Psychic costs of immigration and adaptation to the host country

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Abstract

This paper explores the hypothesis that individuals face psychic costs when they decide to move between countries in order to find better jobs. Parallel to the traditional economic literature of immigration, which tests the wage convergence between immigrants and natives by the *Immigrant Assimilation Hypothesis (IAH)*, we use satisfaction data from the British Household Panel Survey (BHPS) to test the *Satisfaction Assimilation Hypothesis (SAH)* of job satisfaction convergence. We use two different methodologies: the original cross-section approach due to Chiswick (1978) and synthetic cohort methodology (SCM) by Borjas (1985). Our cross-section analysis supports the SAH, that is, although immigrants tend to report lower satisfaction then natives once in the UK, they experience a relative growth on satisfaction through the years and eventually match natives' average subjective wellbeing levels. The convergence, however, is slow – around 30 years. However, once we control for cohort effects, the effect of years in the host country vanishes, indicating that our cross-section analysis used to explain a dynamic phenomenon can be misleading and that the positive cross-section evidence was due to changing cohort inherent characteristics and not to assimilation.

Key words: 1. Immigration; 2. Job satisfaction; 3. Assimilation.

JEL: J28, J61

1. Introduction

This paper explores the hypothesis that individuals face extra costs when they decide to move between countries in order to find better jobs. Besides direct costs, such as the increase in expenditure for food, lodging, and transportation; and indirect costs, such as those comprised of foregone earnings while traveling and time spent at searching for a new job, individuals may face psychic costs such as unfamiliarity with the destination, language and culture.

International migration in recent decades has been an important phenomenon in Britain. In general, immigrants in the UK can be defined as a heterogeneous set. This is because of differences in education, demographic structure, culture, and skills. According to the immigration literature, migrants can be considered a selected set of workers. Then, the adjustment process in the host country is an important topic to be investigated. However, it is important to highlight that, besides economic adjustment, immigrants may also adapt to the new cultural environment in many aspects. They need to deal with the initial psychic distress and to understand and incorporate culture-specific skills – such as language, habits, weather, and social relations. Just after this assimilation process, immigrants may converge their satisfaction levels towards natives. This is what we call here the Satisfaction Assimilation Hypothesis (SAH) of convergence satisfaction levels between immigrants and natives.

Thus, parallel to the traditional economic literature of immigration, we test the Satisfaction Assimilation Hypothesis (SAH) of job satisfaction convergence between immigrants and natives, as opposed to wage convergence tested by the Immigrant Assimilation Hypothesis. We test the SAH using two different methodologies: the original cross-section approach due to Chiswick (1978) and synthetic cohort methodology (SCM) by Borjas (1985). Using satisfaction data from the British Household Panel Survey, our cross-section analysis supports the SAH, that is, although immigrants tend to report lower satisfaction then natives once in the UK, they experience a relative growth on satisfaction through the years and eventually match natives' average subjective wellbeing levels. The convergence, however, is slow (around 30 years). However, once we control for cohort effects, the effect of years in the host country vanishes, indicating that our cross-section analysis used to explain a dynamic phenomenon can be misleading and that the positive cross-section evidence was due to changing cohort inherent characteristics and not to assimilation.

This paper is organized as follows. Section 2 briefly reviews the immigration history to the UK. In section 3, theoretical explanations for the relation between immigration and job satisfaction are presented, comparing job satisfaction convergence between immigrants and natives (SAH) in parallel to the traditional economic literature of immigration (IAH). Satisfaction data from the British Household Panel Survey – BHPS –, the methodology used to work on data, and the empirical evidence are presented in section 4. Section 5 concludes.

2. Immigration to the UK: a brief history

Immigration is an important phenomenon in Britain. As Table 1 shows, the size of the immigrant flow in the BHPS was almost 4% of the total population in 2005. Immigrants from European Union, particularly from Germany (25%) and Irish Republic (17%), are the most representative in comparison to foreigners as a whole. Other important immigrant flows to UK are from Africa, such as Kenya (18%), Jamaica (6%) and South Africa (5%), followed by South Asia (India and Hong-Kong). Australia and USA have also a significant percentage of total immigrant population (7% and 5%, respectively).

Table 1 – Foreign born population in Great Britain - 2005

	Total	***Percentage of total population***
Native	4,375	96.13
Immigrants		
Kenya	18	0.40
Irish Republic	17	0.37
Germany pns	17	0.37
India	14	0.31
German Fed Rep	8	0.18
Australia	7	0.15
Jamaica	6	0.13
Hong Kong	6	0.13
Italy	6	0.13
Rep of S Africa	5	0.11
USA	5	0.11
Other Middle Eastern	5	0.11
USSR	5	0.11
Uganda	4	0.09
Zimbabwe	4	0.09
Nigeria	4	0.09
Other Countries	45	0.94
Total	100	100.00

Source: BHPS (2005)

According to Hatton (2005), the huge increase in immigration in recent decades can be attributable partly to changes in UK immigration policy. During the last 50 years migration in general, and immigration in particular, has become a key policy issue. At the end of the Second World War – more specifically, in the period from 1946 to 1948 – there were labor scarcities in Europe as a whole and also in Britain. As a consequence, the UK's government began looking for immigrants. The first group to be allowed to settle in the UK were Polish, followed by Italians. Many men from the West Indies were also guided towards the UK because they had few work opportunities in the home country. This immigration influx, however, was not enough to meet the need. A substantial change in the British society started in 1948, when mass immigration to the UK and the arrival of different cultures occurred.

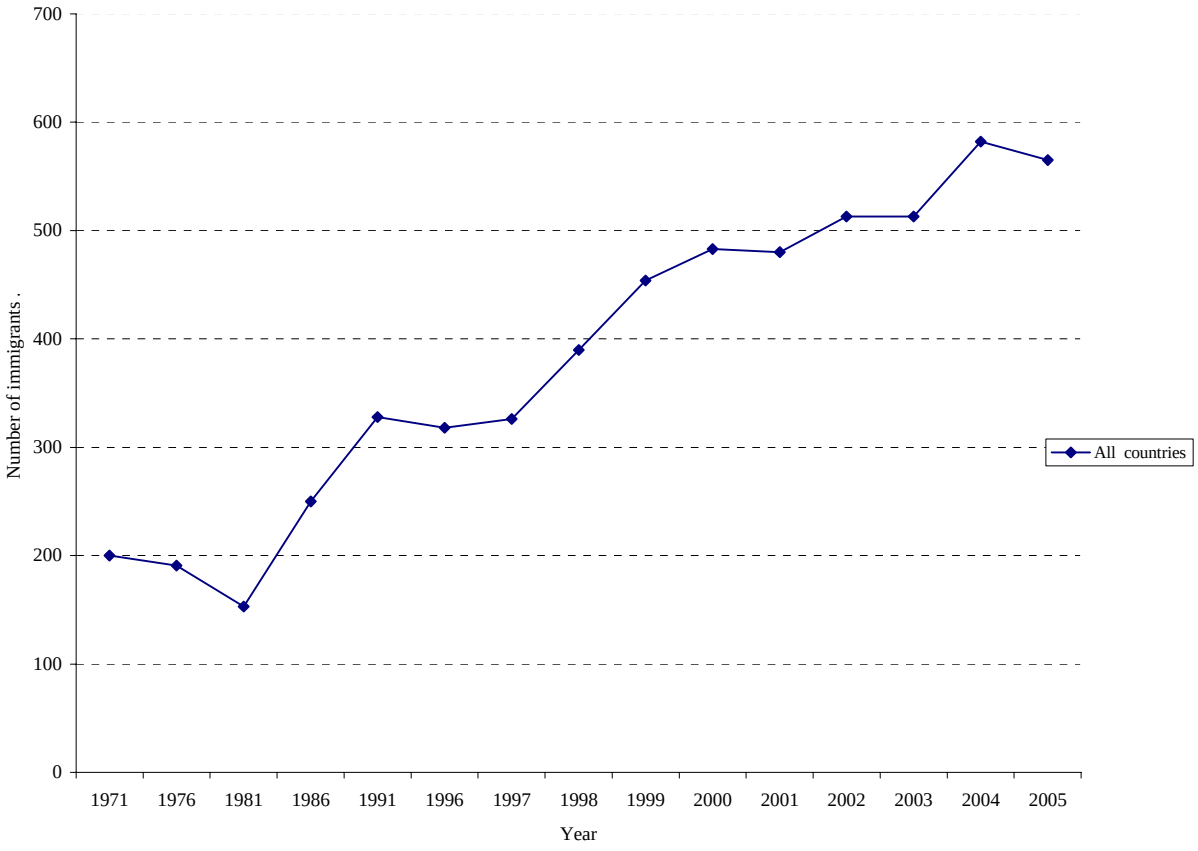
This course continued in the 1950's, so did the rise of racial violence and prejudice. As a result, the government had greatly restricted immigration by the 1970's. Particularly, the government legislated to make immigration for non-white people harder, while people from the Empire and Commonwealth had unconstrained rights to enter Britain because they carried a British passport. By 1972, legislation meant that a British passport holder born overseas could only settle in

Britain if they, firstly, had a work permit and, secondly, could prove that a parent or grandparent had been born in the UK. However, the government had not stopped immigration altogether. Immigrants from the Commonwealth settled in the UK between 1968 and 1975, largely by gaining work permits or obtaining permission to join relatives. The most significant immigration wave of the decade came in 1972 when the UK admitted Ugandan Indians after they were expelled from their country.

By the 1980s Britain's immigration policy was both severe on controls of entry and protective of the rights of ethnic minorities. As manufacturing declined, work permits were harder to obtain unless you had specialist skills or professional training. This meant that the largest immigrant groups were Americans (to banking and industry), Australians, New Zealanders and South Africans making use of family-ties entry rules, and South Asian men and women entering the medical professions.

According to data coming from the International Passenger Survey (IPS), there is a large fraction of immigrants occurred in recent years. We can clearly observe these data in Figure 1, where the contrast in the immigration pattern from 1976–80 and the 1990's is evident. While the immigration did not overcome 200.000 foreign people in the first period, it was responsible for about 480.000 at the end of the second period.

Figure 1: Historical pattern of immigration into UK – all countries



In recent years, the debate over immigration policy led to changes of the legislation. In 2002, the government's plans for a new nationality and immigration legislation, including a possible

citizenship test, sparked new controversy. Fifty years after the start of mass immigration to the UK, questions are still being asked about the UK as a multi-ethnic society. The growth of asylum seeker applications contributed to a new growth of immigration to the UK, when many people arrived from Africa, the Indian sub-continent, Asia and the Americas (Figure 2). An overview of recent immigration to the UK can also be observed in Table 2. The increase in the immigration of foreign people – according to the country of last residence – largely reflects a rise in immigration from the European Union, where no visa restrictions apply, from the New Commonwealth (NCW) countries, particularly the Indian subcontinent, Old Commonwealth countries (including South Africa), and the US.

While many studies of these immigration flows show that they are driven by economic incentives at home and abroad (Hatton e Tani, 2005), the free flow of labor has been mediated or distorted by growing policy intervention. The immigration policies are concerned with the growth and structure of the ethnic minority population, in particular to the economic status of ethnic minorities. One of the key indicators is education and it is worth emphasizing the rising educational levels of the ethnic minority population and in special the strong drive to high standards of education among the second and subsequent generations.

Figure 2: Historical pattern of immigration into UK – selected countries

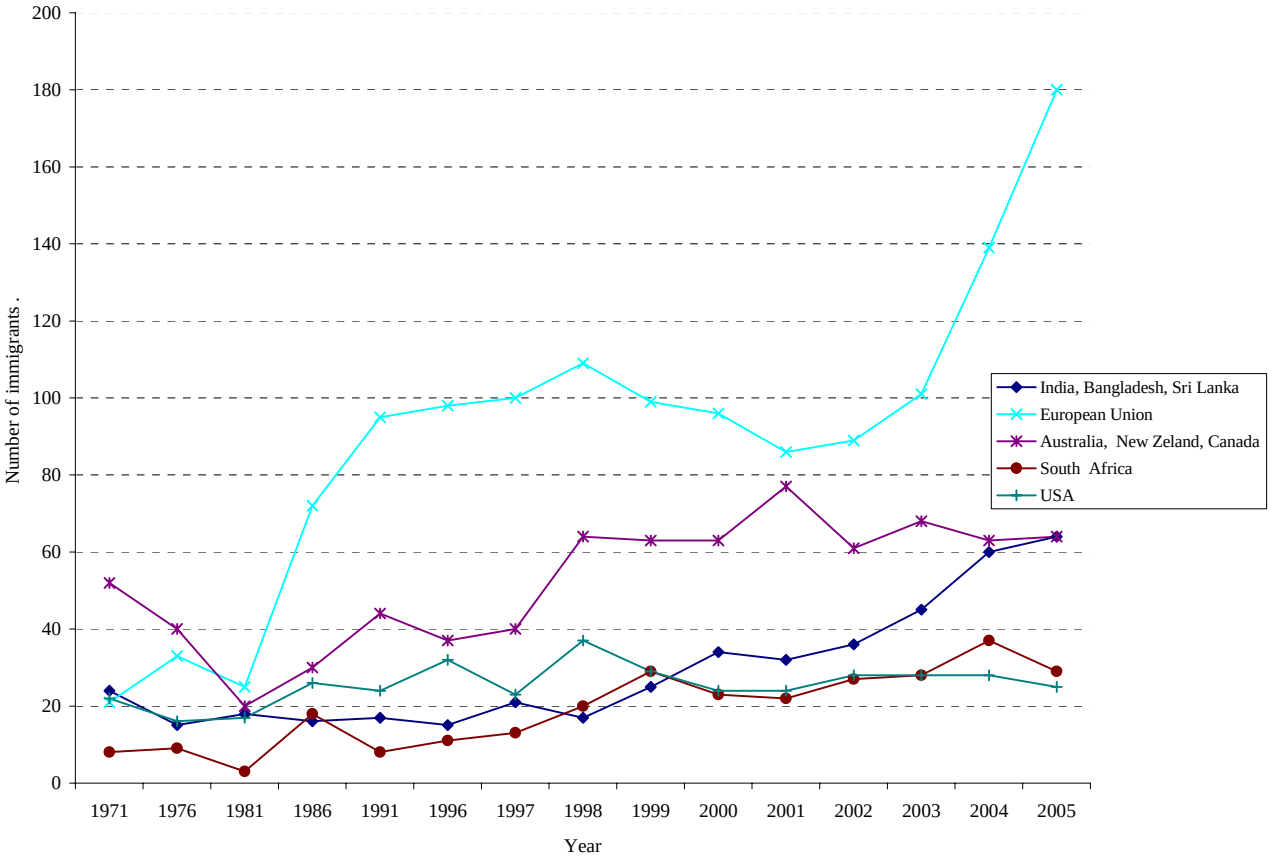


Table 2 - International migration in United Kingdom (1971-2005): country of last residence

			Comonwealth countries						Other foreign countries		
Year and quarter	All countries	European Union[1]	Australia, N. Zeland Canada	South Africa	India, Bangladesh Sri Lanka	Pakistan	Caribbean	Other	USA	Middle East	Other
Inflow											
1971	200	21	52	8	24	-	5	36	22	-	31
1976	191	33	40	9	15	12	4	32	16	7	23
1981	153	25	20	3	18	9	3	19	17	11	27
1986	250	72	30	18	16	10	5	25	26	15	34
1991	328	95	44	8	17	16	4	42	24	11	69
1996	318	98	37	11	15	11	4	33	32	13	63
1997	326	100	40	13	21	9	4	32	23	15	67
1998	390	109	64	20	17	10	6	31	37	13	84
1999	454	99	63	29	25	12	6	37	29	15	138
2000	483	96	63	23	34	16	6	48	24	30	144
2001	480	86	77	22	32	18	3	47	24	30	140
2002	513	89	61	27	36	10	5	52	28	32	172
2003	513	101	68	28	45	13	4	49	28	27	150
2004	582	139	63	37	60	29	6	60	28	26	135
2005	565	180	64	29	64	22	2	42	25	19	117

Note: Numbers in thousands. Source: Bray (2006).

Immigrants in the UK can be defined as a heterogeneous set. Many of them are workers, and contribute to economic progress and well-being. In general, foreign-born individuals may have advantages in some labor market segments, but disadvantages in others. This is because of differences in education, demographic structure, culture, and skills. The adjustment process may occur over time in many respects to their UK-born peers, due to language adaptation, accumulation of skills, collection of information, and adoption of new habits (Dutsmann *et al*, 2003a). A common aspect of this assimilation process is that white immigrants are quite successful in the UK, although there are differences between groups of different origin. Some immigrants from ethnic minority groups are most in disadvantaged. For example, Pakistanis and Bangladeshis are at the lower end of this scale.

Several reasons may explain why there are large differences between immigrants of different origin, conditional on observable characteristics. As attested by Hatton (1999), language proficiency is an important determinant for economic success. Other reasons for the relative disadvantages of some groups may relate to culture and religion. Previous research has often interpreted labor market disadvantage as reflecting discrimination. However, recent researches suggest that, in part, this disadvantage reflects the assimilation process whereby immigrants improve their labor market status with length of residence. Nevertheless significant disadvantages remain, mainly for non-whites which are not accounted for by education, experience or assimilation effects.

Dustmann *et al* (2003b) find that immigration has positive but largely insignificant effects on unemployment in Britain and small positive effects on wage rates. Thus, immigration seems to have relatively benign effects on the labour market. Frijters *et al* (2005) examine the mechanics of immigrant job search in Britain, finding that immigrants use similar methods but are somewhat less successful than natives in gaining employment.

3. Immigration and Job Satisfaction

In the traditional labor economics literature, wage differentials are considered the most important factor able to induce a worker to migrate among regions. The seminal paper of Sjaastad (1962) established the neoclassical basis to the migration analysis, which can be understood as a decision of human capital investment. The worker balances the present value of the income gains and the mobility costs of each potential region of destination, and decides to that with the largest net gain (GL).

$$GL = \sum_{t=0}^{T} \frac{w_{1t} - w_{0t}}{(1+r)^t} - C$$

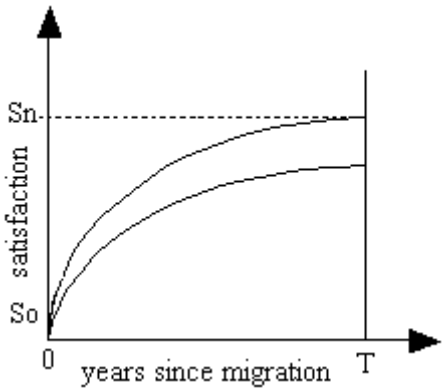
where w_{1t} and w_{0t} are the mean earnings of both host and source regions, respectively, in the period t, r is the discount rate, T is the retirement age, and C are the migration costs. According to this model, the individual moves whether the net gain is positive. Then, the larger are the gains and lesser are the costs related to the migration event, the higher the probability of migration is. It is important to highlight that migration costs may be monetary costs, as transportation or even cost of living between the destination and source regions. However, non-monetary costs, as the opportunity cost, and/or the psychic costs of migrating, may be present in the migration decision. Migration involves crossing language, communication, interpersonal, social and cultural boundaries. The presence of such differences—and the fact that the immigrant has to learn to cope with these differences—provides support for the possibility of stress and/or development of disorders in this population. Ramirez (1989) pointed out that coping with some of the aspects of the new culture constituted groundbreaking efforts for some immigrants, and feelings of stress, failure, and defeat were not uncommon. Several stressors present themselves to the new immigrant. The result of becoming a minority-group member in the host country, concern about relatives in the home country, losses associated with migration, fear of learning new things, and cultural conflicts may all be potential sources of stress (Westermeyer, 1989). The returns are classified in the same way: monetary returns are a positive (or negative) increment in the earning flows obtained by the migration, and non-monetary returns are a consequence of the preferences by the host region in comparison to the source region.

An important topic on the immigration literature is the economic adjustment in the destination country. As the migrants can be considered a differentiated share from the population as a whole, they are a selected set of workers. In other words, migrants are not a random sample from their source regions. Then, the understanding of ability differentials between migrants and non-migrants, and their adjustment to the new conditions in the destination region are important topics to be investigated. A pioneering study on the economic adjustment of immigrants in the destination country was made by Chiswick (1978). He used cross-section data to show that immigrant earnings vary directly with time in the destination country after migration. He interpreted this observation as being consistent with the hypothesis that immigrant human capital is not completely portable, and that it takes time for immigrants to adjust to their new environment. Duration matters because it takes time to acquire language skills (Chiswick and Miller, 2005) and to learn about labor market networks and institutions in the host country. Similar findings are also available in the literature for Canada (Carliner, 1981), Germany and United Kingdom (Buchel and Frick, 2004).

Again, besides economic adjustment, immigrants also need to adapt to the new cultural environment. According to Ward (1995), the first cultural contact can be considered a major life event leading to stress, demanding cognitive appraisal of the situation, and cognitive, affective and behavioral responses for stress management. However, once the initial psychic distress are dealt with and culture-specific skills are understood and incorporated (such as language, habits, weather,

social relations), immigrants may converge their satisfaction levels towards natives. This is what we call here the Satisfaction Assimilation Hypothesis (SAH) of convergence satisfaction levels between immigrants and natives. This satisfaction assimilation occurs independently of the economics assimilation, that is, the adjustment process experienced by the immigrant since he enters the new country occurs both on the pecuniary and non-pecuniary aspects of his life. The relationship between duration and satisfaction is illustrated in Figure 3. On arrival, immigrants experience on average a satisfaction level of S_o, while natives have S_n (constant for a matter of simplicity). At time T, they are fully assimilated and match natives' level of satisfaction. The curves at Figure 3 illustrate the assimilation curve accordingly to different levels of immigrants' assimilation. When immigrants adapt more rapidly, the assimilation curve steepens.

Figure 3. The assimilation curve



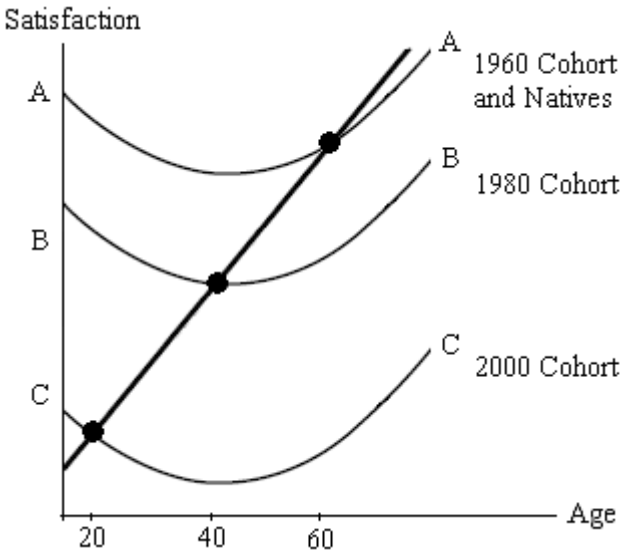
However, it has long been recognized that the potential biases in using cross-sectional data to investigate dynamic phenomena such as immigrant assimilation (Chiswick 1980, Borjas 1985). Cross-sectional analyses compare different individuals observed at the same point of time, under the assumption that apart from their different durations immigrants are otherwise similar. If, however, they are not similar, dynamic inferences made from static cross-sections will be erroneous. Drawing inferences about how the satisfaction of immigrant workers evolves over time from a single snapshot of the immigrant population can be misleading. It might be the case that newly arrived immigrants are inherently different from those who migrated decades ago. Hence we cannot use the current labor market experiences of those who arrived decades ago to forecast the future satisfaction levels of newly arrived immigrants. To overcome this obstacle, Borjas (1985) proposed applying the "synthetic cohort methodology" (SCM), using a succession of cross-sections to construct synthetic panel data. A comparison of two immigrants with identical durations, who immigrated at different times, identifies cohort effects and duration effects.

The same methodological problem may arise in our satisfaction assimilation analysis. In order to illustrate the implications of this alternative hypothesis, Figure 4 pictures a fictional situation in the same fashion as the one suggested by Borjas (1994). Suppose there are three separate immigrant waves, one wave arrived in 1960, the second in 1980, and the last in 2000. Assume that immigrants enter the United Kingdom at age 20. The satisfaction level is highest among the earliest cohort, equal to the UK-born workers. If we could observe their satisfaction in every year after they arrive in the UK, their age-satisfaction profile would be given by the line AA^1. The age-satisfaction profile is lower for the second wave (line *BB*) and lowest for the latest cohort

[1] All age-satisfaction profiles here are U-shaped because that is the pattern most commonly found in the subjective well-being and job satisfaction literature, including the present study.

(line *CC*). Having cross-section from 2000 (or even short time-series data) will allow us to identify only one point on each of the immigrant age-earnings profiles (at age 20 for the latest cohort, at age 40 for the second cohort and at age 60 for the earliest).The cross-section regression line, given by the line *CC* in Figure 4, is steeper than the native age-satisfaction profile, making it seem as if there was satisfaction convergence between immigrants and natives when there are cohort effects. However, just like on the wage convergence model, there is *no* satisfaction convergence between immigrants and natives in this hypothetical example.

Figure 4. Cohort Effects and Satisfaction Adaptation of Immigrants



As it is often the case for empirical work, this methodology does not solve all problems since it is still suscetible to survivor bias. Suppose that fitter workers survive longer in the labor market due to selective emigration, labor force withdrawal, re-migration or mortality. In this case the average fitness of the 1970 synthetic immigrant cohort will grow over time and will be larger in 1990 than in 1980. Therefore the average earnings (or satisfaction) of immigrants, who arrived in 1970, might have increased between 1980 and 1990, not because of assimilation but simply because of survivor bias. Just recently some studies has been used longitudinal (panel) data, by following the same immigrants over time rather than comparing different immigrants who arrived in various time periods (Beenstock, Chiswick and Paltiel, 2005). Using data from two Israel censuses, they show that since the return to destination-specific skills increased during this period because of the very large immigration, the assimilation curve changed its shape in a way that made it difficult to estimate even using panel data[2].

Given all that, it is important to highlight that workers may be induced to migrate by the evaluation of subjective aspects related to the migration process. Besides the wage, well-being variables can be present in the worker's decision of human capital investment. Job satisfaction is a usual measure of workers' well-being used in the literature which captures both objective and subjective characteristics of the environment faced by workers. As a result, the worker balances the present value of the objective and subjective net gains in the migration decision. Paralell to the traditional economic literature of immigration, we test the *Satisfaction Assimilation Hypothesis* (SAH) of job satisfaction convergence between immigrants and natives, as opposed to wage convergence stated by the *Immigrant Assimilation Hypothesis*. Given that immigrants

[2] As the data used in this paper contains very few immigrants which appear in many different cross-section, we cannot control for individual fixed-effects.

systematically report lower levels of job satisfaction than the native once they arrive, the *SAH* states that immigrants adapt to their job in new country and experience increases on their overall satisfaction across time, beyond the possible assimilation observed on their wage levels.

Job satisfaction has long being extensively used in the sociological and psychological literature as a measure of workers' wellbeing, as it captures both objective and subjective characteristics of the environment faced by workers. Economists have, on the other hand, historically not taken subjective variables without a grain of salt. This is mainly because the objectivist approach of economic theory is based on observable choices. Individual utility, dependent only on tangible goods and services and leisure, is recovered from behavior (revealed preferences) and can be used to explain the choices made. The subjective experience, captured by surveys, is sometimes rejected because it cannot be objectively measured. Many scholars challenge the classical economic theory from different angles, incorporating self-esteem (Loewenstein 1999), status (Frank 1985) or emotions (Elster 1998). Besides utilitarianism, procedural utility[3] has also been described as a relevant aspect of behavior and, therefore, should also be considered in the analysis (Sen 1995 and Frey & Stutzer 2000).

It was not until recently that the concept of experienced utility[4] has been brought to light again. Daniel Kahneman and his co-workers have proposed that we go 'Back to Bentham' (Kahneman, Wakker and Sarin, 1997). The result is an economic psychology based on the measurement of *experienced utility*. As Di Tella et al. (2003), we assume that the subjective well-being measures used in this paper are closer to the concept of experienced utility than to decision utility from standard economic theory.

Early work by Freeman (1978), Hamermesh(1997), Borjas (1979) and, more recently, Clark & Oswald (1996) first showed useful applicatios of job satisfaction to empirical economics. In recent years, economists have taken an increasing interest in the subjective well-being analysis. There is much evidence on the association between life stisfaction and personal characteristics. Usually, young married rich women with jobs and good health tend to be happier with their lives (Ng 1996, Oswald 1997, Frey and Stutzer 2000, Easterlin 2000). Most of this evidence is based on data from developed countries. Exceptions are Graham and Pettinato (2001) and Corbi and Menezes-Filho (2006). The latter show that unemployment is one of the main sources of life dissatisfaction in Brazil and Argentina. Clark & Oswald (1996) find that job satisfaction of workers is negatively associated to their comparison earning levels, supporting the presence of rivalry. The analysis of the effect of education on subjective well-being has been intensively performed in the literature and still produces conflicting results. See Frey & Stutzer (2002) and Warr (1999) for extensive reviews of the literature.

Many papers find evidence on the negative effect of lagged income (both personal and GDP) on current subjective wellbeing (Clark, 1999 and Di Tella *et al.,* 2003), suggesting that it is the variation, as opposed to level, that brings happiness. A more direct approach is to ask people the necessary income level to lead a decent life. Results indicate that these levels depend strongly on real current income (Frank, 1999 and van Praag & Frijters, 1999). As people raise their living standards, they lose the possibility of going back to their former living standard and immediately experience the same utility as before, given their consumption level. This phenomenon works just like an unforseen addiction and is commonly refered to as *habituation* in the psychological

[3] While traditional economic theory states that individuals derive utility from outcomes only, procedural utility theory argues that people also care about the processes and conditions which lead to these results, such as political processes and institutions.

[4] Denomination proposed by Kahneman, Wakker & Sarin (1997). It refers to the concept of utility such as proposed by Bentham, as opposed to decision utility, associated to the modern textbook use of the term 'utility'.

literature. It works both up and down: people adjust to good things and to bad. The concept of habituation is in the heart of the idea that immigrants adapt to their new home country[5].

Because satisfaction questions reflect both objective and subjective factors, it is more complex than standard economic variables and requires more sophisticated and careful analysis. By altering the way in which persons respond to questions, variables like education (which raises aspirations), perceived health conditions, or relative income could have very different effects on job satisfaction than on objective economic conditions. Many of the questions posed on the capacity and willingness of people to give meaningful answers about their well-being are discussed by the literature. Eight in every ten citizens think about their happiness at least once a week in the US and the percentage of people which do not know how to answer life satisfaction question are under 1% (Veenhoven 1997). Different measures of subjective well-being present high levels of correlation (Fordyce 1988). Reliability tests indicate that subjective well-being measures are reasonably stable, sensitive to changes in life and present serial correlation of 0.60 when evaluated within a two-week interval[6] (Ehrhardt, Saris, and Veenhoven 2000; Headey and Wearing 1991). Consistency tests reveal that more satisfied people smile more frequently during social interaction (Fernández-Dols and Ruiz-Belda 1995), commit less suicide (Koivumaa et al. 2001) and that changes on brain activity and heart beat levels can be associated with negative chances in well-being. (Davidson et al. 2000). Thus, Diener (1984) in an early survey concluded that "[the] measures seem to contain substantial amounts of valid variance".

Since job satisfaction data contains useful information for predicting and understanding behavior, we follow Clark & Oswald (1996) approach by considering an individual who enjoys 'total' utility *v*, which can be written as:

$$v = v(u(w, h, i, j), \mu)$$

where u and μ are utility from work and other spheres of life, respectively. Utility from work depends on wage, the number of hours worked, and vectors of person-specific and job-specific characteristics. The other component of utility, μ, may be determined quite differently. Assuming that total utility, v, is increasing in both its arguments, we can focus on data on u, the utility associated with work (or job satisfaction). As noted by Clark & Oswald, these data, like most data studied by economists, are highly imperfect representations of the underlying theoretical ideal. However, as discussed above, there seems to be enough reassurance about the validity of its variance.

4. Data and Empirical Evidence

We used satisfaction data of the longitudinal microdata drawn from the 2005 wave of the British Household Panel Survey (BHPS). The BHPS is an annual survey of households randomly selected, which includes information about each individual of working age (15 years old or over) from a nationally representative sample of households, providing a total of 4,551 individuals who

[5] See Kahneman (2002) for the basic human processes (hedonic treadmill and satisfaction treadmill) behind the phenomenon of habituation.

[6] Serial correlation typically found for education and income are higher (Bound, Brown and Mathiowet, 2001, and Angrist and Krueger, 1999), but 0.60 seems high enough to support the current studies on subjective well-being. (Krueger and Schkade 2007).

were interviewed on 2005[7]. This survey offers a rich source of socioeconomic information at the individual and household level.

The BHPS also provides a valuable research resource for the analysis of immigration and immigration decisions (see Adsera and Chiswick, 2006 and Buchel and Frick, 2004 and 2005). As our main interest is on the relation between immigration and job satisfaction, we define a dummy variable called *foreign*, that indicates whether the person is an immigrant.

In this paper, we treat reported overall job satisfaction levels as a proxy to the utility associated with work. Specifically, this variable is the self-reported level of job satisfaction using a scale from 1 (not satisfied at all) to 7 (completely satisfied). The exact question is phrased as follows: "All things considered, how satisfied or dissatisfied are you with your present job overall using the 1 - 7 scale?" (1 = completely satisfied, 4 = neither satisfied nor dissatisfied and 7 = completely satisfied). The distribution of reported satisfaction levels for the sample of 4,551 British employees in the BHPS data set is as follows (table 3). The sample excludes those who are self-employed, those who are retired, and those who are younger than 15. It includes part-time workers, and covers both the public and private sectors.

Last column of table 3 show us that almost 48% of the total workers in the sample give 6 as their answer to the question asking for their overall satisfaction with the job. Those who reported 5 in the satisfaction scale represent 24%, followed by those in the highest possible satisfaction category, with 11.3%. These three categories represent together more than 83% of the categories as a whole. Then, it appears that a significant proportion of employees are happy with their work. The reported satisfaction levels 4 and 3 are quite similar, and then the frequency of response falls monotonically for the lower levels. As can be seen, 6.8% of people give 3 as their answer, until the lowest category of contentment with work, 1, with a frequency distribution of 1.2% of the sample.

Following the middle column of table 3, we can observe that the behavior of natives is rather similar to the population in UK as a whole. However, first column presents that immigrant reported satisfaction is not alike. In general, immigrants are less happy than natives. The three first categories of immigrant job satisfaction – that is, those who reported 5, 6 or 7 in the satisfaction scale – represent together just 77% of the categories as a whole. The same categories represent about 83% for natives. Then, although there is a significant proportion of immigrants who are happy with their work in UK, it appears that they are less satisfied than natives. Indeed, immigrants in our sample tend to report themselves in the bottom three categories more often than the native.

Table 3: Overall job satisfaction

Satisfaction level	*Immigrants*	*Percentage*	*Natives*	*Percentage*	*Total*	*Percentage*
7 (highest)	21	11.93	493	11.27	514	11.29
6	74	42.05	2,094	47.86	2,168	47.64
5	42	23.86	1,052	24.05	1,094	24.04
4	9	5.11	272	6.22	281	6.17
3	20	11.36	288	6.58	308	6.77
2	7	3.98	126	2.88	133	2.92
1 (lowest)	3	1.70	50	1.14	53	1.16
Total	176	100.00	4,375	100.00	4,551	100.00

Source: BHPS (2005)

[7] See Institute for Social and Economic Research (2006) for a detailed description of the Quality Profile: British Household Panel Survey.

The richness of the BHPS also permits a wide variety of both personal and workplace controls in job satisfaction equations. Table A1 (in the Appendix) presents summary statistics of the most important variables selected in our sample, including personal controls (gender, age, highest educational qualification achieved[8], race, perceived health, marital status and region dummies) and work controls (log wages[9], hours worked per week, firm size, union member, occupation and industry dummies).

Figure 5 - Average job satisfaction of immigrants X Year came to the UK

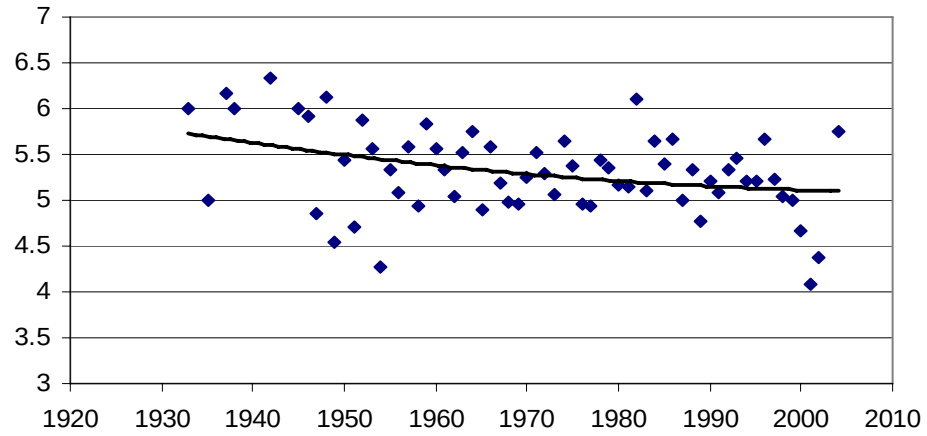


Figure 5 plots average job satisfaction of immigrants against the year they arrived in the UK. Apparently, later cohorts are less happy with their work than the earlier cohorts. This patterns indicates that cohort effects are likely to exist and that should and will be taken into account in our econometric analysis. These cohort effects can arise as a result of changes in immigration policy, of changes in economic or political conditions in the source or host country, and when there is nonrandom return migration.

We estimate the following microeconometric job satisfaction equation:

$$LIFESAT_{it} = \alpha + \beta FOREIGN_i + \delta Y_{it}^{UK} + \phi COHORT_i + \gamma PERSONAL_{it} + \theta WORK_{it} + \lambda_t + \varepsilon_{it}$$

where $LIFESAT_i$ is the self-reported level of job satisfaction of individual i going from 1 (not satisfied at all) to 7 (completely satisfied), $FOREIGN_i$ is a dummy variable indicating if the worker is an immigrant, Y^{UK}_i is the number of years an immigrant has been living in the UK (and is set to zero for native-born workers), $COHORT_i$ is a vector of dummy variables which identifies the period which foreigners have immigrated (pre-1955, 1956-1965, 1966-1975, 1976-1985, 1986-1995, 1996-2005) and $WORK_i$ and $PERSONAL_i$ are vectors of personal and work characteristics of respondents. Estimating the equation above using different econometric techniques imply in assuming different hypothesis concerning the nature of human well-being. For instance, psychologists have long

[8] Education dummies were defined as: higher (which includes higher degree, first degree, teaching qualification, other higher qualification, and nursing qualification) and secondary (GCE a levels, GCE other levels or equivalent).

[9] Wage is the usual gross pay per month, a derived variable that measures usual monthly wage or salary payment before tax and other deductions in current main job for employees in US$2005

considered self-reported happiness as a cardinal measure of life satisfaction. It enables them to run simple OLS regressions on happiness, making it possible to look at changes in happiness and immediately relate them to changes in the explanatory variables. However, economic tradition says that one should not consider personal satisfaction as cardinally comparable, so economic analyses has chosen to use latent variable models such as Ordered Logit and Probit (one exception is Di Tella, MacCulloch and Oswald, 2001). The key parameters of interest here are β and δ, which measure the initial psychic costs of moving countries in terms of subjective well-being and how they evolve through time.

Table 6 shows the Ordered Probit estimates to our model. The first specification has only the dummy variables *foreign* and Y^{UK} (years in the UK) as regressors explaining job satisfaction. The second includes all personal control variables (gender, age, education, race, perceived health status, marital status and region dummies). Job satisfaction seems to be positively correlated to perceived health status, being married and being a woman, negative on education and U-shaped on age (minimizing at 40's). Race does not seem to matter much for job satisfaction.

The first two specifications bring supporting evidence to the fact that, all else equal, foreign workers tend to report lower levels of job satisfaction than the natives at the time of arrival in the UK. This negative impact probably reflects adjustment and acculturation problems foreigners face in the work environment when first entering the job market in the host country. It relates to the psychological term *culture shock*, originally introduced by Olberg (1955) on his study of Americans working on a health project in Brazil. The positive coefficient of variable Y^{UK} suggests that, although less satisfied once in the new country, immigrants slowly adapt to their job environments and eventually match natives' levels of satisfaction around 35 years[10] after arriving in the UK. Yes, we cannot distinguish between income (IAH) and satisfaction assimilation (SAH), since the positive effect of Y^{UK} could be due to rising wages (economic assimilation), which would reflect on satisfaction, or due to actual satisfaction assimilation.

The third specification also includes work controls (lnwage, hours worked per week and size of firm, union member, occupation and industry dummies). Job satisfaction is positive on wage and negative on worked hours per week and size of firm. The coefficients on *foreign* and Y^{UK} hardly change from the two previous specifications, indicating that the *Satisfaction Assimilation Hypothesis* (SAH) still stand after netting out the economic factors.

The picture changes dramatically when we add cohort variables in order to capture any constant characteristics that are inherent to one or more specific waves of immigrants. Specification (IV) substitutes the *foreign* dummy by six cohort variables. Clearly, the last three cohorts (1976-1985, 1986-1995, 1996-2005) have average job satisfaction lower than previous cohorts, independent of how many years living in the UK. The size of the effect is large and is similar in magnitude to falling from the highest perceived health status to the lowest, or fifty percent larger than the *female* coefficient. The first four cohorts (pre-1945, 1946-1955, 1956-1965 and 1966-1975) do not seem to differ significantly from the natives in terms of satisfaction. These cohort effects can arise as a result of changes in immigration policy, of changes in economic or political conditions in the source or host country and when there is nonrandom return migration.

[10] This can be easily calculated by dividing the coefficients of *foreign* by *yuk*. Although the coefficients of our Ordered Probit model are not marginal effects (as they would be in a simple OLS regression), the ratio of two coefficients equals the ratio of the respective marginal effects. See Greene (2003).

Table 6: Ordered Probit Estimates – Assimilation and Cohort analysis

Dep. var.: Job Satisfaction*	(I)	(II)	(III)	(IV)
Foreign	-0.6598 0.2066	-0.6445 0.2147	-0.6453 0.2158	-
Years in the UK	0.0184 0.0065	0.0185 0.0067	0.0187 0.0067	0.0075 0.0280
Cohort pre-1955	-	-	-	-0.3739 1.5356
Cohort 1956-1965	-	-	-	-0.2143 1.2650
Cohort 1966-1975	-	-	-	-0.1761 0.9686
Cohort 1976-1985	-	-	-	-0.3081 0.7082
Cohort 1986-1995	-	-	-	-0.5296 0.4770
Cohort 1996-2005	-	-	-	-0.8094 0.3379
Female	-	0.2753 0.0319	0.2274 0.0402	0.2282 0.0402
Age	-	-0.0279 0.0087	-0.0268 0.0092	-0.0268 0.0092
Age^2	-	0.0003 0.0001	0.0003 0.0001	0.0003 0.0001
Secondary	-	-0.0782 0.0528	-0.0829 0.0539	-0.0824 0.0539
Higher	-	-0.1461 0.0495	-0.1708 0.0534	-0.1705 0.0534
Black	-	-0.9593 0.7413	-1.0100 0.7449	-1.0109 0.7449
South Asian	-	-0.2394 0.5311	-0.3324 0.5322	-0.2179 0.5421
Lnwage	-	-	0.0729 0.0396	0.0728 0.0396
Hours per week	-	-	-0.0095 0.0024	-0.0094 0.0024
Member of Union			-0.0644 0.0394	-0.0644 0.0394
Health dummies	-	X	X	X
Marital dummies	-	X	X	X
Region dummies	-	X	X	X
Size firm dummies	-	-	X	X
Occupation dummies	-	-	X	X
Sector dummies	-	-	X	X
Obs	4551	4551	4551	4551

* Job satisfaction varies from 1 to 7 (see section 4).

5. Conclusion

This paper explores the hypothesis that individuals face psychic costs when they immigrate and analyzes the satisfacion assimilation process of the immigrant. We hypothize that, once in the new country, individuals might derive lower levels of utility from work than the natives due to unfamiliarity with the destination, language and culture. Then, individuals would adapt to the new life across time and eventually catch up with the natives. We call it the *Satisfaction Assimilation Hypothesis* (SAH), as opposed to wage convergence stated by the *Immigrant Assimilation Hypothesis* (IAH), which is extensively discussed in the economics of immigration literature. It is important to clarify that this satisfaction adaptation process goes beyond the simple economic assimilation and can be seen as a separate phenomenon.

Using satisfaction data from the British Household Panel Survey, we test the SAH using the original cross-section methodology due to Chiswick (1978) and synthetic cohort methodology (SCM) due to Borjas (1985, 1994). The cross-section analysis supports the SAH, that is, although immigrants tend to report lower satisfaction then natives once in the UK, they experience a relative growth on satisfaction through the years and eventually match natives' average subjective wellbeing levels. The convergence, however, is slow (around 35 years). On the other hand, the initial psychic cost of immigration (before the convergence takes place) is large and similar in size to the distress of falling from a very good perceived health status to very bad. However, once we control for cohort effects, the effect of years in the host country vanishes, indicating that the preliminary results were misleading and that the positive cross-section evidence was due to changing cohort characteristics and not to assimilation. This pattern mirrors the evidence available on the economics of immigration.

It is not clear why these cohort effects exist. It may be explained by the changing immigration policy and different immigration waves that came to the UK throughout the 20th century. Due to limited data on immigrants in the British Household Panel Survey, we are unable to investigate the satisfaction adaptation process across different immigrant groups.

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Appendix

Table A1: Summary statistics

Variable	***Description***	***Mean***	***SE***	***Min***	***Max***
Jbsat	Job satisfaction	5,3709	1,2541	1	7
Foreign	Immigration dummy (foreign=1)	0,0387	0,1928	0	1
Yuk	Years since arrived in the UK	1,1402	6,1788	0	59
Personal Controls					
Female	Gender dummy (female=1)	0,5157	0,4998	0	1
Age	Age (from 16 to 80)	39,1775	12,3387	15	80
Age^2	Age squared	1687,0890	1006,8700	225	6400
Secondary	Education dummy (1,0)	0,3153	0,4647	0	1
Higher	Education dummy (1,0)	0,5482	0,4977	0	1
Black	Race dummy (1,0)	0,0004	0,0210	0	1
South Asian	Race dummy (1,0)	0,0009	0,0296	0	1
Other	Race dummy (1,0)	0,0000	0,0000	0	0
Health 1	(1,0) if very poor	0,0037	1,2541	0	1
Health 2	(1,0) if poor	0,0387	0,0610	0	1
Health 3	(1,0) if fair	0,1808	0,1928	0	1
Health 4	(1,0) if good	0,5166	0,3849	0	1
Health 5	(1,0) if excellent	0,2602	0,4998	0	1
Marital status 1	(1,0) if married	0,5315	0,4991	0	1
Marital status 2	(1,0) if separated	0,0209	0,1430	0	1
Marital status 3	(1,0) if divorced	0,0914	0,2882	0	1
Marital status 4	(1,0) if widowed	0,0156	0,1239	0	1
Marital status 5	(1,0) if never married	0.3406	0.4610	0	1
Workplace Controls					
Lnwage	Log wage	7.0911	0.7233	3.30	9.6626
$Lnwage^2$	Log wage squared (: 1,000)	50.8064	9.9876	10.94	93.3665
Hours	Hours per week	33,8721	10,2286	2	93
$Hours^2$	Hours per week squared	1251,9210	683,4588	4	8649
Firm size1	(1,0) if 1-2 workers employed	0,0321	0,1762	0	1
Firm size2	(1,0) if 3-9	0,1571	0,3639	0	1
Firm size3	(1,0) if 10-24	0,1595	0,3662	0	1
Firm size4	(1,0) if 25-49	0,1387	0,3456	0	1
Firm size5	(1,0) if 50-99	0,1200	0,3250	0	1
Firm size6	(1,0) if 100-199	0,0967	0,2956	0	1
Firm size7	(1,0) if 200-499	0,1274	0,3335	0	1
Firm size8	(1,0) if 500-999	0,0617	0,2407	0	1
Firm size9	(1,0) if 1000 or more	0,1068	0,3089	0	1
Union	Union member dummy (1,0)	0,2951	0,4561	0	1

(continued)

Occupation1	Managers and Senior Officials	0,1270	0,3330	0	1
Occupation2	Professional Occupations	0,0995	0,2994	0	1
Occupation3	Associate Professional & Technical Occupations	0,1184	0,3232	0	1
Occupation4	Administrative and Secretarial Occupations	0,1738	0,3790	0	1
Occupation5	Skilled Trades Occupations	0,0912	0,2879	0	1
Occupation6	Personal Service Occupations	0,1303	0,3367	0	1
Occupation7	Sales and Customer Service Occupations	0,0846	0,2783	0	1
Occupation8	Process, Plant and Machine Operatives	0,0844	0,2780	0	1
Occupation9	Elementary Occupations	0,0907	0,2873	0	1
Sector1	Agriculture, forestry & fishing	0,0073	0,0849	0	1
Sector2	Energy & water supplies	0,0070	0,0836	0	1
Sector3	Extraction of minerals & ores other than fuels; manufacture of metals, mineral products & chemicals	0,0055	0,0739	0	1
Sector4	Metal goods, engineering & vehicles industries; other manufacturing ind.	0,1485	0,3557	0	1
Sector5	Construction	0,0512	0,2204	0	1
Sector6	Distribution, hotels & catering (repairs)	0,2065	0,4049	0	1
Sector7	Transport & communication	0,0584	0,2346	0	1
Sector8	Banking, finance, insurance, business services & leasing	0,1463	0,3535	0	1
Sector9	Other services	0,3691	0,4826	0	1
Cohort0	If native	0,9613	0,1928	0	1
Cohort1	Immigration into UK before 1946	0,0000	0,0000	0	0
Cohort2	1946<= Imigration <=1955	0,0013	0,0363	0	1
Cohort3	1956<= Imigration <=1965	0,0066	0,0809	0	1
Cohort4	1966<= Imigration <=1975	0,0127	0,1122	0	1
Cohort5	1976<= Imigration <=1985	0,0101	0,1000	0	1
Cohort6	1986<= Imigration <=1995	0,0051	0,0709	0	1
Cohort7	1996<= Imigration <=2005	0,0029	0,0534	0	1

Notes: Sector variable was defined based on the one-digit Standard Industry Classification (SIC) and on the correspondence from SIC (92) to SIC (80); occupation variable was defined based on the one-digit Standard Occupation Classification (SOC); region variable are the 19 regions/metropolitan areas defined in the BHPS.