corroborates the findings by Coulon et al. (2001) based on the Swiss Labor Force Survey. They also do not find significant earnings differences between permit-B and permit-C holders, admittedly in a model with a very large set of controls.

Note that the debate about permit-Status in Switzerland is usually not linked to the issue of wages, but rather to the issue of labor market flexibility. An often expressed opinion (see Flückiger, 1998) is that the increase of the share of perma-

ment residents from about 15% in 1960 to well over 60% had adverse labor market consequences, since it preempted the use of foreign labor to react flexibly to labor market shocks, by not extending contracts to foreigners in “bad” times. One might have suspected a trade-off between flexibility and a better economic performance (higher productivity) of permanent residents. The preliminary evidence presented here suggests that such a tradeoff may not exist.

To summarize, the following general points should be taken from this analysis of education, work, and earnings. First, the educational achievements of immigrants are relatively heterogeneous. Immigrants are both somewhat more likely to have a university degree and much more likely to have no degree at all than Swiss nationals. Second, immigrant women have higher full-time and overall employment rates than Swiss women. Third, there tends to be a substantial negative wage differential associated with being a male immigrant in Switzerland. For women the differential is smaller and statistically insignificant in all models. Fourth, the paper provided estimates of regional wage differentials for all workers, in order to provide a potential base of comparison by which to judge whether the immigrant wage differentials are (economically) large or not. The results showed that the male immigrant wage differential is no larger than the wage differential between workers in the Italian and the German speaking parts of Switzerland.

4 Health care utilization

The effect of immigration on a nation’s welfare is an inherently complex issue. One piece of the overall puzzle has been analyzed in the previous section, namely how Switzerland’s immigrants fare in the labor market. This section deals with a second issue, the receipt of social benefits by immigrants. A comprehensive coverage of all possible aspects is beyond the scope of this paper. Rather, I focus on a particular aspect that has not received much attention so far: what can be said about the use

of the health care system by immigrants.

In contrast to issues related to labor market outcomes, there is little guidance from economic theory in this area (maybe one reason why the question hasn't yet caught the interest of empirical economists). The former usually borrow ideas from human capital theory and apply them to migration. One core hypothesis is that of a limited transferability of human capital that leads, initially at least, to sub-par outcomes in the labor market. The second hypothesis is that of comparative advantage and self-selection. Again, empirical implications of the so-called Roy model (see Borjas, 1994) have been tested extensively.

What then should we do with respect to health? Adopting the human capital framework to health, Grossman (1972) has introduced the term "health capital". It seems unlikely, though, that there is any problem of transferring health capital across country borders. Hence, the analogy to the human capital model does not provide any hypothesis on the relative health stock of immigrants, and thus their utilization of health services. Looking elsewhere for possible hypotheses, one could turn to the institutional set-up of the admission process. In principle, immigrants can be screened for good health (aids, diabetes) before entering, and are so in some countries (USA, New Zealand). A successful screening should result in lower utilization rates for health services. But Switzerland seems not to engage in this practice. Hence, the sign of the immigration effect remains undetermined a-priori.

To obtain an empirical assessment of the cost of a person to society through utilization of social services, here health related services, these health costs will be proxied, in the absence of any better measure in the data, by the number of times a person visited a physician over a 12-month period. Since the dependent variable is a count, appropriate non-linear regression models are used, here the negative binomial model. Estimation proceeds using the method of maximum likelihood. Apart from that, the methodological approach is much the same as before. Coefficients on dummies can be

interpreted as the (approximate) relative difference in the expected count between the two outcomes (since all models are specified with an exponential conditional expectation function). In a first step, I establish whether there is a difference in behavior (here: the number of doctor visits) between immigrants and Swiss at the marginal level (the “raw” or “unadjusted” differential). Then I include an increasing number of additional controls that can reasonably be expected to have an independent effect on doctor visits as well. The resulting immigrant differential is now “adjusted” for the confounding effects of other factors.

One has to beware of overdoing things, though. Not every additional variable is warranted. One well-known example is the question whether one should control for occupation in male/female earnings comparisons. If one strictly wants to establish whether there is “equal pay for equal work”, one certainly should. On the other hand, if women are restricted in their occupational choice, then it becomes more interesting to ask whether there is equal pay for equal starting position, i.e., occupation should not be controlled for.

A related situation arises in the current context where health is an intervening variable that directly affects health utilization. The question then is: should one control for health? From the cost point of view, and continuing the analogy to the occupation variable in the male/female wage debate, it may be irrelevant whether some control variable, such as age, affects health utilization because it leads to lower actual health or because it affects utilization for a given health; it is the combined effect that matters.

For other questions, though, it would be highly informative to observe variations in health utilization for a given health status, for example when one has in mind targeted policies to reduce perceived “excess demand”.

4.1 Negbin models

The benchmark count data model is the Poisson regression model. It is often inappropriate in economic applications, as it imposes a strict variance assumption that is most frequently violated in practice (as in this application), generally through the occurrence of unobserved heterogeneity. The more general negative binomial model is then a suitable alternative. Maximum likelihood estimators are efficient and asymptotically normal distributed (see Winkelmann, 2000, for further details on this as well as other count data models).

Table 8 displays the regression results for women. The coefficient in the most basic model without further covariates is 0.191. Immigrant women have a higher health utilization than Swiss women. The expected number of visits is 4.4 for Swiss and 5.4 for immigrant women. In an international context, both averages are surprisingly low. The annualized number of doctor visits in the German Socio-economic Panel for women is close to 10 (Winkelmann, 2001a).

Column (2) includes a number of additional regressors but no health variables. The immigrant differential increases to 23 percent and remains highly significant. A short look at the other coefficients reveals: Married women have a lower utilization rate. As found elsewhere in the literature, there is a clear and significant effect of economic variables on the number of visits, supporting an interpretation in terms of opportunity cost that are taken into account by individuals when planning the optimal level of health care utilization. For example, full-time employed women have fewer visits, while unemployed women have more visits than others. The difference between full-time employed and unemployed women adds up to almost a full visit per year ($\exp(0.59)-1=0.8$). Similarly, women with a university qualification have fewer visits, possibly because they choose a healthier lifestyle to protect their investment in human capital (the Grossman argument) or again because of the opportunity cost of higher income (where applicable).

	(1)	(2)	(3)
Immigrant	0.1913*	0.2283**	0.0567
	(0.0784)	(0.0789)	(0.0636)
Married		-0.1171*	0.0866
		(0.0531)	(0.0457)
Full-time employed		-0.1882**	-0.0205
		(0.0681)	(0.0568)
Part-time employed		-0.1155*	-0.0090
		(0.0588)	(0.0509)
Unemployed		0.4092*	0.1483
		(0.1832)	(0.1610)
University degree		-0.1991*	0.0806
		(0.0817)	(0.0718)
Vocational qualification		-0.0183	0.1177**
		(0.0525)	(0.0446)
French speaking canton		0.1549**	0.0431
		(0.0491)	(0.0420)
Italian speaking canton		0.0384	-0.0164
		(0.1251)	(0.0985)
Good health today			-0.3350**
			(0.0549)
Satisfaction with health			-0.1085**
			(0.0124)
Chronic condition			0.4106**
			(0.0503)
Health score			0.0685**
			(0.0064)
Observations	4321	4321	4303
Log-likelihood	-11257.3	-11189.1	-10582.3

Table 8: *Doctor consultations, weighted negative binomial regressions for women; the model in addition includes an age polynomial and a constant; * significant at 5% level; ** significant at 1% level*

Income was not directly included because the non-responses would have reduced the number of observation substantially. Finally, we note that region plays an important role. The number of doctor visits in French speaking cantons is by 16 percent

higher than the number of visits in German speaking cantons.

In column (3) of Table 8, four health variables are added to the model. The first is an indicator variable, a subjective assessment of current health (well or very well). The second is a more general health satisfaction variable with values between 0 (completely dissatisfied) and 10 (completely satisfied). The presence of a chronic condition is captured by a further variable. Finally, the health score was generated as an index between 0 (good health) and 15 (bad health) based on the following questions: do you suffer from backache, weariness, insomnia, headache, or anxiety? If so, how often (daily, at least once a month, less frequently). Each of the five mentioned problems was weighted by its frequency (3 for daily, 2 for at least once a month, 1 for less frequently) and then added up. The following table gives the Spearman correlation of the four measures. We see that each of them captures some independent information in addition to a common underlying health condition.

	Good health	Satisfaction	Chronic condition
Satisfaction	0.4759		
Chronic condition	-0.3368	-0.3766	
Health score	-0.3028	-0.3699	0.2306

Table 9: *Spearman rank correlation among different health indicators*

When the health variables are included, most of the effects disappear. In particular, there is no longer any difference between immigrants and natives. Each of the four health variables in turn is highly significant with the expected sign. The obvious interpretation is that, as mentioned before, health status acts as intervening variable. The socio-economic characteristics have no direct effect on health utilization. Rather, they affect utilization through health status, which includes here subjective (perceived) health. This conclusion might sound obvious and foregone, but it by no means is. Indeed, we will find that in the regressions for men, the socio-economic

variables will keep explanatory power even after controlling for health. This is the essence of the opportunity cost/rational choice argument. For Swiss women, however, such effects could not be found.

	(1)	(2)	(3)
Immigrant	0.0010 (0.1302)	-0.0054 (0.1020)	-0.1341 (0.0816)
Married		-0.1390 (0.0808)	-0.0455 (0.0674)
Full-time employed		-0.4178** (0.1046)	-0.1142 (0.0846)
Part-time employed		-0.2113 (0.1616)	-0.2427* (0.1102)
Unemployed		-0.0609 (0.2202)	-0.1740 (0.1489)
University degree		-0.4115** (0.1435)	-0.1535 (0.1074)
Vocational qualification		-0.1528 (0.1105)	0.0184 (0.0871)
French speaking canton		0.0542 (0.0790)	-0.0255 (0.0622)
Italian speaking canton		0.0658 (0.1542)	0.0090 (0.1307)
Good health today			-0.4976** (0.0900)
Satisfaction with health			-0.1447** (0.0181)
Chronic condition			0.3423** (0.0696)
Health score			0.0434** (0.0097)
Observations	3388	3388	3375
Log-likelihood	-7937.1	-7863.0	-7492.7

Table 10: *Doctor consultations, weighted negative binomial regressions for men; the model in addition includes an age polynomial and a constant; * significant at 5% level; ** significant at 1% level*

The next table shows the regression results for men. At the marginal level, there is no difference between immigrant and Swiss men. The expected annual number of visits is around 3.5. The immigrant coefficient is increased by the inclusion of additional variables, but it remains insignificant. The other socio-economic characteristics have similar effects as for women. Notable exceptions are unemployment that does not increase the expected number of male visits, and less pronounced regional differences. If we now add the controls for health status (column (3) of Table 10), the immigration effect remains insignificant, now with negative point estimate. An independent (negative) effects remain for part-time employment. The significantly negative coefficient of being in full-time (in model (2)) or part-time employment (in model (3)) are compatible with an opportunity cost argument. .

This exploratory analysis supports the following conclusions with respect to the health care utilization of immigrants and natives. First, relative to similar Swiss women, immigrants women indeed report higher rates of doctor visits. There is no difference for immigrant men. The female differences can be fully explained by inferior self-reported measures of health. Once health is controlled for, there are no further differences in utilization.

5 Conclusions

This paper was concerned with comparisons of immigrants and citizens living in Switzerland with respect to education, labor market outcomes and health care utilization. The evidence was based on data for 1999 from the first wave of the Swiss household panel. In order to control for confounding influences, linear and non-linear (negative binomial) regression models were used. The main result is that the differences in economic position between immigrants and Swiss nationals tend to be smaller than those found in similar comparisons for other countries. Immigrants are both more likely to have a university degree and no degree at all than Swiss nationals.

Immigrant women have higher employment rates than Swiss women, and the female income differential is statistically insignificant. Male immigrants and Swiss have practically the same employment rates whereas wages of immigrant men are significantly lower, without and with controlling for endowment effects. Finally, utilization rates of health services exceeds the utilization rate of Swiss nationals for women but not for men. The female differences can be fully explained by differences in self-reported health status.

At the end of the day, we want to know whether immigration is “good” or “bad” for a country, whether immigrants are “well” or “poorly” integrated. Within the limited scope of my analysis, my view of the Swiss immigration experience tends to be more positive than previous assessments given by Golder and Straubhaar (1999a, 1999b) who emphasize “shortcomings and failures of Swiss immigration policy”.

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