

Risky working conditions: an immigrant trap or an income effect?

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Very preliminary version. Do not circulate

Abstract

Immigrants' income has been proved to converge to the average native income level with years of residence in the host country. This income assimilation effect is surprisingly not associated with a health improvement. While most of the literature has underlined the role of acculturation as a driver of the counterfactual relation between immigrants' health and income, some emerging studies point towards the role of working conditions. However, according to Viscusi (1978) working conditions are a normal good and income assimilation should lead to an improvement in working conditions. This paper exploits two distinct French databases merged with national industry statistics on professional injuries and illnesses to test *(i)* whether immigrants bear in average worse working conditions than natives, *(ii)* whether working conditions are a normal good and *(iii)* if income assimilation of immigrants has induced an improvement in their working conditions. We find that in average immigrants bear worse working conditions than natives. This divergence seems though to result from an income effect driven by the fact that working conditions are a normal good. For an equivalent non-earned income level there are no significant differences in working conditions between natives and immigrants. Bad working conditions cannot be blamed for the degradation of immigrants' health with years of residence in the host country.

Keywords: immigrants, working conditions, income

JEL: A14; J15; J61; J81

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1 Introduction

While there exists a large literature on the labor market performance of immigrants in the host countries and their impact on natives wages or employment (see among others Card (1990), Hunt (1992), Katz and Murphy (1992), Card (2005), Algan et al. (2010), Ottaviano and Peri (2012), D’Amuri and Peri. (2014) or Moreno-Galbis and Tritah (2016)) less is known about working conditions borne by immigrants and how these conditions evolve with immigrant assimilation in the host country. The objective of this paper is to gain insights on immigrants working conditions and the role of income assimilation as a potential driver of them.

With years of residence in the host country immigrants’ income tends to converge to the native income level (see Borjas (1985), Borjas (1995), Chiswick (1986), Hu (2000) or Antecol, Kuhn, and Trejo (2006) among others). This income assimilation effect is surprisingly not associated with a health improvement (see Marmot, Adelstein, and Bulusu (1984), Antecol and Bedard (2006) or Hao and Kim (2009)). Why the improvement of immigrants’ income is not associated with a better health dynamics? The economic literature has tried to provide alternative explanations to this counterfactual result. Acculturation (and the associated risky behaviors) is often underlined as the main driver of the counterfactual relation between immigrants’ health in the host country and income (see Antecol and Bedard (2006)). While less numerous, some studies also point towards worse working conditions of immigrants with respect to natives as determinant of their deteriorated health dynamics (see Case and Deaton (2005), Fletcher and Sindelar (2009), Orrenius and Zavodny (2009), Fletcher, Sindelar, and Yamaguchi (2011) or Giuntella and Mazzona (2015)). This statement seems though contradictory with the idea that working conditions are rather a normal good: the higher the individual’s non-earned income the better working conditions he will require to accept a job (see Viscusi (1978) for a seminal work on the subject). With years of residence in the host country, immigrants’ income tends to converge to the native level. Under the hypothesis that working conditions are a normal good we should then find a convergence in immigrants’ and natives working conditions. If this is not the case we may wonder whether immigrants are actually caught in a trap of bad working conditions due to differences in risk perception, human capital or outside opportunities.

Media reports and anecdotal evidence suggest that immigrants work under more hazardous conditions. This statement evidently abstracts from the fact that the composition of immigrants’ waves and thus the working conditions that immigrants are willing to accept evolve along time. A recent immigrant wave might be willing to work in riskier jobs than previous waves if recently arrived immigrants have lower levels of human capital, of non-earned income or are less risk averse than the previous. This implies that conclusions drawn by the literature on the relationship between immigrants and working conditions are likely to be sensitive to the period of time considered.

There are several reasons that can rationally explain why immigrants should be willing to accept riskier jobs than their natives counterparts (see Orrenius and Zavodny (2009) for more details on these reasons). First, because working conditions of immigrants in their home country may be very

hard and since they may have also gone through very hard migration trip conditions, immigrants are likely to have a differing perception of risk with respect to natives. As a result, immigrants may be more willing to accept riskier jobs than natives (even for an identical wage rate), since they do not perceive these jobs as dangerous.

Second, lower levels of education, social capital or bad language proficiency may lead immigrants to have less information on the actual risks associated with a job. Moreover, employers may have an interest in hiding the actual risks associated with the job. Third, even if immigrants are perfectly aware about the risky nature of a job, they may not have other choice than accept it because of the lack of alternative opportunities. This particularly applies for undocumented immigrants.

Fourth, upon arrival immigrants tend to be in better health than natives (see McDonald and Kennedy (2004), Antecol and Bedard (2006) or Park, D. Myers, and Min (2009)). Therefore, recently arrived immigrants might be willing to hold more physically strenuous jobs than natives. These physically strenuous jobs may involve more workplace risks.

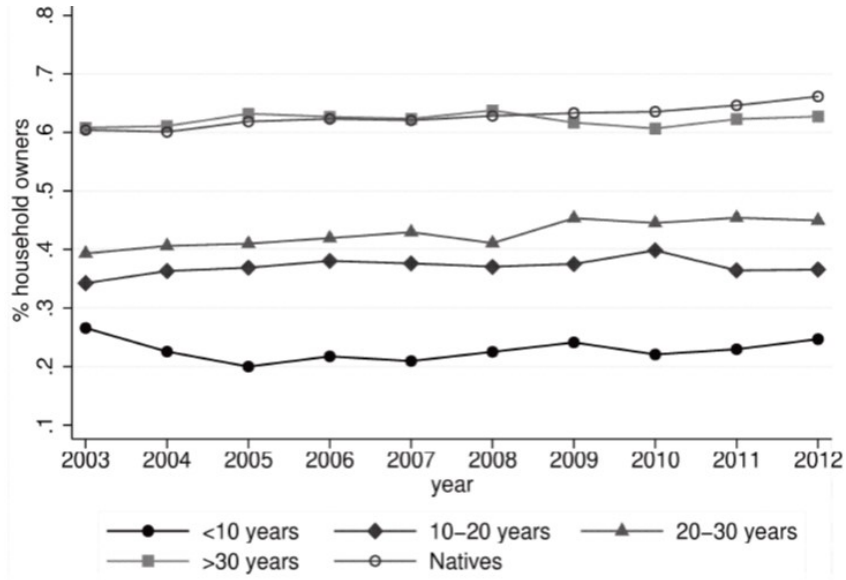
Finally, even if immigrants and natives have similar knowledge about job risks and the same legal status, immigrants might still occupy riskier jobs than natives because of differences in non-earned income. Our paper focuses on this point.

Figure 1 uses French Labor Force Survey data 2003-2012 to compute the share of household owners, which is considered to be a proxy for high non-earned income, among immigrants depending on their residence duration in France. Figure 1 reveals first that the share of household owners among immigrants increases with years of residence in the host country, progressing from a proportion of around 2.2% of immigrants with less than 10 years of residence, to 3.8% for immigrants with 10-20 years of residence, to 4.2% for immigrants with 20-30 years of residence and to slightly more than 6% for immigrants with more than 30 years of residence. Second, among immigrants with more than 30 years of residence in the host country the share of household owners actually equals along time the average proportion of natives who are household owners. Years of residence seem thus associated with income convergence of immigrants towards the native average. If as remarked by Viscusi (1978) or Orrenius and Zavodny (2009) working conditions, are a normal good whose quantity demanded increases with income we should find an improvement in immigrants' working conditions with years of residence in the host country and, everything else equal, undifferentiated working conditions between immigrants and natives having high non-earned income.

We seek to analyze both if immigrants are employed in riskier jobs and if income promotes better working conditions. We work with French data. We use the same technique as in Berger and Gabriel (1991), Hamermesh (1998) and Orrenius and Zavodny (2009) and merge industry injury and illness rates with individual-level data. Industry data comes from the national statistics provided by the National Health Insurance Fund for Salaried Workers ("Caisse nationale de l'assurance maladie des travailleurs salariés") 2014-2016 on professional injuries and illnesses by NAF5 2008 activity classification.

We use two alternative sources of individual data covering distinct periods and differing in their

Figure 1: Share of immigrant household owners depending on residence duration



Source: Labor Force Survey 2003-2012.

content. The French Labor Force Survey (LFS) is a representative database of the French labor force and our sample covers the period 2003-2012 (after this date there is no information on the country of birth). The LFS contains information on the individuals' level of non-earned income in an indirect way, since we know if the individual is a household owner. It does not contain information on working conditions but we will merge the LFS with national statistics on professional accidents and illness coming from the National Health Insurance Fund for Salaried Workers.

The individual medical database CONSTANCES corresponds to a non representative sample covering the period 2012-2018. Participation in this survey is voluntary, implying that participants may be more likely to care about their health than the average. The number of observations is evidently below the LFS but CONSTANCES will allow us to contrast results obtained on the LFS. More precisely, CONSTANCES contains information on the origin of the individual's revenue. We have information on whether the individual is perceiving capital income from dividends or housing rentals. We use this variable as a proxy for high non-earned income. Because we also enrich CONSTANCES by merging it with national statistics on professional accidents and illness coming from the National Health Insurance Fund for Salaried Workers, we will be able to test the robustness of results obtained on the basis of the LFS on CONSTANCES data.

CONSTANCES contains also information on current job content of the individual (physical hardness, use of ICT, repetitive nature of the job, etc.) as well as job content of past positions (whether the individual has been exposed to organizational, physical, chemical, noise or other constraints).¹

¹CONSTANCES also contains information on the individual health status and it has a panel dimension on what concerns the follow up of individuals' health status. The analysis on the relationship between working conditions

We use this information in appendix to show the relationship between professional accidents/illness indicators and job content.

The paper is organized as follows. The economic rational behind our empirical findings is explained in section 2 using a simplified labor market representation. Section 3 describes our data bases and the merging procedure between individual data bases (LFS and CONSTANCES) and activity branch data coming from the National Health Insurance Fund for Salaried Workers. Descriptive statistics are also provided in this section. The econometric strategy is presented in section 4. Results from benchmark estimations are commented in section 5 and complementary estimations are analyzed in section 6. Section 7 concludes.

2 Economic rational

2.1 The framework

We build a simplified matching model based on Pissarides (1990). Time is continuous, agents are risk neutral and discount the future at a common rate ρ . We consider a partial equilibrium where wages are exogenously determined and workers have an exogenous probability of finding a job. The individual can be employed or unemployment. While in the former case the individual devotes all the time to work, in case of unemployment the individual profits from the value of leisure. The economy is composed by J independent labor markets each corresponding to a different occupation or activity branch.² Within a particular labor market, workers are homogeneous in terms of productivity, implying also that we can easily assume that they all earn the same wage. In contrast, workers may be heterogeneous with respect to the outside opportunity of employment. For simplicity, we assume here that the outside opportunity of employment is composed by the unemployment benefit b_j associated with the wage of the corresponding occupation/activity branch j and by non-earned income of the worker, R_i . The outside opportunity of employment equals $b_j + R_i$, where the value of leisure is assumed to be equal to non earned income. Depending on its nature, non-earned income can contribute to finance or not consumption. More precisely, if non earned income is composed by income capital coming from dividends or rentals, it can finance consumption independently on the employment status of the individual. In contrast, if non-earned income corresponds to household ownership, it cannot directly contribute to finance current consumption but it contributes to the value of leisure when the individual is unemployed. Consumption is financed by the individual's wage w_j in occupation/activity branch j and by the monetary part of non-earned income, σR_i , where σ stands for the proportion of non-earned income that can be used to finance consumption.

A job seeker in labor market j successfully matches a vacancy with probability p_j . The value of

and individual health dynamics is studied in another ongoing paper.

²While the hypothesis of independence across labor markets may seem unrealistic, it is easier to justify it if we consider occupations or activity branches defined in large sense.

unemployment equals then:

$$\rho U_j = b_j + R_i + p_j[W_j - U_j] \quad (1)$$

where W stands for the value of employment.

To keep as close as possible to the standard search models traditionally used in the literature (see Pissarides (1990)) we assume that jobs are destroyed by a common exogenous shock with probability χ (but this hypothesis does not play any role for our analysis). The expected utility of an employee in labor market j equals:

$$\rho W_j = w_j - \tau_j + \sigma R_i + \chi(U_j - W_j) \quad (2)$$

where w_j represents the wage and τ_j stands for the utility loss associated with working conditions in occupation/activity branch j . The difference between the wage paid in occupation/activity j and the disutility generated by working conditions in j , *i.e.* $w_j - \tau_j$, captures what is known as the compensating wage differential. A wage differential refers to the relation between the wage rate and the unpleasantness, risk, or other undesirable attributes of a particular job. A compensating wage differential is the additional amount of revenue that a given worker must be offered in order to motivate him to accept a given undesirable job, relative to other jobs in which working conditions could be such that $\tau_j = 0$.

A job seeker in labor market j accepts a job if and only if:

$$W_j \geq U_j \quad W_j - U_j \geq 0 \quad (3)$$

Replacing equations (1) and (2) in the previous expressions leads to:

$$W_j - U_j \geq \frac{w_j - \tau_j - b_j - (1 - \sigma)R_i}{\rho + \chi + p_j} \quad (4)$$

where the denominator is always positive. The decision to accept a job or remain unemployed is thus driven by the sign of the numerator:

- If $w_j - \tau_j - b_j - (1 - \sigma)R_i < 0 \Rightarrow w_j - \tau_j < b_j + (1 - \sigma)R_i$, the individual prefers to keep the outside opportunity of employment and not work. The compensating wage differential does not manage to overcome the unemployment benefit and the additional utility obtained while unemployed from the non-monetary part of non-earned income (value of leisure).
- If $w_j - \tau_j - b_j - (1 - \sigma)R_i > 0 \Rightarrow w_j - \tau_j > b_j + (1 - \sigma)R_i$, the compensating wage differential together with the monetary component of non-earned income overcomes the outside opportunity of employment. The individual accepts the job.

2.2 Comparative static analysis

2.2.1 Non-earned income and labor supply

Consider a particular labor market j , where all individuals earn the same wage w_j , face same working conditions τ_j and have the same unemployment benefit b_j . For simplicity we actually

set $b_j = 0$. The proportion of monetary non-earned income σ has been assumed identical for all individuals. We initially set also $\sigma = 0$. In this case, from equation (4) we deduce that only individuals with non-earned income below $w_j - \tau_j = R^*$ accept to work. Individuals with $R_i > R^*$ refuse to work under these conditions.

If we assume a strictly positive proportion of monetary non-earned income, only individuals with an income below $\frac{w_j - \tau_j}{(1 - \sigma)} = R^{**}$ accept a job. Because $R^{**} > R^*$, the proportion of people that accepts to work, increases when we consider the possibility that a fraction of non-earned income can be used to finance current consumption. However, our previous conclusions still holds, since for a given σ and for a given compensating wage differential, individuals with a non-earned income $R_i > R^{**}$ will refuse to work, while individuals with lower non-earned income accept the job. Identical working conditions are then refused by high income individuals whereas accepted by lower income individuals.³

As shown by Figure 1, it takes more than 30 years of residence in the host country for immigrants to attain the average non-earned income level of natives, where non-earned income has been proxied by household ownership. In average, immigrants have then lower non-earned income than natives. Using results from our theoretical framework, this means that for an identical compensating wage differential immigrants may be willing to accept jobs that natives with higher non-earned income refuse.

2.2.2 Non-earned income, risk aversion and labor supply

As underlined by Orrenius and Zavodny (2009) immigrants may be actually willing to accept hard working conditions simply because they have a different perception of the risk with respect to natives. Because working conditions of immigrants in their home country may be very hard and since they may have also gone through very hard migration trip conditions, immigrants may be more willing to accept riskier jobs than natives. In this case, for an identical level of non-earned income, immigrants may be willing to accept a job which has been refused by a native simply because immigrants do not perceive this job as dangerous.

We modify our framework to introduce the possibility of different risk perception by individuals. Up to now, we have considered that everyone is risk neutral and utility is linear in consumption. When the individual is employed, consumption is financed by both earned income (*i.e.* wages) and the monetary part of non-earned income if the individual:

$$U(C_W) = C_W - \tau_j \quad \Rightarrow \quad U(C_W) = w_j + \sigma R_i - \tau_j$$

where $C_W = w_j + \sigma R_i$ stands for current consumption when the individual is employed and benefits

³If the proportion of monetary non-earned income was individual specific, σ_i , for an identical level of non-earned income R individuals with a higher proportion of monetary non-earned income, $\sigma_2 > \sigma_1$, may be willing to work while individuals with a lower proportion of monetary non-earned income may not be willing to work: $\frac{w_j - \tau_j}{(1 - \sigma_2)} < R < \frac{w_j - \tau_j}{(1 - \sigma_1)}$. While we are perfectly aware that the nature of non-earned income influences individuals' labor supply, with data in hand we are unable to identify the composition of the individual's non-earned income.

then from a total income equal to $w + \sigma R_i$. Again τ_j represents the lump-sum utility loss associated with working conditions in occupation/activity branch j .

When the individual is unemployed, the utility of the individual is determined by consumption of both goods and leisure (remember that when employed there is no leisure consumption):

$$U(C_U) = C_U \Rightarrow U(C_U) = b_j + \sigma R_i$$

where $C_U = b_j + R_i$ must be interpreted as a composite including everything that drives utility of the unemployed individual (consumption of goods and leisure, essentially).

Let us assume now, that some individuals, for example natives, are risk averse. Their utility function becomes then concave in consumption: $U'(C_i) > 0$ and $U''(C_i) < 0$. We consider the simplest risk averse utility function :

$$U(C_W) = \alpha \ln C_W - \tau_j \Rightarrow U(C_W) = \alpha \ln (w + \sigma R_i) - \tau_j \quad (5)$$

$$U(C_U) = \alpha \ln C_U \Rightarrow U(C_U) = \alpha \ln (b_j + R_i) \quad (6)$$

with $0 < \alpha < 1$. For computational simplicity, we set again $b_j = 0$ and replace equations (5) and (6) in expression (3):

$$W_j - U_j \geq \frac{\alpha \ln (w_j + \sigma R_i) - \tau_j - \alpha \ln (b_j + R_i)}{\rho + \chi + p_j} \quad (7)$$

Again, because the denominator is always positive, we focus on the numerator and analyze under which conditions is positive (*i.e.* the individual accepts to work):

$$\begin{aligned} \alpha [\ln (w_j + \sigma R_i) - \ln R_i] - \tau_j &\geq 0 \\ \ln \frac{(w_j + \sigma R_i)}{R_i} &\geq \frac{\tau_j}{\alpha} \\ \frac{w_j}{e^{\tau/\alpha} - \sigma} &\geq R_i \end{aligned} \quad (8)$$

Risk averse individuals accept to work if and only if their non-earned income is below $R_r^* = \frac{w_j}{e^{\tau/\alpha} - \sigma}$. Individuals with $R_i > R_r^*$ refuse to work and rationally prefer to remain job seekers.

Consider now two individuals (a native and an immigrant) facing identical compensating wage differentials (even if they are in different occupations $w_j - \tau_j$ is assumed to be equal) and having identical non-earned income $R_{Migrant} = R_{Native}$ but different risk perceptions. One individual, the native, is risk averse while the other, the immigrant, is risk neutral.

The risk neutral immigrant accepts to work if and only if $R_M < R^{**} = \frac{w_j - \tau_j}{(1 - \sigma)}$ while the risk averse native accepts to work if $R_N < R_r^* = \frac{w_j}{e^{\tau/\alpha} - \sigma}$. Is the non-earned income threshold value of risk neutral individuals above or below that of risk averse individuals? We analyze under which

circumstances both thresholds are equalized :

$$\begin{aligned}
R^{**} &= R_r^* \\
\frac{w_j - \tau_j}{(1 - \sigma)} &= \frac{w_j}{e^{\tau/\alpha} - \sigma} \\
w_j(e^{\tau_j/\alpha} - 1) &= \tau_j(e^{\tau_j/\alpha} - \sigma) \\
\frac{w_j}{\tau_j} &= \frac{(e^{\tau_j/\alpha} - \sigma)}{(e^{\tau_j/\alpha} - 1)} = \left[\frac{w_j}{\tau_j} \right]^*
\end{aligned}$$

where $e^{\tau/\alpha} > 1$ since $\tau/\alpha \neq 0$.

If $\frac{w_j}{\tau_j} > \left[\frac{w_j}{\tau_j} \right]^*$ the threshold value of income below which individuals are willing to work is higher for risk neutral individuals, *i.e.* $R^{**} > R_r^*$, implying that for an identical $R_M = R_N$ risk neutral individuals may be willing to work while risk averse individuals refuse to work, *i.e.* $R^{**} > R_M = R_N > R_r^*$. If $\frac{w_j}{\tau_j} < \left[\frac{w_j}{\tau_j} \right]^*$, the opposite situation arises. The threshold value of income below which individuals are willing to work is higher for risk averse individuals *i.e.* $R^{**} < R_r^*$.

Differences in risk perception between risk neutral immigrants and risk averse native imply different working choices for identical levels of non-earned income. All in all, our theoretical framework suggests two alternative mechanisms that may be driving the divergence in working conditions between natives and immigrants:

- On the one hand, if immigrants and natives do not differ in their perception of risks, differences in working conditions can simply be justified by differences in the level of non-earned income as shown by our benchmark framework. An average natives have higher non-earned income level. As revealed by Figure 1 only immigrants with more than 30 years of residence in France benefit from a non-earned income level which equals natives' average level.
- On the other hand, if immigrants and natives actually differ in their perception of professional risks, we should find that for identical non-earned income levels immigrants and natives bear in average different working conditions.

As explained in the introduction there are other reasons that could explain differences in the observed working conditions borne by immigrants and natives, as the fact that immigrants may actually have less information on the actual risks associated with a job due to their lower level of education, social capital or bad language proficiency, or the fact that upon arrival immigrants are healthier than natives and therefore they might be willing to hold more physically strenuous jobs than natives. With our survey data it is not possible to test these potential explanations or to infer any evidence about them. However, we will be able to provide evidence on the role of non-earned income and infer consequences regarding potential differences in risk perception across nativity groups. More precisely, we will be able to compare working conditions between natives and immigrants when they have the same level of non-earned income.

3 Data sources, variables and descriptive statistics

3.1 Data sources and variables

Our paper combines three alternative data sources:

- The French Labor Force Survey (LFS) was established as an annual survey in 1982. Re-designed in 2003, it is now a continuous survey providing quarterly data. Participation is compulsory and it covers private households in mainland France. All individuals in the household older than 15 are surveyed. The LFS provides detailed information on individual characteristics of the respondent. Information the country of birth is only available for the period 2003-2012. Since immigrants are defined as people born abroad, we exclusively consider the period 2003-2012 so as to be able to identify natives and immigrants.⁴

The main topics covered by the LFS concern employment, unemployment, hours of work, wages, activity classification⁵, four digit occupation classification, status in employment, education/qualification and secondary jobs. There is no much information on employers since the worker is simply asked to indicate the approximative size of his employer (the questionnaire proposes several size-intervals). Moreover, for some years this variable is poorly informed.

There is not direct information either on individual's level of non-earned income. The LFS contains though information on whether the individual is a household owner. We will use this variable as a proxy for high non-earned income. Combining information of several variables we can also know if the individual rents a social housing facility in a sensible urban area. We consider this situation to be an indicator of low non-earned income, and we will control for it in our estimations.

For our paper we exclusively consider employed individuals which reduces our sample size for the period 2003-2012 to 1,429,915 native individuals and 173,417 immigrant individuals.

- We use the statistics provided by the National Health Insurance Fund for Salaried Workers (“Caisse nationale de l’assurance maladie des travailleurs salariés”) on both professional

⁴The quarterly sample is divided into 13 weeks. From a theoretical point of view, the sampling method consists of a stratification of mainland France into 189 strata (21 French regions \times 9 types of urban unit) and a first stage sampling of areas in each stratum (with different probabilities, average sampling rate = 1/600). Areas contain about 20 dwellings and among them only primary residences are surveyed. Each area is surveyed over 6 consecutive quarters. Every quarter, the sample contains 6 sub-samples: 1/6 of the sample is surveyed for the first time, 1/6 is surveyed for the second time, ..., 1/6 is surveyed for the 6th (and last) time. When it was run as an annual survey, every year a third of the sample was renewed meaning that each individual was interviewed only 3 times. The collection method has always been a face-to-face interview. However, since 2003, a telephone interview has been employed for intermediate surveys (2nd to 5th).

⁵The LFS 2003-2008 use the 2003 NAF classification while the LFS 2009-2012 use the NAF 2008 classification. We will use the tables provided by the National Statistical Institute (INSEE) to convert one classification into the other, so that we obtain consistent NAF series.

accidents and illness. These statistics are available for the period 2012-2016, but it is only for 2014, 2015, 2016 that they are provided at the 5 digit NAF2008 level, *i.e.* more than 720 activity branches. Appendix A provides more detailed information on the definition of professional accidents and illness. The main difference between both of them is that while declaring the existence of a professional illness can become a long time-consuming procedure for the employee, declaring an professional accident is done immediately by the employer. This difference is going to play a key role when comparing working conditions of natives and immigrants. We adopt here the professional accidents and illness indicators proposed by the National Health Insurance Fund for Salaried Workers:

- The “Professional Accident Frequency Rate” (*PAFR*) corresponds to the number of professional accidents by million of hours worked.
 - The “Severity Rate for Temporary Disabilities” induced by professional accidents (*PATD*) is the number of temporary disability days per 1,000 hours of work;
 - The “Severity Index for Permanent Disabilities” induced by professional accidents (*PAPD*) is the total rate of permanent disabilities per million hours of work, including deaths as permanent disabilities.
 - The “Severity Rate for Temporary Disabilities” induced by professional illness (*ODTD*) is the number of temporary disability days per 1,000 hours of work;
 - The “Severity Index for Permanent Disabilities” induced by professional illness (*PDPD*) is the total rate of permanent disabilities per million hours of work, including deaths as permanent disabilities.
- The medical database CONSTANCES is designed as a randomly selected non representative sample (participation is done on a voluntary basis) of French adults aged 18-69 years at study inception; 200,000 subjects are included over a five-year period (starting in 2012). The data collected include social and demographic characteristics (sex, age, civil status, children, country of birth, parents’ country of birth), socioeconomic status, occupational factors (current job defined at four digit occupation classification, current and past working conditions). Moreover, we can also know if the individual receives monthly revenue coming from professional activities, lodging aid, handicap aide, other types of aids or capital income (dividends or housing rentals). We use the capital income variable as a proxy for high non-earned income. Data on the socio-demographic characteristics, socioeconomic status, occupational factors is only available at inclusion since the follow-up questionnaires refer only to health issues.

CONSTANCES database contains detailed information on job content characteristics. Appendix A provides a detailed description of the following job content indicators: (i) Fixed schedule; (ii) Physical hardness; (iii) ICT; (iv) Repetitive; (v) Bad quality job.

The database also provides information on the workers' past job characteristics. It reports whether the individual has borne in the past physical constraints, organizational constraints, chemical constraints, noise constraints or other constraints. All these indicators are increasing in the number of constraints in the corresponding category that the individual has borne in the past.⁶

As with the LFS, when using the CONSTANCES database we only consider employed individuals. Our final sample covers 96,208 natives and 10,004 immigrants.

To summarize, for the LFS we have a sequence of cross sections from 2003 to 2012. Statistics on professional accidents and illness are available at 5 digit NAF 2008 classification for the period 2014-2016. For the CONSTANCES database we do not exploit the panel dimension (since it concerns the general health status of the individual) so that we have a sequence of cross-sections from 2012 to 2018.

3.2 Combining the three data sources

For our analysis we combine information on the three data sources. Using the statistics on professional accidents and illness we compute for each of the more than 720 activity branches the average value of the above injury and illness indicators (*PAFR*, *PATD*, *PAPD*, *ODTD*, *PDPD*) for the period 2014-2016. We merge these data with the LFS using the 5 digit NAF 2008 classification. Therefore for every year from 2003 to 2012 every individual in the labor survey is affected to the injury and disease indicator (computed for the period 2014-2016) corresponding to the activity branch where he is employed.⁷

Once the LFS and the activity injury and diseases statistics are merged (creating a LFS-Injury and disease statistics database) we proceed by steps in order to impute to the CONSTANCES database both the LFS weights, so as to improve CONSTANCES' representativeness, and the statistics on occupational injuries and diseases.

In CONSTANCES there is no information on the 5 digit NAF classification. There is only information at the 2 digit level, which we believe too aggregated. In contrast, in CONSTANCES occupations are provided at the 4 digit level. Therefore, as a first step we use the enriched LFS-Injury and disease database to create an intermediate database defined by cells at the 4 digit occupation classification (remember that we are only considering employed individuals), by department, gender, nativity group (foreign born vs. natives) and age (15-29 years old, 30-39 years old, 40-49 years old, 50-59 years old and more than 60 years old). For each of these cells defined at the

⁶For example, if the individual has been exposed in the past to smokes and dust, the chemical constraint variable equals 2. If the individual has been exposed to smokes, dust, fuels and solvents the chemical constraint variable will equal 4.

⁷In spite of the detailed definition of activity branch (we have more than 720 activities), we still find several occupations (defined at the 4-digit level) within the same activity branch. In 50% of the cases there are 3 or less occupations by activity branch in the year and in 90% of the cases there are less than 15 occupations.

occupation-department-gender-nativity-age level we compute both the weighted average values of the considered activity injury and disease indicators (*PAFR*, *PATD*, *PAPD*, *ODTD*, *PDPD*) and the average weight provided by the LFS for the period 2003-2010.⁸ This intermediate database only contains information on LFS weights corresponding to the occupation-department-gender-nativity-age cell level and professional injury and disease indicators at this cell level. We merge it with the individual database CONSTANCES using as merging variables occupation-department-gender-nativity-age. There are almost 62,244 individuals for whom there is a perfect match with the intermediate database. All individuals having the same occupation, living in the same department, having the same gender, belonging to the same nativity group (*i.e.* native vs. immigrants) and having the same age, are imputed the same weight and the same injury/illness indicators. There are around 43,968 individuals in CONSTANCES for which there is no perfect match at the occupation-department-gender-nativity-age level.

Step 2 creates from the LFS-Injury and disease statistics database a second intermediate database defined by cells at the 4 digit occupation classification, by department, gender and nativity group (foreign born vs. natives). Age is not longer considered in this intermediate database. Again for each of the cells defined at the occupation-department-gender-nativity level we compute the average values of the considered activity injury and disease indicators (*PAFR*, *PATD*, *PAPD*, *ODTD*, *PDPD*) and the average weight provided by the LFS for the period 2003-2010. We merge this new intermediate database with CONSTANCES using as merging variables occupation-department-gender-nativity. This merge leads to a perfect match for more than 12,200 individuals in CONSTANCES, but there still remains more than 31,700 individuals without match.

Starting from the LFS-Injury and disease statistics database, step 3 creates a third intermediate database defined by department, gender, nativity group (foreign born vs. natives) and age group (15-29, 30-39, 40-49, 50-59, +60). The 4 digit occupation classification is not longer considered in this intermediate database. For each department-gender-nativity-age cell we compute again the average values of the activity injury and disease indicators and the average weight provided by the LFS for the period 2003-2010. After merging this new intermediate database with CONSTANCES, we find 28,322 perfect matches. There are 3,445 individuals from CONSTANCES for whom there is no match. For these individuals the department is missing that is why it was impossible to make the match.

All in all we have now two data sources that we will exploit to analyze (*i*) whether immigrants bear in average worse working conditions than natives, (*ii*) whether working conditions are actually a normal good and (*iii*) if immigrant income assimilation has fostered an improvement in working conditions. The first database is the individual data LFS 2003-2012 enriched with the average values of the activity injury and disease indicators 2014-2016 computed at 5 digit NAF 2008 classification level provided by the National Health Insurance Fund for Salaried Workers. The

⁸Years 2011 and 2012 cannot be used to compute the average weight and injury/disease indicators, since for these two waves there is no information on the department of residence of the individual.

second data source is the individual data CONSTANCES enriched with the time-constant average weights coming from LFS to improve the representativeness of the sample and with the average activity injury and disease indicators.

3.3 Descriptive statistics

3.3.1 Labor Force Survey-Injury Disease database

Table B.1 from Appendix B summarizes the main unweighted LFS sample characteristics distinguishing between natives and immigrants. The share of women is lower among immigrants. Immigrants are also slightly older than natives and are more often married than them. There are three times more immigrants than natives living in sensible urban areas (SUA), and there are twice more immigrants living in moderate rental housing, MRH (*i.e.* social housing) than natives. Moreover, immigrants are less often household owners. The proportion of immigrants without any diploma is twice the proportion of natives, and they are in average less educated for all diploma levels except from higher than BAC+2 years.

Immigrants suffer more often than natives professional injuries (indicator *PAFR*) and have thus a larger number of temporary and permanent disabilities (*PATD* and *PAPD*, respectively) associated with professional accidents. On the opposite, immigrants suffer less temporary and permanent disabilities resulting from an professional disease (*ODTD* and *PDPD*, respectively). This may be precisely explained by the fact that the recognition of a professional illness implies a long procedure including a survey over the victim. Immigrants may be less willing to follow this screening procedure or conversely, this screening procedure may provide less often a favorable decision for immigrants. Injury and fatality indicators values associated with immigrants tend to fall and converge to the values obtained for natives, with years of residence in the host country (see Table B.2).

Unsurprisingly, workers with an educational level below or equal to Baccalaureate occupy positions associated with higher professional injuries and disease indicators (see Table B.3). Moreover, while for the educational subgroup with Baccalaureate or less immigrants display higher professional injuries and disease rate values than natives, for workers with an educational level above Baccalaureate, the immigrant group displays very close values of the injury and disease indicators with respect to natives.

Concerning women (see Table B.4), we find that they are employed in jobs associated with lower values of the activity injury and disease indicators than men of their respective nativity group. Surprisingly, native women are employed in job displaying higher rates of professional injuries and diseases.

Table B.5 in Appendix B, reveals that both immigrants and natives being households owners display lower values of the activity injury and disease indicators. Moreover, the values of these indicators become surprisingly close across nativity groups when considering household owners. In contrast, immigrants and natives living in sensible urban areas (SUA) display higher activity injury

and disease indicators than their peers living out of SUAs. Among residents in SUAs immigrants display higher professional fatality and injury rates than natives (*PAFR*, *PATD* and *PAPD* indicators, respectively) but lower professional diseases (*ODTD* and *PDPD*, respectively). This is consistent with results in Table B.1. Both nativity groups living in Moderate Rental Housing (MRH) located in SUAs do worse than their counterparts living also in social housing but outside SUAs (see Table B.6). Immigrants, living in MRH always do worse than natives, independently on whether they are or not in a SUA.

3.3.2 CONSTANCES enriched database

Tables B.7, B.8, B.9, B.10 and B.11 in Appendix B present some unweighted descriptive statistics of the CONSTANCES sample. As shown by Table B.7, in the CONSTANCES sample there are more women among natives than among immigrants. Immigrants in the sample are slightly older and are less likely to be married. Immigrants are relatively more allocated towards activities having higher frequency of professional accidents and temporal or permanent disabilities due to both professional accidents and illnesses. Actually, immigrants are employed in jobs having less often fixed schedules and are much more physically demanding. Their jobs are more often repetitive and they are much less exposed to ICTs. Immigrants have also lower job security than natives.⁹ Finally, they undergo or have undergone in the past more organizational, physical, chemical and noise constraints than natives.

In the sample of immigrants interviewed by CONSTANCES, residence duration does not seem to improve working conditions of immigrants (see Table B.8). After more than 30 years of residence in the host country professional accidents and illness indicators (*PAFR*, *PATD*, *PAPD*, *PDTD* and *PDPD*) are around the same levels as for individuals with less than 10 years of residence. Education seems the only factor that protects immigrants against these bad job characteristics (see Table B.9). While for identical education levels immigrants continue to bear worse job characteristics than natives, we find that among immigrants, those having more than secondary education benefit more often from better quality jobs, with improved accident/illness indicators, having more often fixed schedules, less physically demanding and repetitive and that use more often ICT. Higher educated workers (both natives and immigrants) undergo or have undergone lower organizational, physical, chemical and noise constraints than lower educated workers. In the CONSTANCES sample female immigrants have an equivalent working conditions than female natives (see Table B.10).

The share of immigrants in the sample perceiving capital income, such as dividends or/and rentals from housing, is one third smaller among immigrants. However, when comparing working conditions of immigrants and natives with high non-earned income (*i.e.* perceiving dividends or/and rentals from housing) there seems to be a convergence in both professional accident/illness indicators and job content (see Table B.11).

⁹Note though that this indicator is subjective.

4 Econometric strategy

Our objective is to estimate the relationship between working conditions (captured by professional accident and illness indicators), nativity and income level. We want to test if, consistently with Orrenius and Zavodny (2009) for the US or Giuntella and Mazzona (2015) for Germany, immigrants occupy in average riskier jobs than natives in France. To measure the risky nature of working conditions we use activity accident and illness indicators. However, we also complement the analysis in appendix using job content indicators as a measure of strenuous working condition.

To gain insights on the normal nature of working conditions we must test if income promotes an improvement on working conditions and if this applies to all workers independently on their nativity. As a proxy of high non-earned income level we use a dummy variable which equals unity if the individual is a household owner when working with the LFS and a dummy variable equal to unity if the individual perceives capital income (such as dividends or rentals) from housing when using CONSTANCES.

Our analysis based on both (i) the individual data set resulting from merging the average value of 2014-2016 national statistics on professional injuries and illnesses by NAF5 2008 with the LFS 2003-2012 and, for robustness tests (ii) the individual data set CONSTANCES 2012-2018 enriched with the injuries and illnesses statistics as well as with the imputed weights coming from the LFS. Both individual databases stand for a sequence of cross-section and no panel dimension exists. The baseline estimated equation is:

$$Y_{it} = \alpha_M IMM_{it} + \alpha_I Income_{it} + \alpha_x X_{it} + \alpha_t + \alpha_R + \alpha_t \alpha_R + \alpha_N + \epsilon_i \quad (9)$$

where the outcome variable Y_{it} corresponds to the working condition indicators for individual i in year t , which can be activity accident/illness indicator ($PAFR$, $PATD$, $PAPD$, $ODTD$, $PDPD$) or, when proposing additional robust test with CONSTANCES (in appendix C.1) job content indicator (fixed schedule, physical work, ICT, repetitive, bad quality job).

Our unit of observation is the individual to whom working conditions have been imputed depending on the activity branch where the individual is employed for the LFS and on the occupation where the individual is employed for CONSTANCES.¹⁰ In sum, while our indicators of working conditions ($PAFR$, $PATD$, $PAPD$, $ODTD$, $PDPD$) are constant along time within the 720 activity branches, the sample of individuals to whom these indicators are imputed changes from one year to another. Because the sample of individuals changes, population composition of people employed within each activity also changes from year to year, implying that we can exploit heterogeneity across individuals within a year and across time to identify the impact of nativity and income on working conditions. Moreover, the fact of computing working conditions over the period 2014-2016 ensures that the dependent variable is at least partially exogenous with respect to economic and

¹⁰Activity accident/illness indicators at the occupation level are though computed using information of accident/illness at the activity branch level.

technological shocks that may be pushing people towards some activity branches during the LFS sample period 2003-2012.

IMM_{it} equals unity if individual i in period t is foreign born. We consider being a household owner as a high non-earned income indicator.¹¹ We control for low non-earned income by introducing an indicator which equals unity if the individual is living in a social housing (MRH) located in a SUA. For the CONSTANCES survey the high non-earned income indicator equals unity if the individual perceives dividends or rentals from housing.

X_{it} stands for a vector of control variables including gender, age, age squared, civil status, children, diploma level (no diploma, BEPC only, CAP-BEP, Baccalaureate, Baccalaureate+2 years, higher degree),¹² size of the establishment or plant where the individual works (less than 10 employees, between 10 and 50 employees, between 50 and 200 employees and more than 200 employees) and whether the individual as a permanent contract. We also control for residence duration in the host country (less than 10 years, between 10 and 20 years or between 20, 30 years and more than 30 years) since as shown by Figure 1 years of residence are associated with a convergence of immigrants' income level towards the average native income level. Residence duration captures at least partially an income convergence effect. Therefore, in order to disentangle both effects we introduce separately on income indicator and a residence duration indicator.

We also control by differences in working conditions across years¹³ and by systematic differences in working conditions across regions (due to differences in productive structures across geographical areas) through the introduction year and region/department¹⁴ fixed effects (α_t and α_R , respectively). To control for the fact that some yearly changes in working conditions may be region/department specific, we also interact region/department and year fixed effects. Even if our activity accident and illness indicators are computed at the 5 digit NAF 2008 level, their values are then imputed to individuals according to the activity branch where they are employed. Since our objective is to isolate the impact of immigrant and income effects on these indicators, we also introduce in our LFS regression an activity branch fixed effect,¹⁵ while when using CONSTANCES we introduce occupation fixed effects.

We implement weighted OLS regressions with robust standard errors clustered at the NAF level when working with the LFS and at the job-department level when using CONSTANCES. When working with the LFS we employ weights provided directly by the survey while when working

¹¹Note though that household owners may still be paying their house through a credit.

¹²When using CONSTANCES the diploma level is classified as no diploma, BEPC only, CAP-BEP, Baccalaureate, Baccalaureate+2 or 3 years, Baccalaureate+4 years, Baccalaureate+5 years or more.

¹³Note that even if working conditions are originally constant since they are computed as an average of the injury and illness indicators 2014-2016, they are then yearly imputed to workers according to their activity branch. If the economic structure of the country changes and favors some activity branches against others, we are likely to observe a change in working conditions. The introduction of a year fixed effect allows to purge from this yearly shocks.

¹⁴When using CONSTANCES we use department fixed effects, since the CONSTANCES survey is not national and is only implemented for a reduced sample of 20 departments.

¹⁵We introduce a fixed effect for each of the 2 digit NAF 2008 activity branches.

with CONSTANCES we have imputed average weights computed from the LFS 2003-2010 at the 4-digit-occupation-native-gender-department-age level.

To test the robustness of the results concerning the relationship between nativity and working conditions, we estimate equation (9) distinguishing between foreign born (*i.e.* immigrants) and (*i*) foreign born having acquired the French nationality (“naturalized”); (*ii*) foreign born married with a a French citizen (“assimilated”); (*iii*) native born with foreign born parents (“2nd generation”). Section 6, presents additional evidence to complement our findings. First, we propose a linear probability model to estimate the probability of being a high non-earned income individual, *i.e.* being a household owner when working with the LFS or perceiving capital income when using CONSTANCES:

$$\begin{aligned} H_{it} = & v_M IMM_{it} + v_{10} Residence_{10} + v_{10-20} Residence_{10-20} + v_{20-30} Residence_{20-30} \\ & + v_x X_{it} + v_t + v_R + v_t v_R + \chi_i \end{aligned} \quad (10)$$

where IMM_{it} represents the dummy immigrant and $Residence_{10}$, $Residence_{10-20}$ and $Residence_{20-30}$ stand for dummy indicators of residence duration. Consistently with previous estimations we include as controls gender, age, age squared, civil status, children, diploma level, size of the establishment or plant where the individual works (less than 10 employees, between 10 and 50 employees, between 50 and 200 employees and more than 200 employees) and whether the individual as a permanent contract. For CONSTANCES, there is no information on the size of the firm or the contract type.

We control for aggregate shocks by introducing year fixed effects. We also control by systematic differences in the probability of having high non-earned income across regions (when using the LFS¹⁶) or departments (when using CONSTANCES) through the introduction of regional/departement fixed effects. We also allow shocks to be regional/departement specific through the introduction of year-region/departement interacted fixed effects.

Second, we re-estimate equation (9) using aggregate data. More precisely, we define cells at the department-nativity-year level. To ensure a sufficient number of observations by department and a sufficient number of cells we only consider the LFS.¹⁷ Moreover, since we are working with departments our analysis focuses on the period 2003-2010 since afterwards there is no information on department. We estimate how yearly changes in the proportion of immigrant owners within a department affects working conditions in the corresponding department.

For every year and for every department we compute the average professional injury and illness indicators $PAFR$, $PATD$, $PAPD$, $ODTD$, $PDPD$. Within a department and within a nativity group, the variation of these indicators from one year to another will be driven by the distribution of workers of the corresponding nativity group across activity branches, since the occupational injury and illness indicators are time-invariant within the NAF5 activity branches. We will relate

¹⁶When using the LFS, considering smaller geographical unit, as the department implies restricting our sample to the period 2003-2010, since for years 2011 and 2012 there is no data on department.

¹⁷Note that CONSTANCES has a lower number of observations and it only concerns 20 departments.

this yearly changes in working conditions to yearly changes in the proportion of household owners in the department. Equation (9) is then adapted to the cell approach:

$$Y_{rnt} = \gamma_M IMM_{rt} + \gamma_I Income_{rt} + \gamma_t + \gamma_R + \gamma_R \gamma_t + \nu_{rnt} \quad (11)$$

where Y_{rnt} stands for the value of an activity injury and illness indicator for nativity group n in department r in year t . $Income_{rt}$ is an income indicator that corresponds to the share of household owners in the department. We control for systematic differences in working conditions between natives and immigrants by introducing an immigrant fixed effect (IMM_{rt}), we control for systematic differences in working conditions across departments by introducing a department fixed effect (γ_R),¹⁸ we control by economic shocks (γ_t) and by department specific shocks on working conditions interacting department-year fixed effects ($\gamma_R \gamma_t$).

5 Estimation results

5.1 Heterogeneity across individuals: nativity, working conditions and income

In this section we identify the relationship between nativity and working conditions' indicators as well as the driving role of income in this relationship. In Table C.1 in Appendix C we analyze the correlation between our indicators of professional accidents and illness and the fact of being foreign born without any type of control or fixed effect. The correlation does not display a clear positive or negative sign for all our indicators. While for the "Professional Accident Frequency Rate" (PAFR) the correlation is not significant, it becomes positive for the severity index of temporary and permanent disabilities associated with professional accidents (PATD and PAPD, respectively). For severity indexes of temporary and permanent disability associated with professional illness the correlation becomes again non-significant. In sum, from simple correlations we cannot anticipate the potential relationship between working conditions and the fact of being foreign born. Remark too that working conditions reveal individuals' allocations across activities, since our accident and illness indicators are computed at the NAF5 2008 level and then imputed to individuals depending on their occupational activity.

Table 1 below, resulting from the estimation of equation (9), analyzes the relationship between the professional accident/illness indicators and being an immigrant depending on income effects. We control for gender, age, age squared, civil status, children, diploma level, size of the establishment or plant where the individual works and whether the individual has a permanent contract. We introduce year, region and NAF2 fixed effects as well as the interacted fixed effect between region and year. Because of the positive correlation between years of residence and household ownership

¹⁸Note that this type of fixed effect is also capturing systematic differences in the population composition across departments that may be affecting working conditions. For example, some departments may be characterized by a young recently arrived immigrant population with less than 20 or 30 years of residence, while in some other departments we may only find immigrants with more than 30 years of residence. These systematic differences in population composition are captured by the department fixed effect.

we also display in Table 1 estimated coefficients for residence duration, so as to disentangle the income effect from the residence duration effect.

Table 1 reveals that household owners are less likely to suffer a professional accident, the temporal or permanent disability associated to it, as well as the temporary or permanent disability associated with professional illnesses. Consistently with Viscusi (1978), this result suggests that working conditions are a normal good. Household owners have a higher relative non-earned income with respect to non-owners and this pushes them to ask for better working conditions. On the other hand, Table 1 shows that residents in social housing (MRH) located in sensible urban areas (SUAs) are more likely to be allocated into activities with high frequency of professional accidents as well as the associated temporary or permanent disability following the accident. In contrast no significant relation arises for residents in MRH in SUA and professional disease indicators. Residents in MRH in SUA are low-income people who seem ready to accept harder working conditions with respect to non residents in social housing in SUA.

What about immigrants? Does the income effect hold also for them or are they willing to accept riskier jobs than natives for an identical level of non-earned income? As revealed by the coefficient associated with the dummy variable “Immigrant”, this nativity group is more likely to suffer professional accidents and the temporal and permanent disabilities associated with them. This effect is though reduced with years of residence. As observed from columns (1)-(6), the coefficients associated with the dummy variables “Residence duration <10 years”, “Residence duration 10-20 years” and “Residence duration 20-30 years” are positive and significant, but they become progressively smaller with years of residence.¹⁹

Interestingly, working conditions of immigrants’ household owners do not significantly differ from working conditions of natives (see coefficients of the interacted term “Immigrant·Household owners”), except from the fact that they are significantly less concerned than natives by permanent disabilities resulting from professional accidents.

All in all, comparing estimated coefficients of the variables “Immigrant”, “Household owners” and “Immigrant·Household owners”, we can draw the following conclusions:

- An average, immigrants are relatively more allocated in activities displaying high frequency of professional accidents and the associated temporal and permanent disabilities.
- Household owners benefit in average from better working conditions, since they are significantly less present in activities with high frequency of professional accidents and they bear significantly less temporal and permanent disabilities induced by accidents.
- There are no significant differences between working conditions among household owners, whatever their nativity group.

Given the normal nature of working conditions, average differences in working conditions between immigrants and natives seem then to reflect a divergence in income level. For identical income

¹⁹Note that the reference category for years of residence is “Residence duration >30 years”.

levels no significant differences arise between both nativity groups (except from permanent disabilities associated with accidents, which are significantly lower for immigrants). According with our framework, these results suggest that immigrants and natives do not differ in their risk perception. Income convergence with years of residence seems to foster a convergence in working conditions of immigrants and natives. Bad working conditions do not seem to be the driver of the degradation of immigrants' health status with years of residence in the host country.

Table 1: Immigrants and professional accident/illness : the role of income. LFS 2003-2012.

	Dependent variable: professional accident/illness indicators									
	PAFR		PATD		PAPD		ODTD		PDPD	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Immigrant	3.212*** (1.233)	3.222*** (1.206)	0.324*** (0.106)	0.323*** (0.103)	2.799*** (0.834)	2.767*** (0.823)	0.000146 (0.0575)	0.00416 (0.0539)	-0.0610 (0.136)	-0.0511 (0.127)
MRH in SUA	0.920* (0.479)	0.925** (0.462)	0.0813** (0.0413)	0.0808** (0.0399)	0.593** (0.264)	0.574** (0.256)	-0.0240 (0.0301)	-0.0217 (0.0280)	-0.0676 (0.0719)	-0.0620 (0.0668)
Household owner	-0.683** (0.270)	-0.691** (0.283)	-0.0546*** (0.0175)	-0.0539*** (0.0179)	-0.172** (0.0779)	-0.145* (0.0750)	-0.0692* (0.0408)	-0.0726* (0.0440)	-0.164* (0.0984)	-0.172 (0.106)
Immigrant · Household owner		0.0742 (0.311)		-0.00613 (0.0237)		-0.253* (0.149)		0.0312 (0.0317)		0.0769 (0.0763)
Residence duration <10 years	1.352*** (0.421)	1.379*** (0.365)	0.130*** (0.0336)	0.128*** (0.0286)	1.204*** (0.298)	1.113*** (0.283)	-0.00930 (0.0283)	0.00186 (0.0180)	-0.0504 (0.0673)	-0.0229 (0.0419)
Residence duration 10-20 years	0.904** (0.428)	0.920** (0.382)	0.0911** (0.0357)	0.0897*** (0.0318)	0.833*** (0.261)	0.776*** (0.244)	-0.0101 (0.0223)	-0.00306 (0.0165)	-0.0401 (0.0529)	-0.0227 (0.0389)
Residence duration 20-30 years	0.707* (0.392)	0.720** (0.355)	0.0690** (0.0321)	0.0679** (0.0290)	0.493** (0.225)	0.448** (0.210)	-0.00965 (0.0180)	-0.00411 (0.0129)	-0.0369 (0.0425)	-0.0233 (0.0301)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAF2 FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562
R-squared	0.534	0.534	0.532	0.532	0.596	0.596	0.173	0.173	0.160	0.160

Source: Labor Force surveys 2003-2012 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators

PAFR, PATD, PAPD, ODTD and PDPD. Note: weighted OLS estimation with robust standard errors clustered at the NAF5 level and weights provided by the LFS. Control variables include: gender, age, age squared, civil status, children, diploma level, residence duration in the host country (<10 years, 10-20 years, 20-30 years and more than 30 years), size of the establishment or plant where the individual works (less than 10 employees, between 10 and 50 employees, between 50 and 200 employees and more than 200 employees) and whether the individual as a permanent contract. Significance levels are ***($p < 0.01$), **($p < 0.05$) and *($p < 0.1$).

The robustness of this conclusion is next tested using data from CONSTANCES²⁰ where high non-earned income people are defined as those perceiving capital income from dividends or/and rentals. Results are summarized in Table 2. Consistently with previous findings immigrants bear, in average, worse working conditions. Immigrants are actually significantly more allocated towards

²⁰Appendix C.1 presents complementary results exploiting CONSTANCES data to analyze the relationship between professional accident and illness indicators and job content characteristics (such as “Fixed Schedule”, “Physical hardness”, “ICT”, “Repetitive” or “Bad Quality Job”).

activities with higher frequency of professional accidents and temporary and permanent disabilities associated with these accidents. Again, in line with findings based on LFS data immigrants do not display a significant different behavior with respect to natives when considering temporal and permanent disabilities associated with professional diseases.

When defining high non-earned income individuals as those who perceive not only professional revenues (since our sample is only composed by employed workers) but also capital income coming from dividends or/and housing rentals we still find that, in average, high non-earned income individuals benefit from better working conditions. Whatever the working condition indicator we consider in Table 2, the coefficient associated with the variable “Non-earned income” is negative and significant, pointing towards the normal nature of working conditions.

In line with findings from Table 1 immigrants with high non-earned income do not display significantly different allocation with respect to high income natives. More precisely, the frequency of accidents and the temporal and permanent disabilities associated with accidents do not significantly differ between both groups. In contrast, immigrants perceiving dividends or/and housing rentals display significantly higher temporal and permanent disabilities associated with professional diseases. This finding is in contrast with previous results from Table 1, where we find that in average immigrants do not display a significantly different behavior with respect to natives in what concerns temporal and permanent disabilities associated with professional diseases. These differences may be explained by the fact that participation in the CONSTANCES survey is voluntary and there may be a representativeness issue. Only people caring about their health participate in the survey. If this bias is equal for natives and immigrants its effect neutralizes. However if the bias is more present in one of the nativity groups our results may be biased.

Conclusions from Table 2 based on the CONSTANCES survey tend to reinforce main findings from Table 1. An average immigrants are relatively more present in activities displaying higher frequency of professional accidents as well as temporal and permanent disabilities associated with these accidents. Whatever the working condition indicator we consider, individuals with high non-earned income display an average better working conditions. This income effect applies similarly for both immigrants and natives. When working the LFS database we find though that high income immigrants are relatively less present in activities with high frequency of permanent disabilities, suggesting that they actually benefit from better working conditions than high income natives. When considering the CONSTANCES survey we find that high non-earned income immigrants are relatively more present in occupations with frequent disabilities associated with professional disease. We believe though that this result is likely to be explained by selection issues concerning the CONSTANCES sample, particularly because disabilities associated with professional illness require the worker to go through a relatively long administrative procedure. The recognition of a professional illness is then tightly link to the willingness of the worker to undertake this procedure.

Table 2: Immigrants and professional accident/illness : the role of non-earned income. CON-
STANCES 2012-2018.

	Dependent variable: professional accident/illness indicators									
	PAFR		PATD		PAPD		ODTD		PDPD	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Immigrant	2.013***	2.024***	0.205***	0.206***	2.491***	2.497***	-0.00424	-0.00365	-0.0233	-0.0222
	(0.676)	(0.677)	(0.0456)	(0.0456)	(0.419)	(0.419)	(0.0174)	(0.0174)	(0.0426)	(0.0426)
Non-earned income	-0.155**	-0.184***	-0.00998**	-0.0119***	-0.0872*	-0.102**	-0.00692**	-0.00844***	-0.0161**	-0.0190***
	(0.0682)	(0.0697)	(0.00448)	(0.00456)	(0.0504)	(0.0506)	(0.00277)	(0.00288)	(0.00631)	(0.00659)
Immigrant · Non-earned income		0.491		0.0323		0.253		0.0260**		0.0496*
		(0.410)		(0.0269)		(0.268)		(0.0126)		(0.0275)
Residence duration <10 years	-0.436	-0.405	-0.0198	-0.0177	0.0419	0.0578	-0.0425***	-0.0409***	-0.0995***	-0.0964***
	(0.345)	(0.346)	(0.0239)	(0.0241)	(0.242)	(0.244)	(0.00928)	(0.00916)	(0.0216)	(0.0214)
Residence duration 10-20 years	0.225	0.251	0.0222	0.0239	0.170	0.184	-0.0202***	-0.0188**	-0.0486**	-0.0460**
	(0.315)	(0.314)	(0.0211)	(0.0210)	(0.169)	(0.170)	(0.00777)	(0.00775)	(0.0195)	(0.0195)
Residence duration 20-30 years	0.207	0.206	0.0145	0.0144	0.140	0.140	0.0120	0.0119	0.0240	0.0239
	(0.304)	(0.302)	(0.0203)	(0.0201)	(0.196)	(0.196)	(0.00833)	(0.00834)	(0.0200)	(0.0201)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478
R-squared	0.639	0.639	0.664	0.665	0.708	0.708	0.509	0.509	0.516	0.516

Source: CONSTANCES survey 2012-2018 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators PAFR, PATD, PAPD, ODTD and PDPD. Note: weighted OLS estimation with robust standard errors clustered at the occupation-department level and weights imputed from the LFS at the department-occupation-gender-nativity-age level, or at the department-occupation-gender-nativity level or at the department-gender-nativity-age level. Control variables include: gender, age, age squared, civil status, children, diploma level and residence duration in the host country (<10 years, 10-20 years, 20-30 years and more than 30 years). Significance levels are ***($p < 0.01$), ** ($p < 0.05$) and * ($p < 0.1$).

5.2 Nativity, working conditions and income: robust tests

To test the robustness of our main conclusions Table 3 replicates estimates of Table 1 considering both immigrants that have acquired the French nationality, *i.e.* naturalized immigrants, and immigrants that are married to a French citizen, *i.e.* assimilated immigrants. The intuition behind this tests is that if during the assimilation process in the host country there is an income convergence effect, we should find that foreign born people that have already acquired the French nationality or foreign born that benefit from a native network through marriage with a French citizen should benefit from better working conditions.

From columns (1), (5), (9), (13) and (17) in Table 3 we conclude that, consistently estimates from Table 1 foreign born workers (variable “Immigrant”) bear an average worse working conditions in terms of injury indicators and associated disabilities. In contrast, among foreign born workers, those that have acquired the French nationality and are thus “Naturalized” display an average better working conditions than other foreign born workers. Actually, the variable “Naturalized”

results from the interaction between “Immigrant” and “French nationality” and its associated coefficients are systematically negative and significant whatever the working conditions indicator we consider.

From columns (3), (7), (11), (15) and (19) in Table 3 we still conclude that in average foreign born workers are significantly more allocated towards activities with higher frequency of professional accidents and with more temporal and permanent disabilities resulting from these accidents. Nevertheless, foreign born people that are married with a French citizen (“Assimilated” results from the interaction between “Immigrant” and “French husband or wife”) display systematically a negative and significant coefficient, underlining the fact that they benefit from better working conditions. Assimilation seems again associated with an improvement in working conditions.

What about the income effect? For household owners (*i.e.* high income people) whatever the injury/illness indicator we consider we find that high non-earned income household systematically benefit from better working conditions than non-owners. In contrast, low income individuals (those living in MRH in SUA) are significantly more present in activities with higher frequency of injuries and the associated disabilities. Finally, and consistent with previous findings, columns (2), (4), (6), (8), (10), (12), (14), (16), (18) and (20) reveal that high income naturalized immigrants and high income assimilated immigrants do not display a significant different allocation with respect to the other household owners.

In line with previous estimates we still conclude that immigrants bear in average worse working conditions than natives. As immigrants assimilate to the host country, their working conditions are improved. Working conditions arise as a normal good. More precisely, foreign born having acquired the French nationality or being married to a French citizen that are household owners do not bear significantly different working conditions with respect to the average household owner. Again high income level equalizes working conditions among nativity groups.

Table 3: Naturalized immigrants, assimilated immigrants and professional accident/illness: the role of income. LFS 2003-2012.

	Dependent variable: professional accident/illness indicators																			
	PAFR					PATD					PAPD					PDTD				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Immigrant	2.921** (1.153)	3.023*** (1.134)	3.186*** (1.222)	3.254*** (1.205)	2.295*** (0.9977)	0.302*** (0.0968)	0.321*** (0.105)	0.325*** (0.104)	2.453*** (0.748)	2.457*** (0.750)	2.780*** (0.826)	2.736*** (0.827)	-0.0117 (0.0590)	-0.00170 (0.0522)	-0.00143 (0.0580)	0.00037 (0.0498)	-0.0877 (0.140)	-0.0642 (0.123)	-0.0650 (0.137)	-0.0384 (0.117)
MRH in SUA	0.922* (0.477)	0.937** (0.474)	0.919* (0.477)	0.929* (0.474)	0.0815** (0.0412)	0.0826** (0.0410)	0.0813** (0.0411)	0.0817** (0.0411)	0.596** (0.262)	0.597** (0.262)	0.592** (0.263)	0.586** (0.263)	-0.0239 (0.0301)	-0.0224 (0.0291)	-0.0240 (0.0301)	-0.0225 (0.0289)	-0.0674 (0.0718)	-0.0639 (0.0693)	-0.0678 (0.0719)	-0.0640 (0.0690)
Household owner	-0.673** (0.269)	-0.694** (0.275)	-0.673** (0.268)	-0.685** (0.275)	-0.0537*** (0.0174)	-0.0552*** (0.0177)	-0.0537*** (0.0173)	-0.0544*** (0.0178)	-0.161** (0.0767)	-0.162** (0.0778)	-0.165** (0.0766)	-0.157** (0.0778)	-0.0689* (0.0407)	-0.0709* (0.0422)	-0.0687* (0.0406)	-0.0706* (0.0422)	-0.163* (0.0983)	-0.168* (0.102)	-0.163* (0.0979)	-0.167 (0.102)
Residence duration <10 years	0.728** (0.344)	0.777** (0.334)	1.119*** (0.382)	1.160*** (0.370)	0.0680*** (0.0237)	0.0716*** (0.0232)	0.109*** (0.0282)	0.111*** (0.0277)	0.462** (0.181)	0.464** (0.181)	1.031*** (0.252)	1.005*** (0.253)	-0.0347 (0.0325)	-0.0298 (0.0290)	-0.0231 (0.0332)	-0.0167 (0.0280)	-0.108 (0.0777)	-0.0962 (0.0692)	-0.0855 (0.0792)	-0.0606 (0.0666)
Residence duration 10-20 years	0.571 (0.356)	0.621* (0.343)	0.754* (0.387)	0.784** (0.376)	0.0579** (0.0282)	0.0616** (0.0275)	0.0774** (0.0312)	0.0790** (0.0307)	0.437** (0.200)	0.439** (0.198)	0.722*** (0.226)	0.703*** (0.226)	-0.0237 (0.0242)	-0.0187 (0.0210)	-0.0190 (0.0253)	-0.0143 (0.0220)	-0.0706 (0.0577)	-0.0589 (0.0499)	-0.0625 (0.0605)	-0.0511 (0.0522)
Residence duration 20-30 years	0.554 (0.354)	0.598* (0.342)	0.614* (0.366)	0.638* (0.357)	0.0538* (0.0284)	0.0571** (0.0277)	0.0605** (0.0293)	0.0618** (0.0288)	0.312 (0.192)	0.314 (0.192)	0.424** (0.204)	0.409** (0.204)	-0.0158 (0.0188)	-0.0114 (0.0157)	-0.0151 (0.0197)	-0.0114 (0.0167)	-0.0509 (0.0447)	-0.0405 (0.0371)	-0.0509 (0.0469)	-0.0416 (0.0396)
Naturalized	-1.092*** (0.402)	-1.268*** (0.418)			-0.109*** (0.0353)	-0.122*** (0.0359)			-1.299*** (0.379)	-1.305*** (0.388)			-0.0444*** (0.0118)	-0.0617*** (0.0228)			-0.100*** (0.0267)	-0.141*** (0.0540)		
Naturalized- Household owner		0.351 (0.266)				0.0256 (0.0178)				0.0138 (0.110)								0.0814 (0.0644)		
Assimilated			-0.725** (0.331)	-0.856** (0.384)			-0.0605** (0.0287)	-0.0738** (0.0311)			-0.538** (0.225)	-0.453* (0.238)				-0.0638* (0.0181)		-0.109** (0.0430)		-0.160* (0.0821)
Assimilated - Household owner				0.236 (0.286)				0.0131 (0.0189)				-0.152 (0.129)				0.0373 (0.0322)				0.0918 (0.0774)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAF2 FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562
R-squared	0.534	0.534	0.534	0.534	0.533	0.533	0.532	0.532	0.596	0.596	0.596	0.596	0.173	0.173	0.173	0.173	0.160	0.160	0.160	0.161

Source: Labor Force surveys 2003-2012 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators PAFR, PATD, PAPD, PDTD and PDPD. Note: weighted OLS

estimation with robust standard errors clustered at the NAF5 level and weights provided by the LFS. Control variables include: gender, age, age squared, civil status, children, diploma level, residence duration in the host country (<10 years, 10-20 years, 20-30 years and more than 30 years), size of the establishment or plant where the individual works (less than 10 employees, between 10 and 50 employees, between 50 and 200 employees and more than 200 employees) and whether the individual as a permanent contract. Significance levels are *** ($p < 0.01$), ** ($p < 0.05$) and * ($p < 0.1$).

Table C.2 in Appendix C confirms the importance of the assimilation process in the convergence of working conditions. This table makes a focus on second generation immigrants, that is on natives having both parents who are foreign born.²¹ As observed from columns (1), (7) and (9), second generation immigrants are on average relatively less allocated than the average native into activities displaying a higher frequency of professional accidents. Second generations are on average less concerned by temporal and permanent disabilities associated with illness. Their situation is then improved with respect to immigrants who systematically display worse injury indicators (*PAFR*, *PATD*, *PAPD*) and not significantly different disability indicators associated with illness.

Using the CONSTANCES database, Table C.3 in Appendix C tests the robustness of estimations in Table 2. Consistently with all previous results, immigrants are on average significantly more allocated into activities with high frequency of professional accidents and therefore high severity index of temporal and permanent disabilities associated with these accidents. Again, when focusing on disabilities associated with professional illness we do not find significantly different behavior between natives and immigrants.

Natives with both parents being foreign born, that is, second generation immigrants, and naturalized immigrants do not seem to display here a significantly different allocation across activities with respect to natives for 2nd generation of immigrants and with respect to immigrants for naturalized foreign born, except from the fact that naturalized people are more present in activities with more permanent disabilities associated with injury.²²

The income effect is still salient and all individuals perceiving capital revenues (from dividends or/and housing rentals) benefit from better working conditions, whatever the working condition indicator we consider. This applies to all high income people, including naturalized immigrants, who do not display a significantly different allocation with respect to the average. Interestingly, 2nd generation immigrants (natives with both parents foreign born) perceiving capital income in the forms of dividends or housing rentals, benefit from significantly better working conditions (*PAFR*, *PATD* and *PAPD*) than the average, underlining the importance of residence duration and income assimilation as a driver of better working conditions.

All in all, results from Tables 1, 2, 3, C.2 and C.3 confirm that foreign born, *i.e.* immigrants, are more likely than natives to allocate towards activities characterized by worse indicators of professional accidents and, to a lesser extent, professional illness. This effect seems mostly explained by differences in non-earned income between both nativity groups, since working conditions are a normal good. Actually, high non-earned income individual benefit from better working conditions than non high income individuals and this applies to all people, independently of the nativity. Income assimilation seems associated with working conditions' assimilation. Consistently with this result, Table 3 reveals that naturalized and assimilated immigrants benefit from better work-

²¹Unfortunately the place of birth of the parents is provided only the first time the individual is interviewed by the LFS, implying that our sample is strongly reduced and results must be interpreted with caution.

²²This result is in contrast with findings from Table 3 and may be explained by the bias nature of the CONSTANCES sample, which is likely to be composed by individuals that care about their health more than the average.

ing conditions than the average immigrant. Natives with foreign born parents (2nd generation immigrants) having high non-earned income benefit actually from significantly better working conditions than average household owners (see Table C.3), underlining again the importance of income assimilation.

6 Complementary estimations

6.1 Income assimilation

Conclusions from previous section suggest that differences in income are a major explanatory factor behind the average differences in working conditions observed between natives and immigrants. When making a focus on high non-earned income individuals these differences disappear. Figure 1 reveals first that the share of household owners among immigrants increases with years of residence in the host country. Among immigrants with more than 30 years of residence in the host country the share of household owners actually equals along time the average share of natives who are household owners. Years of residence are associated with income convergence of immigrants towards the native average.

Table 4 contains estimations from the linear probability model in equation (10). It seeks to provide insights on the role of nativity and years of residence in the host country as determinants of high non-earned income. Results in columns (1)-(4) are based on the LFS while estimations in columns (5)-(7) are based on CONSTANCES. As remarked previously we include as controls gender, age, age squared, civil status, children, diploma level, size of the establishment or plant where the individual works (less than 10 employees, between 10 and 50 employees, between 50 and 200 employees and more than 200 employees) and whether the individual as a permanent contract. For CONSTANCES, there is no information on the size of the firm or the contract type. We also introduce year fixed effect, regional/department fixed effects as well as the interacted of year-region/department fixed effects.

Table 4 reveals that, in average, immigrants are less likely than natives to have high non-earned income, that is, they are less likely to be household owners when using the LFS (columns (1)-(4))²³ and less likely to perceive capital income when using CONSTANCES. However, consistently with descriptive statistics provided in Figure 1, with years of residence in the host country the likelihood of having high non-earned income rises. From columns (1)-(4) we find that the probability of becoming a household owner increases with years in the host country, *i.e.* the negative and significant coefficient associated with the dummies capturing residence duration increases (becomes less negative) as years of residence increase. From columns (5)-(7) we conclude that immigrants with less than 20 years of residence are less likely to perceive capital income than those with more than 20 years of residence.

²³In contrast, as shown by Table C.4 in Appendix C, immigrants are in average more likely to live in social housing located in sensible urban areas.

Columns (2) and (3) confirm the intuition that there is an income convergence as residence duration increases. More precisely, column (2) reveals that immigrants having acquired the French nationality (“Naturalized” immigrants) are more likely than the average immigrant to be household owners. Similarly, immigrants that are married to a French citizen (“Assimilated” immigrants) are significantly more likely than the average immigrant to be household owners. Assimilation into the host country seems then coupled with an income assimilation.

Lastly, columns (4) and (7) consider natives but having both parents foreign born, that is, second generation immigrants. The negative and significant coefficient must be interpreted with respect to other natives, which is the reference group in the regression. This means that natives with foreign parents are significantly less likely than other natives to have high non-earned income (be household owners for column (4) or perceive capital income for column (7)). However, the size of this negative coefficient is smaller than the size of the negative coefficient associated with the dummy “Immigrant”, underlining the fact that second generation immigrants are in any case more likely than immigrants to benefit from a high non-earned income. Again, host country assimilation is associated with an income assimilation.

Estimations on the relationship between nativity group and income complement main findings from Tables 1, 2, 3, C.2 and C.3. Working conditions are a normal good. In average immigrants are less likely than natives to have a high non-earned income (see Table 4). The likelihood to become a high income individual increases though with years of residence in the host country. As a result, immigrants are in average relatively more allocated towards activities with higher rate of injuries and disabilities. With years of residence in the host country there is an income assimilation process. Whatever their nativity group, all high non-earned income individuals benefit from better working conditions than non-high income individuals. The income assimilation process of immigrants fosters a progressive improvement in working conditions.

6.2 Aggregated data approach

This section proposes an alternative methodological approach to study the relationship between nativity, working conditions and income. Because the LFS 2003-2012 is a sequence of cross-sections, we propose to aggregate individual data by cells at the department-nativity-year level and exploit changes across cells and across time to characterize the relationship between nativity, working conditions and income. Information about department of residence is not available after 2010, so for the cell analysis our sample is limited to 2003-2010. Again our dependent variables, *i.e.* activity accident and illness indicators, are computed during the period 2014-2016, while the explanatory variables are computed yearly at the department-nativity level. We have defined 1518 cells, 760 cells of natives and 758 of immigrants. We only use for this approach the enriched LFS and not the enriched CONSTANCES survey, since the number of observations in the LFS for the considered period is large enough to ensure a sufficient number of cells and a sufficient number of observations within cells every year.

Table 4: Probability of being a high non-earned income individual. LFS 2003-2012 and CON-STANCES 2012-2018.

	Dependent variable: High non-earned income Household owner						
	Household owner				Dividends & Rents		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Immigrant	-0.570*** (0.0207)	-0.548*** (0.0179)	-0.564*** (0.0201)	-0.613*** (0.0206)	-0.0933*** (0.0164)	-0.0909*** (0.0168)	-0.0943*** (0.0164)
Residence duration <10 years	-0.245*** (0.0134)	-0.201*** (0.0117)	-0.209*** (0.0120)	-0.237*** (0.0108)	-0.0272*** (0.0104)	-0.0239** (0.0110)	-0.0272*** (0.0104)
Residence duration 10-20 years	-0.137*** (0.0117)	-0.114*** (0.00996)	-0.114*** (0.0106)	-0.136*** (0.0152)	-0.0443*** (0.00611)	-0.0424*** (0.00706)	-0.0443*** (0.00611)
Residence duration 20-30 years	-0.108*** (0.00986)	-0.0973*** (0.00821)	-0.0935*** (0.00855)	-0.106*** (0.00696)	0.0136 (0.0104)	0.0146 (0.0104)	0.0136 (0.0104)
Naturalized		0.0757*** (0.0100)				0.00443 (0.00607)	
Assimilated			0.111*** (0.00803)				
2nd generation				-0.136*** (0.0195)			-0.0141*** (0.00369)
Year FE	Yes	Yes	Yes	Yes	No	No	No
Region FE	Yes	Yes	Yes	Yes	No	No	No
Department FE	No	No	No	No	Yes	Yes	Yes
Region \times Year FE	Yes	Yes	Yes	Yes	No	No	No
Department \times Year FE	No	No	No	No	Yes	Yes	Yes
Observations	1,601,952	1,601,952	1,601,952	1,295,112	97,909	97,909	97,909
R-squared	0.164	0.165	0.165	0.173	0.048	0.048	0.048

Source: Labor Force surveys 2003-2012. Note: Linear probability estimation with robust standard errors clustered at the region level and weights provided by the LFS. Control variables include: gender, age, age squared, civil status, children, diploma level, residence duration in the host country (<10 years, 10-20 years, 20-30 years and more than 30 years), size of the establishment or plant where the individual works (less than 10 employees, between 10 and 50 employees, between 50 and 200 employees and more than 200 employees) and whether the individual as a permanent contract. Significance levels are ***($p < 0.01$), **($p < 0.05$) and *($p < 0.1$).

Estimation results from equation (11) are summarized in Table 5. We control for time shocks. We also control for systematic differences in working conditions across department and across nativity groups by introducing department fixed effects and immigrant fixed effect. Moreover we report the coefficient associated with the immigrant fixed effect. We also allow time shocks to be department specific by introducing year-department interacted fixed effects. We use weighted OLS regressions with robust standard errors clustered at the department level and weights equal to the cell weight resulting from aggregating at the department-nativity-year level individual weights provided by the LFS.

Consistently with equation (11) we regress the professional accident/illness indicator computed at the department-nativity-year level over the share of household owners. We control by the immigrant effect by introducing the dummy, *i.e.* fixed effect, “Immigrant” and we estimate if there are specific immigrant income effect by interacting household ownership with the dummy “Immigrant”.

Estimations on the immigrant effect in Table 5 confirm our findings on individual data (*i.e.* see Table 1). Immigrants are significantly more allocated in jobs with higher frequency of professional accidents and disabilities, both temporary and permanent, associated with them. In contrast there are no significant differences between natives and immigrants concerning temporary and permanent disabilities associated with professional diseases. Again, this probably reflects the fact that the recognition of an professional illness requires a long administrative procedure which immigrant individuals may be not willing to undertake.

The larger the share of high non-earned income individuals (*i.e.* household owners) the lower the frequency of professional accidents and the associated temporal or permanent disability at the cell level, while there is no significant impact of household ownership on professional disease indicators, PDTD and PDPD (see columns (7)-(10)). This average negative coefficient of household ownership more than compensates the positive immigrant effect. When considering the share of immigrants who are household owners²⁴ we find that the effect is not significantly different from the average. The share of households owners seems then a driver of the improved working conditions in the department, whatever the nativity group of households owners.²⁵

Our analysis by cells confirms then that immigrants bear worse working conditions than natives. While there is a significant high-income effect inducing an average improvement in working conditions, the share of immigrants’ household owners does not seem large enough to compensate the negative effect of being foreign born on average working conditions.

Table C.6 in Appendix C replicates estimations from Table 3 over aggregated data. The share of naturalized immigrants and the share of assimilated immigrants in the department are introduced as explanatory variables of working conditions. Consistently with previous findings, we observe that, in average, immigrants are significantly more allocated towards activities with higher frequency of professional accidents and the associated disabilities. This effect is though cancelled for immigrants having acquired the French nationality. As we observe the coefficient associated with “Naturalized” is negative, significant and overcomes the size of the positive coefficient associated with “Immigrant”. For immigrants being married with a French citizen we also find a negative and

²⁴To test if there is a specific immigrant effect we introduce as explanatory variable the share of immigrants that are household owners. Evidently this explanatory variable equals zero for the 760 cells composed only by natives and equals the share of household owners for the 758 cells composed by immigrants. This implies that when introducing as explanatory variable the share of household owners in our regression the variable perfectly correlates with the interacted variable “Immigrant · Household owner” for half of the sample. The individual variable “Household owner” is then automatically dropped from the regression.

²⁵Table C.5 replicates the same exercise using one-period-lagged income indicators. Results remain robust.

Table 5: Immigrants and professional accident/illness : the role of income. Cell analysis based on the LFS 2003-2012.

	Dependent variable: professional accident/illness indicators									
	PAFR		PATD		PAPD		PDTD		PDPD	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Immigrant	1.883*** (0.366)	2.955*** (1.054)	0.181*** (0.0258)	0.292*** (0.0841)	2.245*** (0.248)	3.622*** (0.907)	0.00641 (0.0245)	-0.0672 (0.0646)	-0.000419 (0.0587)	-0.201 (0.161)
Household owner	-6.880*** (2.439)		-0.564*** (0.178)		-5.257*** (1.816)		-0.220 (0.159)		-0.462 (0.378)	
Immigrant · House. owner		-1.890 (1.892)		-0.195 (0.148)		-2.427 (1.563)		0.130 (0.0935)		0.354 (0.234)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Immigrant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518
R-squared	0.902	0.902	0.888	0.890	0.880	0.882	0.875	0.876	0.867	0.869
R-squared	0.902	0.900	0.888	0.887	0.880	0.881	0.875	0.872	0.867	0.865

Source: Labor Force surveys 2003-2012 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators

PAFR, PATD, PAPD, PDTD and PDPD. Note: cells are defined at the department-immigrant-year level. Weighted OLS estimation with robust standard errors clustered at the department level and weights equal to the cell weight when considering weights provided by the LFS. Significance levels are *** ($p < 0.01$), ** ($p < 0.05$) and * ($p < 0.1$).

significant coefficient but of slightly smaller size than the positive and significant coefficient of “Immigrant”, suggesting that whereas assimilated immigrants benefit from better working conditions than the average immigrants, they are still worse off than natives.

Consistently with previous findings in individual data, the income effect still applies. The higher the share of household owners in the department, the better the working conditions. Again, this results holds whatever the nativity group of household owners, since there is no significant specific effect associated with naturalized immigrants’ household owners or assimilated immigrants’ household owners.

Finally Table C.7 replicates from Table C.2 using the cell approach. Estimations are in line with previous findings. Immigrants are relatively more present in activities with high frequency of injuries and the associated disabilities. The larger the share of household owners in the cell the lower the the frequency of professional accidents and the corresponding disabilities. In contrast, the larger the share of natives with both parents being foreign born (2nd generation immigrants), the higher the frequency of professional accidents and temporal disabilities. The significant and positive coefficient associated with “2nd generation” remains though smaller than that of “Immigrant”, suggesting that, while natives with foreign parents bear worse working conditions than the average native, they are still better off than immigrants.

Results based on aggregate data confirm findings on individual data. Immigrants bear an average

worse working conditions than natives. Working conditions are a normal good. Whatever their nativity group, high income individuals benefit from better working conditions and there is no significant specific effect associated with nativity. Average differences in working conditions between natives and immigrants seem then to reflect income differences. Immigrant assimilation in the host country is associated with an assimilation in working conditions.

7 Conclusion

With years of residence in the host country immigrants' income tends to converge to the native income level (see Borjas (1985), Borjas (1995), Chiswick (1986), Hu (2000) or Antecol, Kuhn, and Trejo (2006) among others). This income assimilation effect is surprisingly not associated with a health improvement (see Marmot, Adelstein, and Bulusu (1984), Antecol and Bedard (2006) or Hao and Kim (2009)). A large number of studies point towards acculturation (and the associated risky behaviors) as a major driver of the counterfactual relation between immigrants' health dynamics in the host country and income dynamics (see Antecol and Bedard (2006)). While less numerous, some emerging studies point towards worse working conditions of immigrants with respect to natives as determinant of their deteriorated health dynamics (see Case and Deaton (2005), Fletcher and Sindelar (2009), Orrenius and Zavodny (2009), Fletcher, Sindelar, and Yamaguchi (2011) or Giuntella and Mazzona (2015)). This statement seems though contradictory with the idea that working conditions are rather a normal good (see Viscusi (1978) for a seminal work on the subject). With years of residence in the host country, immigrants' income convergence towards the natives' average income level should promote a simultaneous convergence in working conditions. If this is not the case, we may argue that immigrants are caught in a "bad working conditions trap" that may be explained by differences in the perception of risk, in human capital or in employment opportunities.

This paper seeks to gain insights on the relationship between nativity, income and working conditions. Using two alternative French data sources merged with national industry statistics on professional accidents and illnesses, we show that immigrants bear an average worse working conditions than natives. This difference seems though explained by differences in income levels. Individuals with high non-earned income benefit in average from better working conditions and this holds whatever the nationality of the individual. With years of residence in the host countries immigrants' income tends to converge to the native income level and this promotes an improvement in their working conditions. For equivalent level of non-earned income, no significant differences arise between immigrants and natives working conditions. According to our theoretical model, this finding rules out the possibility of differences in risk perception as the main factor responsible for differences in working conditions across nativity groups.

Because immigrants' income assimilation is associated with an improvement in their working conditions, we cannot claim that bad working conditions are driving the deterioration of immigrants'

health status with years of residence in the host country. On the contrary, working conditions are rather improved with residence duration together with non-earned income.

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A Appendix: Data sources

Statistics provided by the National Health Insurance Fund for Salaried Workers (“Caisse nationale de l’assurance maladie des travailleurs salariés”) concern both professional illness and accidents. These statistics are available for the period 2012-2016, but it is only for 2014, 2015, 2016 that they are provided at the five digit NAF2008 level. So for more than 720 activity branches we have information on:

- The statistics of professional accidents that led to (i) a repair in the form of a first payment of daily “illness allowance” (resulting from a full day leave of work in addition to the day when the accident actually happened); (ii) or to a financial compensation due to a permanent disability or fatal accident (death benefit). An professional accident is defined as an accident which occurred to the employee by the fact or at the time of his work, whatever the cause. In order for the work accident to be recognized, the employee must justify the following 2 conditions: (i) he was the victim of an accidental act in the course of his professional activity, and (ii) the accidental event results in the sudden appearance of a lesion. The cause of the accident at work must be sudden (which distinguishes it from the appearance of the occupational illness). It can come from an event or series of events, which must be dated with certainty. The accident is presumed to be of professional origin as soon as it occurs on company premises, even during a break. This implies that the employee must be placed under the authority of the employer when the event occurs.
- The statistics occupational illness that gave rise to (i) a repair in the form of a first daily “illness allowance” payment (following an interruption of work); (ii) or to a financial compensation due to a permanent incapacity or fatal loss (death benefit). In France, the occupational disease is a work-related illness, that is to say, the exposure more or less prolonged to a risk existing during the usual exercise of the worker’s mission. To be considered as an occupational illness, it must appear in one of the 118 tables of the Social Security Code, but it must also be recognized as such by the Primary Health Insurance Fund following a survey conducted on the victim. Once the occupational illness is proven, the victim is compensated without a waiting period until the end of his work stoppage and is entitled to reimbursement for his medical expenses. If the injury or the occupational illness is consolidated, a permanent incapacity rate is pronounced by the Primary Health Insurance Fund and the worker is entitled to the payment of a life annuity or a lump sum compensation in capital. At the end of the work stoppage, the employee must return to his position under the usual conditions and if he is not declared fit by the doctor, the employer must propose a new position adapted to his situation. The recognition of an occupational illness may therefore a long procedure including a survey over the victim. This implies that there must really be a willingness of

the worker to go through all this administrative procedure.

Using information on job content provided by CONSTANCES survey, we define the following indicators:

- Fixed schedule: dummy variable equal to unity if the individual has a job with fixed schedules.
- Physical hardness. This indicator results from the addition of 3 indicators whose values are defined between $[0, 1]$:
 - The first indicator is increasing with the following working conditions: standing, kneeling, leaning forward, manipulating an object weighing more than 1 kg, moving objects weighing more than 10/20/25 kg, head down, arms in the air, separated arms, pinching, movement of screwing, with back to back, elbow flexed, wrist twisted, hitting with hand.
 - Physical effort: variable provided by CONSTANCES and adopting the 0 value when the job implies no physical effort at all and unity when the job is physically exhausting.
 - Extreme temperature: indicator defined between $[0, 1]$ and increasing with the frequency at which the individual is exposed to extreme temperatures (high or low).
- ICT: variable defined within the interval $[0, 1]$ and resulting from the addition of the (i) frequency at which the individual uses a computer screen or control screen at work and (ii) the frequency at which the individual uses a computer keyboard, computer mouse or equivalent.
- Repetitive: indicator resulting from the addition of two $[0, 1]$ variables: (i) do you have to repeat the same actions 2 to 4 times per minute? (ii) low concentration required for the job. This variable increases with the frequency at which the individual can interrupt his job during at least 10 minutes per hour and with the frequency at which the individual can raise his eyes from work during some seconds even if he is not in a break.
- Bad quality job: indicator resulting from the addition of two $[0, 1]$ variables: (i) weak promotion perspectives (the weaker the perspectives the higher the value of the variable); (ii) threaten job security (this variable increases with job insecurity).

B Appendix: Descriptive statistics

Table B.1: Native and immigrant sample composition, LFS 2003-2012.

Variable	Natives			Immigrants		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Female	1429915	0.479	0.500	173417	0.449	0.497
Age	1429915	41.108	11.404	173417	44.546	10.648
Married	1429915	0.506	0.500	173417	0.660	0.474
Children	1429915	0.523	0.499	173417	0.614	0.487
SUA	1429915	0.044	0.205	173417	0.129	0.335
MRH	1429915	0.118	0.322	173417	0.240	0.427
Household owner	1429915	0.630	0.483	173417	0.472	0.499
no diploma	1429915	0.157	0.364	173417	0.337	0.473
BEPC only	1429915	0.076	0.265	173417	0.065	0.247
CAP-BEP	1429915	0.278	0.448	173417	0.160	0.367
Baccalaureate degree	1429915	0.184	0.387	173417	0.156	0.363
Baccalaureate+2	1429915	0.145	0.352	173417	0.087	0.282
Higher degree	1429915	0.160	0.367	173417	0.195	0.396
Residence duration < 10	1429915	0.000	0.000	173417	0.174	0.379
Residence duration 10 – 20	1429915	0.000	0.000	173417	0.177	0.381
Residence duration 20 – 30	1429915	0.000	0.000	173417	0.191	0.393
Residence duration above 30	1429915	0.000	0.000	173417	0.459	0.498
PAFR	1415042	20.770	15.555	170688	22.147	16.719
PATD	1415042	1.286	1.055	170688	1.450	1.207
PAPD	1415042	11.945	11.510	170688	13.752	13.492
PDTD	1415042	0.392	0.758	170688	0.388	0.603
PDPD	1415042	0.852	1.766	170688	0.835	1.383

Table B.2: The role of residence duration for immigrants, LFS 2003-2012.

Variable	10 years or less of residence			10-20 years of residence			20-30 years of residence			More than 30 years of residence		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
PAFR	29535	23.975	17.578	30096	23.357	17.280	32560	22.281	16.506	78491	20.940	16.150
PATD	29535	1.607	1.284	30096	1.556	1.259	32560	1.468	1.203	78491	1.343	1.146
PAPD	29535	15.443	14.847	30096	14.781	14.340	32560	13.533	13.020	78491	12.814	12.702
PDTD	29535	0.419	0.572	30096	0.387	0.507	32560	0.371	0.512	78491	0.385	0.678
PDPD	29535	0.873	1.227	30096	0.816	1.206	32560	0.775	1.139	78491	0.852	1.580

Table B.3: The role of education, LFS 2003-2012.

Variable	Natives						Immigrants					
	Secondary educ. or less			More than secondary educ.			Secondary educ. or less			More than secondary educ.		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
PAFR	983074	23.064	15.849	431968	15.551	13.483	122556	24.731	16.871	48132	15.568	14.364
PATD	983074	1.444	1.089	431968	0.927	0.873	122556	1.643	1.236	48132	0.958	0.968
PAPD	983074	13.540	12.380	431968	8.315	8.135	122556	15.866	14.515	48132	8.370	8.288
PDTD	983074	0.449	0.802	431968	0.261	0.627	122556	0.450	0.626	48132	0.232	0.506
PDPD	983074	0.974	1.865	431968	0.576	1.480	122556	0.964	1.420	48132	0.505	1.225

Table B.4: Female composition for natives and immigrants, LFS 2003-2012.

Variable	Natives			Immigrants		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
PAFR	678958	18.912	14.846	76893	18.604	15.691
PATD	678958	1.153	1.004	76893	1.184	1.111
PAPD	678958	9.203	8.170	76893	9.191	8.225
PDTD	678958	0.310	0.539	76893	0.292	0.449
PDPD	678958	0.624	1.167	76893	0.589	0.949

Table B.5: The role of income: owner versus resident in a sensible urban area. LFS 2003-2012.

Variable	Natives						Immigrants					
	Household owner			Resident in a urban sensible area			Household owner			Resident in a urban sensible area		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
PAFR	891559	20.119	15.376	62376	22.453	15.456	80747	20.728	16.449	21976	25.675	16.725
PATD	891559	1.242	1.039	62376	1.409	1.075	80747	1.329	1.165	21976	1.744	1.261
PAPD	891559	11.850	11.544	62376	12.099	10.688	80747	12.771	13.038	21976	16.474	14.323
PDTD	891559	0.366	0.669	62376	0.447	0.900	80747	0.366	0.605	21976	0.435	0.479
PDPD	891559	0.795	1.532	62376	0.981	2.140	80747	0.798	1.406	21976	0.918	1.047

Table B.6: The role of income: moderate rental Housing (MRH) and sensible urban areas. LFS 2003-2012.

Variable	Natives						Immigrants					
	MRH			MRH in a sensible urban area			MRH			MRH in a urban sensible area		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
PAFR	166241	23.145	15.560	33353	24.083	15.392	40960	25.235	16.433	14121	26.907	16.465
PATD	166241	1.453	1.095	33353	1.528	1.097	40960	1.692	1.224	14121	1.831	1.247
PAPD	166241	12.827	11.204	33353	13.121	11.008	40960	15.659	13.575	14121	17.107	14.174
PDTD	166241	0.409	0.667	33353	0.437	0.748	40960	0.424	0.481	14121	0.450	0.463
PDPD	166241	0.885	1.591	33353	0.939	1.754	40960	0.888	1.020	14121	0.945	1.002

Table B.7: Native and immigrant sample composition, CONSTANCES 2012-2017.

Variable	Natives			Immigrants		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Female	92951	0.534	0.499	9806	0.505	0.500
Age	92951	43.590	10.413	9806	44.556	10.406
Married	92951	0.591	0.492	9806	0.557	0.497
Children	89138	0.587	0.492	8966	0.582	0.493
Dividends & rents	92951	0.094	0.292	9806	0.063	0.243
BEPC only	92191	0.031	0.172	9399	0.056	0.229
CAP/BEP	92191	0.136	0.343	9399	0.127	0.333
Bac	92191	0.152	0.359	9399	0.136	0.342
Bac +2 ou 3	92191	0.291	0.454	9399	0.201	0.401
Bac +4	92191	0.092	0.289	9399	0.083	0.277
Bac +5 or more	92191	0.278	0.448	9399	0.333	0.471
Residence duration < 10	92951	1.000	0.000	9806	0.121	0.327
Residence duration 10 – 20	92951	1.000	0.000	9806	0.184	0.388
Residence duration 20 – 30	92951	1.000	0.000	9806	0.120	0.325
Residence duration above 30	92951	1.000	0.000	9806	0.251	0.433
PAFR	92672	18.273	9.983	9764	19.165	10.705
PATD	92672	1.105	0.673	9764	1.221	0.750
PAPD	92672	9.900	6.596	9764	11.163	7.828
PDTD	92672	0.293	0.296	9764	0.314	0.359
PDPD	92672	0.633	0.676	9764	0.684	0.838
Fixed schedule	92951	0.602	0.489	9806	0.596	0.491
Physical hardness	8232	0.502	0.455	7947	0.609	0.527
ICT	90164	0.726	0.362	9256	0.656	0.410
Repetitive	8618	0.928	0.425	8688	0.980	0.455
Bad quality job	87368	0.872	0.441	8514	0.881	0.473
Other constraints	92951	0.020	0.079	9806	0.018	0.076
Organizational constraints	92951	0.101	0.136	9806	0.124	0.152
Physical constraints	92951	0.123	0.218	9806	0.149	0.237
Chemical constraints	92951	0.030	0.070	9806	0.035	0.076
Noise constraints	92951	0.118	0.207	9806	0.122	0.210

Table B.8: The role of residence duration for immigrants, CONSTANCES 2012-2017.

Variable	10 years or less of residence			10-20 years of residence			20-30 years of residence			More than 30 years of residence		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
PAFR	1182	18.269	10.961	1795	19.257	11.320	1172	18.278	11.006	2454	18.471	10.126
PATD	1182	1.167	0.743	1795	1.238	0.797	1172	1.170	0.787	2454	1.162	0.703
PAPD	1182	10.610	7.655	1795	11.246	8.353	1172	10.767	8.335	2454	10.672	7.261
PDTD	1182	0.280	0.385	1795	0.312	0.357	1172	0.282	0.252	2454	0.312	0.364
PDPD	1182	0.615	0.918	1795	0.671	0.800	1172	0.609	0.563	2454	0.690	0.865
Fixed schedule	1190	0.569	0.495	1806	0.572	0.495	1176	0.581	0.494	2458	0.606	0.489
Physical hardness	973	0.589	0.515	1473	0.620	0.546	957	0.617	0.542	1961	0.590	0.516
ICT	1133	0.666	0.417	1714	0.635	0.421	1103	0.662	0.412	2326	0.669	0.399
Repetitive	1083	0.980	0.442	1607	0.986	0.458	1032	0.993	0.462	2151	0.968	0.452
Bad quality job	1092	0.814	0.472	1579	0.843	0.484	1044	0.900	0.487	2181	0.907	0.470
Other constraints	1190	0.016	0.073	1806	0.019	0.083	1176	0.017	0.073	2458	0.020	0.080
Organizational constraints	1190	0.131	0.153	1806	0.136	0.158	1176	0.118	0.142	2458	0.117	0.148
Physical constraints	1190	0.117	0.211	1806	0.150	0.240	1176	0.146	0.236	2458	0.146	0.240
Chemical constraints	1190	0.027	0.057	1806	0.035	0.082	1176	0.030	0.067	2458	0.036	0.081
Noise constraints	1190	0.102	0.197	1806	0.115	0.205	1176	0.107	0.194	2458	0.123	0.212

Table B.9: The role of education, CONSTANCES 2012-2017.

Variable	Natives						Immigrants					
	Secondary educ. or less			More than secondary educ.			Secondary educ. or less			More than secondary educ.		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
PAFR	31042	21.552	10.551	60873	16.592	9.246	3549	22.516	11.367	5809	16.975	9.608
PATD	31042	1.332	0.727	60873	0.988	0.612	3549	1.468	0.826	5809	1.059	0.645
PAPD	31042	12.154	7.956	60873	8.745	5.439	3549	13.549	9.258	5809	9.606	6.246
PDTD	31042	0.369	0.345	60873	0.254	0.258	3549	0.376	0.367	5809	0.273	0.354
PDPD	31042	0.798	0.772	60873	0.548	0.604	3549	0.814	0.860	5809	0.598	0.830
Fixed schedule	31098	0.650	0.477	61093	0.578	0.494	3564	0.664	0.472	5835	0.552	0.497
Physical hardness	26512	0.750	0.527	55192	0.383	0.359	2655	0.930	0.559	5012	0.430	0.412
ICT	29964	0.556	0.421	59486	0.813	0.292	3283	0.417	0.429	5631	0.805	0.318
Repetitive	28188	1.027	0.459	57335	0.878	0.398	2993	1.075	0.479	5374	0.925	0.429
Bad quality job	28696	0.946	0.451	58033	0.836	0.432	2963	0.946	0.480	5442	0.845	0.466
Other constraints	31098	0.017	0.071	61093	0.022	0.082	3564	0.014	0.067	5835	0.021	0.082
Organizational constraints	31098	0.140	0.160	61093	0.081	0.117	3564	0.157	0.166	5835	0.105	0.138
Physical constraints	31098	0.226	0.264	61093	0.070	0.168	3564	0.252	0.270	5835	0.084	0.186
Chemical constraints	31098	0.055	0.096	61093	0.017	0.047	3564	0.060	0.101	5835	0.019	0.050
Noise constraints	31098	0.188	0.250	61093	0.082	0.170	3564	0.188	0.244	5835	0.081	0.174

Table B.10: Female composition for natives and immigrants, CONSTANCES 2012-2017.

Variable	Natives			Immigrants		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
PAFR	49625	17.612	9.509	4932	17.119	10.139
PATD	49625	1.048	0.636	4932	1.062	0.676
PAPD	49625	8.354	4.671	4932	8.333	4.546
PDTD	49625	0.258	0.242	4932	0.255	0.304
PDPD	49625	0.520	0.506	4932	0.521	0.671
Fixed schedule	49678	0.631	0.482	4948	0.609	0.488
Physical hardness	43428	0.478	0.416	3944	0.556	0.471
ICT	48022	0.730	0.361	4644	0.663	0.413
Repetitive	45409	0.920	0.448	4299	0.985	0.461
Bad quality job	46126	0.895	0.435	4197	0.901	0.476
Other constraints	49678	0.018	0.075	4948	0.015	0.068
Organizational constraints	49678	0.088	0.125	4948	0.106	0.135
Physical constraints	49678	0.096	0.194	4948	0.114	0.210
Chemical constraints	49678	0.012	0.032	4948	0.014	0.036
Noise constraints	49678	0.081	0.164	4948	0.083	0.172

Table B.11: Individual perceiving dividends and/or rentals from housing. CONSTANCES 2012-2017.

Variable	Natives			Immigrants		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
PAFR	8709	16.733	9.538	618	16.977	9.847
PATD	8709	1.011	0.642	618	1.055	0.662
PAPD	8709	9.338	6.130	618	9.747	6.578
PDTD	8709	0.268	0.279	618	0.301	0.443
PDPD	8709	0.590	0.650	618	0.660	1.050
Fixed schedule	875	0.537	0.499	619	0.538	0.499
Physical hardness	7948	0.359	0.363	540	0.360	0.388
ICT	8546	0.809	0.304	596	0.829	0.296
Repetitive	8232	0.914	0.384	576	0.936	0.412
Bad quality job	8233	0.812	0.434	575	0.846	0.454
Other constraints	8750	0.023	0.083	619	0.023	0.081
Organizational constraints	8750	0.087	0.122	619	0.109	0.137
Physical constraints	8750	0.072	0.173	619	0.082	0.183
Chemical constraints	8750	0.023	0.058	619	0.020	0.051
Noise constraints	8750	0.086	0.182	619	0.074	0.166

C Appendix: Estimation results

Table C.1: Correlation between nativity group and working condition indicators. LFS 2003-2012.

	Dependent variable: Professional accident/illness indicators				
	PAFR	PATD	PAPD	PDTD	PDPD
Immigrant	1.215 (0.899)	0.155** (0.0707)	1.722** (0.839)	-0.00995 (0.0326)	-0.0312 (0.0765)
Year FE	No	No	No	No	No
Region FE	No	No	No	No	No
NAF2 FE	No	No	No	No	No
Region \times Year FE	No	No	No	No	No
Observations	1,584,562	1,584,562	1,584,562	1,584,562	1,584,562
R-squared	0.001	0.002	0.002	0.000	0.000

Source: Labor Force surveys 2003-2012 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators PAFR, PATD, PAPD, PDTD and PDPD. Note: weighted OLS estimation with robust standard errors clustered at the NAF5 level and weights provided by the LFS. Significance levels are ***($p < 0.01$), ** ($p < 0.05$) and *($p < 0.1$).

Table C.2: 2nd generation immigrants and professional accident/illness : the role of income. LFS 2003-2012.

	Dependent variable: professional accident/illness indicators									
	PAFR		PATD		PAPD		PDTD		PDPD	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Immigrant	3.508*** (1.085)	3.597*** (1.094)	0.337*** (0.0921)	0.342*** (0.0929)	2.941*** (0.777)	2.953*** (0.777)	0.00193 (0.0519)	0.00972 (0.0503)	-0.0513 (0.122)	-0.0312 (0.118)
MRH in SUA	1.015* (0.519)	1.003* (0.518)	0.0883* (0.0455)	0.0875* (0.0453)	0.572* (0.300)	0.570* (0.299)	-0.0112 (0.0231)	-0.0123 (0.0243)	-0.0331 (0.0545)	-0.0359 (0.0575)
Household owner	-0.626*** (0.221)	-0.523*** (0.189)	-0.0508*** (0.0145)	-0.0447*** (0.0129)	-0.165** (0.0725)	-0.152** (0.0738)	-0.0588* (0.0321)	-0.0499* (0.0257)	-0.137* (0.0775)	-0.114* (0.0620)
2nd generation	-0.407** (0.188)	-0.196 (0.250)	-0.0163 (0.0158)	-0.00373 (0.0176)	-0.140 (0.135)	-0.113 (0.144)	-0.0181** (0.00892)	0.000346 (0.0301)	-0.0417** (0.0207)	0.00565 (0.0724)
2nd generation · Household owner		-0.371 (0.394)		-0.0221 (0.0258)		-0.0482 (0.153)		-0.0324 (0.0541)		-0.0833 (0.130)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAF2 FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	218,457	218,457	218,457	218,457	218,457	218,457	218,457	218,457	218,457	218,457
R-squared	0.551	0.551	0.547	0.547	0.604	0.604	0.178	0.178	0.164	0.164

Source: Labor Force surveys 2003-2012 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators PAFR, PATD, PAPD, PDTD and PDPD. Note: weighted OLS estimation with robust standard errors clustered at the NAF5 level and weights provided by the LFS. Control variables include: gender, age, age squared, civil status, children, diploma level, residence duration in the host country (<10 years, 10-20 years, 20-30 years and more than 30 years), size of the establishment or plant where the individual works (less than 10 employees, between 10 and 50 employees, between 50 and 200 employees and more than 200 employees) and whether the individual as a permanent contract. Significance levels are ***($p < 0.01$), ** ($p < 0.05$) and * ($p < 0.1$).

Table C.3: 2nd generation immigrants, naturalized immigrants and professional accident/illness : the role of income. CONSTANCES 2012-2018.

	Dependent variable: professional accident/illness indicators																			
	PAFR					PATD					PAPD					PDTD				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Immigrant	2.018*** (0.676)	2.020*** (0.676)	2.145*** (0.686)	2.160*** (0.687)	0.205*** (0.0456)	0.205*** (0.0456)	0.215*** (0.0461)	0.216*** (0.0462)	2.493*** (0.419)	2.495*** (0.419)	2.654*** (0.420)	2.665*** (0.420)	-0.00404 (0.0173)	-0.00400 (0.0173)	-0.000887 (0.0167)	0.000301 (0.0168)	-0.0230 (0.0425)	-0.0229 (0.0425)	-0.0167 (0.0413)	-0.0144 (0.0414)
Non-earned income	-0.154** (0.0684)	-0.142** (0.0689)	-0.157** (0.0682)	-0.171** (0.0698)	-0.00987** (0.00449)	-0.00917** (0.00454)	-0.0101** (0.00448)	-0.0111** (0.00457)	-0.0865* (0.0505)	-0.0780 (0.0511)	-0.0885* (0.0504)	-0.0991* (0.0510)	-0.00685** (0.00278)	-0.00688** (0.00282)	-0.00695** (0.00276)	-0.00812*** (0.00285)	-0.0160** (0.00635)	-0.0152** (0.00643)	-0.0162** (0.00631)	-0.0184*** (0.00654)
Residence duration <10 years	-0.436 (0.345)	-0.434 (0.345)	-0.188 (0.391)	-0.181 (0.392)	-0.0197 (0.0239)	-0.0196 (0.0239)	-0.0130 (0.0274)	-0.000822 (0.0274)	0.0420 (0.242)	0.0430 (0.242)	0.347 (0.277)	0.351 (0.277)	-0.0425*** (0.00928)	-0.0425*** (0.00927)	-0.0362*** (0.00900)	-0.0337*** (0.00884)	-0.0994*** (0.0216)	-0.0994*** (0.0216)	-0.0870*** (0.0227)	-0.0860*** (0.0226)
Residence duration 10-20 years	0.226 (0.315)	0.227 (0.315)	0.341 (0.343)	0.353 (0.342)	0.0222 (0.0211)	0.0223 (0.0211)	0.0308 (0.0226)	0.0317 (0.0226)	0.171 (0.169)	0.172 (0.169)	0.313* (0.180)	0.322* (0.180)	-0.0201*** (0.00777)	-0.0201*** (0.00776)	-0.0172** (0.00749)	-0.0163** (0.00747)	-0.0485** (0.0195)	-0.0484** (0.0195)	-0.0427** (0.0189)	-0.0410** (0.0189)
Residence duration 20-30 years	0.208 (0.304)	0.207 (0.304)	0.265 (0.309)	0.269 (0.309)	0.0145 (0.0203)	0.0145 (0.0203)	0.0188 (0.0205)	0.0191 (0.0205)	0.140 (0.196)	0.140 (0.196)	0.211 (0.199)	0.214 (0.199)	0.0120 (0.00833)	0.0120 (0.00833)	0.0135 (0.00838)	0.0137 (0.00842)	0.0240 (0.00394)	0.0240 (0.00394)	0.0269 (0.00581)	0.0275 (0.00581)
2nd generation	0.0584 (0.0895)	0.0843 (0.0921)			0.00377 (0.00606)	0.00534 (0.00627)			0.0226 (0.0739)	0.0418 (0.0768)			0.00252 (0.00406)	0.00290 (0.00420)			0.00394 (0.00954)	0.00581 (0.0102)		
2nd generation - Non-earned income		-0.714** (0.327)				-0.0432** (0.0212)			-0.529** (0.241)					-0.0105 (0.0169)				-0.0514 (0.0385)		
Naturalized			0.331 (0.271)	0.310 (0.268)			0.0246 (0.0183)	0.0231 (0.0182)			0.407** (0.178)	0.392** (0.178)			0.00836 (0.00794)	0.00671 (0.00797)		0.0167 (0.0175)		0.0136 (0.0175)
Naturalized - Non-earned income				0.290 (0.443)			0.0217 (0.0284)	0.0217 (0.0284)				0.211 (0.264)				0.0233 (0.0142)				0.0437 (0.0310)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478	75,478
R-squared	0.639	0.639	0.640	0.640	0.664	0.664	0.665	0.665	0.708	0.708	0.708	0.708	0.509	0.509	0.509	0.509	0.516	0.516	0.516	0.516

Source: CONSTANCES survey 2012-2018 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators PAFR, PATD, PAPD, PDTD and PDPD. Note: weighted OLS estimation with robust standard errors clustered at the occupation-department level and weights imputed from the LFS at the department-occupation-gender-nativity-age level, or at the department-occupation-gender-nativity level or at the department-gender-nativity-age level. Control variables include: gender, age, age squared, civil status, children, diploma level and residence duration in the host country (<10 years, 10-20 years, 20-30 years and more than 30 years). Significance levels are ** ($p < 0.01$), * ($p < 0.05$) and * ($p < 0.1$).

Table C.4: Probability of being a resident in a moderate rent housing located in a sensible urban area. LFS 2003-2012.

	Dependent variable: Moderate Rent Housing in Sensible Urban Areas			
	(1)	(2)	(3)	(4)
Immigrant	0.145*** (0.0232)	0.145*** (0.0220)	0.145*** (0.0230)	0.136*** (0.0232)
Residence duration <10 years	0.0358*** (0.0122)	0.0349*** (0.0100)	0.0333*** (0.0104)	0.0324** (0.0132)
Residence duration 10-20 years	0.0398*** (0.00569)	0.0394*** (0.00458)	0.0382*** (0.00473)	0.0347*** (0.00657)
Residence duration 20-30 years	0.0439*** (0.00551)	0.0437*** (0.00500)	0.0430*** (0.00516)	0.0389*** (0.00400)
Naturalized		-0.00141 (0.00507)		
Assimilated			-0.00741 (0.00599)	
2nd generation				0.0137*** (0.00175)
Year FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Region \times Year FE	Yes	Yes	Yes	Yes
Observations	1,601,952	1,601,952	1,601,952	1,295,112
R-squared	0.034	0.034	0.034	0.032

Source: Labor Force surveys 2003-2012. Note: Linear probability estimation with robust standard errors clustered at the region level and weights provided by the LFS. Control variables include: gender, age, age squared, civil status, children, diploma level, residence duration in the host country (<10 years, 10-20 years, 20-30 years and more than 30 years), size of the establishment or plant where the individual works (less than 10 employees, between 10 and 50 employees, between 50 and 200 employees and more than 200 employees) and whether the individual as a permanent contract. Significance levels are ***($p < 0.01$), ** ($p < 0.05$) and * ($p < 0.1$).

Table C.5: Immigrants and professional accident/illness : the role of lagged income level. Cell analysis based on the LFS 2003-2010.

	Dependent variable: professional accident/illness indicators									
	PAFR		PATD		PAPD		PDTD		PDPD	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Immigrant	2.053***	3.034***	0.197***	0.303***	2.417***	3.786***	0.00563	-0.0647	-0.00674	-0.201
	(0.344)	(1.112)	(0.0252)	(0.0871)	(0.250)	(0.863)	(0.0187)	(0.0551)	(0.0442)	(0.136)
Household owner (-1)	-5.573**	-4.030	-0.443**	-0.276	-3.844**	-1.691	-0.235*	-0.345**	-0.546*	-0.852**
	(2.380)	(2.961)	(0.172)	(0.210)	(1.822)	(2.199)	(0.119)	(0.136)	(0.278)	(0.328)
Immigrant · House. owner (-1)		-1.734		-0.188		-2.419		0.124		0.344*
		(2.043)		(0.157)		(1.535)		(0.0838)		(0.205)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Immigrant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328
R-squared	0.900	0.901	0.886	0.887	0.879	0.881	0.881	0.882	0.874	0.876

Source: Labor Force surveys 2003-2012 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators

PAFR, PATD, PAPD, PDTD and PDPD. Note: cells are defined at the department-immigrant-year level. Weighted OLS estimation with robust standard errors clustered at the department level and weights equal to the cell weight when considering weights provided by the LFS. Significance levels are *** ($p < 0.01$), ** ($p < 0.05$) and * ($p < 0.1$).

Table C.6: Naturalized immigrants, Assimilated immigrants and professional accident/illness: the role of income. Cell analysis based on the LFS 2003-2010.

		Dependent variable: professional accident/illness indicators																			
		PAFR				PATD				PAPD				PDTD				PDPD			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Immigrant		4.851***	4.850***	3.490***	3.451***	0.454***	0.453***	0.352***	0.347***	5.700***	5.727***	4.265***	4.292***	0.0168	0.0263	-0.0554	-0.0475	9.75e-05	0.0237	-0.168	-0.148
		(0.930)	(0.902)	(0.823)	(0.832)	(0.0752)	(0.0766)	(0.0708)	(0.0710)	(0.931)	(0.930)	(0.886)	(0.886)	(0.0608)	(0.0605)	(0.0581)	(0.0546)	(0.161)	(0.144)	(0.141)	(0.131)
	Household owner	-5.031**	-5.017**	-5.991***	-5.771**	-0.394***	-0.385***	-0.470***	-0.444**	-3.380*	-3.386*	-4.141**	-4.237**	-0.214	-0.313*	-0.254*	-0.298*	-0.462	-0.709*	-0.555	-0.666
		(2.108)	(2.474)	(2.250)	(2.690)	(0.154)	(0.177)	(0.161)	(0.191)	(1.755)	(2.030)	(1.774)	(2.128)	(0.133)	(0.163)	(0.148)	(0.176)	(0.317)	(0.391)	(0.353)	(0.422)
Naturalized		-5.029***	-5.004*			-0.462***	-0.445**			-5.854***	-6.358***			-0.0177	-0.200			-0.000874	-0.455		
		(1.542)	(2.733)			(0.120)	(0.197)			(1.463)	(2.216)			(0.122)	(0.166)			(0.294)	(0.403)		
Naturalized - Household owner																					
Assimilated				-3.039*	-2.537			-0.322**	-0.264			-3.819**	-4.038			0.117	0.0169		0.317	0.0585	
				(1.533)	(2.705)			(0.126)	(0.202)			(1.558)	(2.447)			(0.110)	(0.158)		(0.265)	(0.378)	
Assimilated - Household owner					-0.622			-0.0711	-0.0711			0.271	0.271				0.124		0.320	0.202	
					(3.042)			(0.224)	(0.224)			(2.487)	(2.487)				(0.163)		(0.395)	(0.395)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Immigrant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department \times Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518
R-squared	0.906	0.906	0.903	0.903	0.896	0.896	0.896	0.892	0.892	0.890	0.890	0.885	0.885	0.875	0.877	0.876	0.876	0.867	0.870	0.869	0.869

Source: Labor Force surveys 2003-2012 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators PAFR, PATD, PAPD, PDTD and PDPD. Note: cells are defined at the department-immigrant-year level. Weighted OLS estimation with robust standard errors clustered at the department level and weights equal to the cell weight when considering weights provided by the LFS. Significance levels are ***($p < 0.01$), **($p < 0.05$) and *($p < 0.1$).

Table C.7: 2nd generation immigrants and professional accident/illness: the role of income. Cell analysis based on the LFS 2003-2012.

	Dependent variable: professional accident/illness indicators									
	PAFR		PATD		PAPD		PDTD		PDPD	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Immigrant	2.427*** (0.427)	2.412*** (0.428)	0.221*** (0.0303)	0.219*** (0.0304)	2.457*** (0.329)	2.439*** (0.328)	0.0214 (0.0236)	0.0223 (0.0233)	0.0373 (0.0558)	0.0397 (0.0550)
Household owner	-6.602*** (2.437)	-6.620*** (2.411)	-0.544*** (0.178)	-0.545*** (0.175)	-5.149*** (1.847)	-5.172*** (1.800)	-0.212 (0.158)	-0.211 (0.157)	-0.443 (0.376)	-0.440 (0.372)
2nd generation	0.939** (0.417)	-0.669 (1.621)	0.0681** (0.0298)	-0.0826 (0.124)	0.365 (0.392)	-1.576 (1.391)	0.0259 (0.0226)	0.123 (0.0860)	0.0653 (0.0526)	0.321 (0.212)
2nd generation · Household owner		2.841 (2.750)		0.266 (0.211)		3.429 (2.294)		-0.171 (0.143)		-0.451 (0.353)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Immigrant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518
R-squared	0.903	0.904	0.890	0.891	0.881	0.882	0.875	0.876	0.868	0.870

Source: Labor Force surveys 2003-2012 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators PAFR, PATD, PAPD, PDTD and PDPD. Note: cells are defined at the department-immigrant-year level. Weighted OLS estimation with robust standard errors clustered at the department level and weights equal to the cell weight when considering weights provided by the LFS. Significance levels are ***($p < 0.01$), **($p < 0.05$) and *($p < 0.1$).

C.1 Appendix: What is behind accident and illness indicators: The relationship between job content and working conditions

Up to now, working conditions were summarized by activity accident and illness indicators provided by the National Health Insurance Fund for Salaried Workers 2014-2016. These indicators are likely to reflect the nature of job content, that is, activities implying hard physical work are more likely to have more frequently professional accidents than activities in office where the individual is simply exposed to ICT. In this section we present some evidence on the relationship between activity accident and illness indicators and job content indicators. Because the merge between the CONSTANCE survey and the activity accident and illness indicators provided by the National Health Insurance Fund for Salaried Workers has been done by occupations and not by activity branch, we are now exploiting heterogeneity in the job content of occupations (classified at the 4-digit level) where individuals are employed at different moment of times to identify the impact of job content on the average accident/illness indicator of the corresponding job. We then re-estimate equation (9) taking as dependent variable the individual's occupation working conditions and as explanatory variable the job content of this occupation. The objective being to study the correlation between injury/illness indicators and job content.

Table C.8: Immigrants and professional accident/illness : the role of job content and conditions.
CONSTANCES 2012-2018.

	Dependent variable: professional accident/illness indicators				
	PAFR	PATD	PAPD	PDTD	PDPD
Immigrant	2.164** (0.918)	0.234*** (0.0678)	3.133*** (0.882)	0.0503** (0.0224)	0.130** (0.0545)
Fixed schedule	0.115 (0.0740)	0.00454 (0.00534)	-0.0122 (0.0794)	0.00389 (0.00329)	0.00660 (0.00838)
Immigrant·Fixed schedule	0.175 (0.307)	0.0249 (0.0220)	0.210 (0.305)	0.00409 (0.0102)	0.00815 (0.0252)
Physical work	0.739*** (0.158)	0.0475*** (0.0117)	0.405** (0.164)	0.0185*** (0.00515)	0.0404*** (0.0126)
Immigrant · Physical work	-1.197** (0.486)	-0.0731** (0.0341)	-0.224 (0.424)	-0.0207 (0.0127)	-0.0366 (0.0303)
ICT	-0.0602 (0.171)	-0.00299 (0.0122)	-0.145 (0.177)	-0.00518 (0.00666)	-0.0139 (0.0167)
Immigrant · ICT	1.365** (0.688)	0.0721 (0.0494)	0.573 (0.617)	0.0256 (0.0161)	0.0511 (0.0385)
Repetitive	-0.179* (0.107)	-0.0124 (0.00791)	-0.232** (0.114)	-0.00576 (0.00521)	-0.0128 (0.0130)
Immigrant · Repetitive	-0.138 (0.379)	-0.0276 (0.0283)	-0.437 (0.385)	-0.0137 (0.0119)	-0.0431 (0.0292)
Bad quality job	-0.0853 (0.0735)	-0.00506 (0.00517)	-0.0667 (0.0763)	-0.00849*** (0.00320)	-0.0190** (0.00771)
Immigrant · Bad quality job	-0.0721 (0.392)	-0.0138 (0.0278)	-0.348 (0.347)	0.00682 (0.0101)	0.0163 (0.0238)
R-squared	0.604	0.622	0.551	0.426	0.403
Year FE	Yes	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes	Yes
Job FE	Yes	Yes	Yes	Yes	Yes
Observations	61,817	61,817	61,817	61,817	61,817
Department × Year FE	Yes	Yes	Yes	Yes	Yes

Source: CONSTANCES survey 2012-2018 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators

PAFR, PATD, PAPD, PDTD and PDPD. Note: weighted OLS estimation with robust standard errors clustered at the occupation-department level and weights imputed from the LFS at the department-occupation-gender-nativity-age level, or at the department-occupation-gender-nativity level or at the department-gender-nativity-age level. Control variables include: gender, age, age squared, civil status, children , diploma level and residence duration in the host country (<10 years, 10-20 years, 20-30 years and more than 30 years). Significance levels are ***($p < 0.01$), ** ($p < 0.05$) and *($p < 0.1$).

We consider the following job content variables: “Fixed schedule ”, “Physical work ”, “ICT”, “Repetitive” and “Bad quality job”. Moreover, since for an identical job content less risk averse

individuals may take less prevention measures to avoid accidents/diseases, we test if there is a significant immigrant specific effect associated with job content that could be explained by the potential lower aversion of immigrants to risk.

Consistently with findings from previous tables, Table C.8 reveals that immigrants are on average allocated to positions displaying worse performance in terms of professional accidents and illness. Unsurprisingly, findings in Table C.8 show a positive and significant correlation between bad working conditions (represented by higher frequency of professional accidents/diseases and the associated disabilities) and the physical content of the job. In contrast, repetitive tasks are on average negatively correlated with permanent disabilities associated with accidents. Similarly, bad quality jobs with no security against being fired and lower probability of promotion negatively correlate with temporal and permanent disability associated with professional illness.

Surprisingly, there is a negative and significant immigrant specific effect associated with physical work. Among workers declaring facing strenuous physical conditions, immigrants are significantly less concerned by professional accidents and the associated temporal disability. In contrast, among workers using ICT at their jobs, immigrants are significantly more affected by professional accidents.

Table C.9 complements these findings. Instead of considering as explanatory variable the current job content of the individual's occupation, Table C.9 considers variables capturing both the current and past job content conditions the worker has known along the professional career. As explained in the data section, these variables are increasing with the number of constraints the individual has borne. In line with our previous findings, organizational and physical constraints are associated to worse accidents and illness indicators. Chemical constraints induce worse professional disease indicators and permanent disabilities associated with professional accidents.

Table C.9: Immigrants and professional accident/illness : the role of past job content and conditions. CONSTANCES 2012-2018.

	Dependent variable: professional accident/illness indicators				
	PAFR	PATD	PAPD	PDTD	PDPD
Organization constraints	0.929*** (0.284)	0.0680*** (0.0206)	1.205*** (0.291)	0.0405*** (0.0124)	0.106*** (0.0310)
Physical constraints	0.454** (0.197)	0.0355** (0.0147)	0.397* (0.223)	0.0151** (0.00703)	0.0310* (0.0174)
Chemical constraints	1.318 (0.885)	0.0836 (0.0714)	3.146*** (1.177)	0.0853*** (0.0245)	0.286*** (0.0613)
Noise constraints	0.0650 (0.194)	0.00453 (0.0141)	0.0635 (0.211)	0.0143* (0.00855)	0.0324 (0.0212)
Other constraints	0.780* (0.455)	0.0529* (0.0319)	0.458 (0.452)	0.0108 (0.0185)	0.00723 (0.0453)
Year FE	Yes	Yes	Yes	Yes	Yes
Departement FE	Yes	Yes	Yes	Yes	Yes
Job FE	Yes	Yes	Yes	Yes	Yes
Departement \times Year FE	Yes	Yes	Yes	Yes	Yes
Observations	79,175	79,175	79,175	79,175	79,175
R-squared	0.589	0.602	0.528	0.413	0.391

Source: CONSTANCES survey 2012-2018 and National Health Insurance Fund for Salaried Workers 2014-2016 for working condition indicators PAFR, PATD, PAPD, PDTD and PDPD. Note: weighted OLS estimation with robust standard errors clustered at the occupation-department level and weights imputed from the LFS at the department-occupation-gender-nativity-age level, or at the department-occupation-gender-nativity level or at the department-gender-nativity-age level. Control variables include: gender, age, age squared, civil status, children, diploma level and residence duration in the host country (<10 years, 10-20 years, 20-30 years and more than 30 years). Significance levels are ***($p < 0.01$), ** ($p < 0.05$) and * ($p < 0.1$).