

LUND UNIVERSITY
SCHOOL OF ECONOMICS AND MANAGEMENT
DEPARTMENT OF ECONOMICS

Fair Innings and Immigration

Victoria C Moreno Manrique

Supervisor: Carl-Hampus Lyttkens
Opponent: Kristine Mkhitarian

Fair Innings and Immigration

Table of Contents

- Abstract..... 3
- 0. Introduction 4
- 1. The Framework..... 5
 - The Fair Innings Argument..... 5
 - Social Welfare Function..... 7
- 2. Acceptable inequalities? 9
 - Fairness..... 10
 - Health differences 11
 - Responsibility..... 13
- 3. Achieving a fair inning 15
 - Measuring innings 15
 - Equity and Efficiency..... 19
- 4. Conclusions 20
- References 22
- Annexes 26

Abstract

Gains from health improvements for the worst-off in society should be weighted according to their possibility to achieve a fair inning. This statement parts from the fair inning equity definition developed by Williams (1997). A fair inning is the level of full health all individuals should be entitle with. It is the aim of this paper to assess immigrants and natives health disparities under the light of this concept.

Given the theoretical and empirical development to discriminate according to responsibility, the reasons underling health outcomes differential between immigrants and natives are assessed. I will conclude that there is no evidence towards holding immigrants accountable for worst lifestyles since it will hold them responsible for an uncontrolled factor, their country of birth.

Based on previous empirical research, the reasons found for lower health outcomes for immigrants are factors associated to their home countries, the event of migration and a lower socio-economic status in the host country.

Finally, as long as the fair innings are based on social welfare maximization immigrants will be assigned a lower fair inning than natives. The reason is not necessary grounded on racism, but rather on the influence of risk adverse preferences in the measurement of tradeoffs.

Key words: fair innings, immigration, inequality aversion, equity weights

0. Introduction

Previous empirical studies such as, Tinghög et al (2007), Bayard-Burfield et al. (2000) or Uiters and Devillé (2006) provide evidence regarding immigrants and natives differences in health needs and demands. It is the aim of this paper to discuss such differences from a fair innings perspective. This will involve discussing the differences based on health outcomes and their equity implications. According to the fair inning argument, everyone should live the same amount and quality of life. Consequently, priority and higher value of health gains are given to the group who experiences a shorter healthy life (immigrants in this case) as compared to those with longer healthy life (indigenous).

During the development of the fair innings argument the possibility to allow for health inequalities due to individuals unhealthy lifestyles has been presented. Authors as Olsen (2008) and Dolan and Tsuchiya (2009) had argued that lower weights should be given to groups characterized by unhealthier behaviours (e.g. smokers). Applied to immigrants, their preferences for healthier behaviours might be different, not only due to lack of information and factors as income, but due to preferences. I will therefore address the problem that surrounds acceptable inequalities concerning immigrants.

Furthermore, by looking at Carlsson et al. (2005) findings on society aversion to inequality I will conclude that immigrants will be entitle with lower equity-weight than natives. This will hold as long as the fair innings and the equity weight are constructed under society willingness to reduce health in favour of equity.

Immigrant and foreign-born are interchangeable terms throughout this paper. They refer to those individuals that are currently living in a country different from the country they were born. Within this population group, I will refer to those who migrated from countries, which are considered to be developing economies and migrated to a developed economy (viewed as their host or their new country). The term natives or indigenous will be then used for individual born in the host country. To my knowledge, no previous studies have been made concerning fair innings and immigrants.

The paper consists of four major sections. The first section presents the fair innings argument together with an explanation on the social welfare function used to calculate equity-efficiency tradeoffs. The second section describes the health differences previously explored by other authors and addresses the acceptable inequalities issue. The third section gives an overview of

the difficulties in measuring a fair innings for immigrants. Finally, the fourth section concludes the paper.

1. The Framework

In health economic theory there is an extensive literature concerning different definitions of what equality, fairness and efficiency should mean. Tsuchiya and Dolan (2008) present a brief review on this topic. Their main discussions dwell on which type of equity should be considered: equality of access, equality of utilization and equality of health. I adopt the perspective by which equality of health care, or its consumption, are the means to achieve equality but policy concerns and decisions should be made considering the total life span of the individuals. This is the fair innings definition of equity; all individuals deserve to live a certain amount and quality of life.

Discussions surrounding this argument mainly focus on its discrimination against the old. Nord et al. (1996) and Farrant (2009) are some examples. But empirical studies have also shown individuals to present discriminatory preferences towards the old (priority to the young before the old). Nord (2005) further divides the fair inning argument into equal and sufficient innings. Though he welcomes the consideration of everyone being entitled to the same quality of life; he criticizes the argument for not taking into account social preferences which prioritize according to the severity of the individuals' present situation. But according to Stolk et al. (2005), the fair innings seems to be a better approach to social preferences, than the principles of severity of illness or proportional shortfall.

This section will expand on the fair innings argument presented by Williams (1997) as a definition of equity; as well as his view of maximizing health gains as a definition for efficiency. I will also develop on the measurement of equity and efficiency tradeoffs, using the social welfare function with constant elasticity of substitution, since it allows for inequality aversion.

The Fair Innings Argument

The first notion of fair innings comes from John Harries and his book "The value of Life"¹. But Alan Williams was the first to develop it on an economic basis. Williams (1997) defines the fair innings argument as: "*everyone should be entitled to some normal span of health*".

¹ Harris (1985)

According to this equity principle, those with a lower quantity and quality of health should be prioritized when allocating health care. He then proceeds to analyze health inequalities across social classes.

It is important to understand that the fair innings definition of equity is not founded on equal utilization or access to health care resources but on equal outcomes. Inequality arises when some individuals live longer and better healthy life than others. Each individual should have the right to enjoy the same amount of health during their life without uncontrollable factors (country of origin, genetics...) becoming a hindrance to it. But problems may arise when we want to distinguish between controllable and uncontrollable causes of inequality. It becomes necessary to answer why some do enjoy healthier lives and others do not.

Williams (1997) proposed to merge the fair innings concept into the social welfare analysis. He defines efficiency as “*maximizing health gains as measured in some standardized way*”. It is important to note that efficiency is not defined from the cost of resources, or to be on the production possibility frontier. But efficiency is measured as the amount of health that the society renounces in order to move towards equity, the willingness to forego (WTF).

The measures he proposed are quality expectancy of life and quality adjusted life years (QALYs). In order to account for equity, each health gain is weighted according to who earns it. Weights will tell the value society attaches to improve the health outcomes of the less favoured group given their expected lifetime outcome.

Furthermore, Williams (1997) proposed dynamic weight. By dynamic means, to allow weights to change according to the health achievements (e.g. the increase in QALYs). Those that have live a longer healthy life will have lower weight than those younger, since the later have not yet arrived to their fair innings level, but as even the young approaches to his fair inning level, lower value to his health gains should be attached.

Using data from the UK, Williams drafted the inequalities existing across different socioeconomic classes and the implied weights they would receive depending on society's level of aversion to inequality. I will differ from Williams approach by looking at immigrant versus indigenous population groups instead of social classes and discuss how immigrants differ in their innings compared to the natives.

Then the first matter to address is if there exist inequalities in health outcomes between those two groups. Though we will further discuss this issue in section two, we can anticipate that

immigrants are expected to present lower health outcomes than natives. Most immigrants come from developing economies where health indicators tend to be lower than the ones for the host country. For instance, life expectancy at birth in 2002 for Sweden is 80.90 years while in Iraq it is 62.62 years².

A second issue is if natives are willing to reduce those inequalities, since trading efficiency to arrive to equity is done under society willingness to forego health. Any movements towards a more “fair distribution” of health will result in losses to the group that enjoys higher innings, the natives in this case. Since individuals are willing to spend certain amount of their resources in aid to other countries; we would expect that they will also be willing to contribute to the health improvement of the new comers at the expense of their own. Consequently it is possible to assume that there is a certain level of aversion to inequality when regarding health. After all, immigrants may represent a closer problem to the society if their level of health is lower, than if the level of the whole country where they come from is lower. For instance, when a certain proportions of the population has lower life expectancy due to HIV, the society will be more willing to sacrifice more resources than those given to improve the life expectancy from another country that suffers greatly from HIV. Since in the later case we see individuals willing to forego resources, it is then reasonable to believe that there will be WTF resources in order to achieve a more equitable distribution of health also within the country.

Social Welfare Function

The social welfare function (SWF) is meant to represent the preferences of the society. It is commonly used to calculate and evaluate the welfare losses or gains for society in order to take appropriate policy decisions. Commonly, a SWF is constructed as a function of individuals’ utilities. The point where the SWF is tangent to the production possibility frontiers (PPF) is regarded as a point which maximizes social utility and as being efficient.

When referring to the health related social welfare function (HRSWF) instead of looking at individuals’ utility, the function will be depending on individuals’ health. As Dolan (1998) expands, instead of referring to the maximization of social utility, we will generally speak about maximization of QALYs³. None the less, according to Absolo and Tsuchiya (2004), the properties demanded are the same as those of the social welfare function. The function should

² In 2002 around 5.96% of those born abroad living in Sweden, came from Iraq. The life expectancy information comes from the Eastern European and Europe regions health observatories form the WHO.

³ Further discussion on QALYs and the SWF is found on Wagstaff (1991) or Dolan (1998)

depend on the welfare of all individuals of society. It should be cardinal measurable and possible to add individuals' different levels of welfare. In addition, the paper states that, everyone in society should be equally value and equal distributions of welfare are preferred. Finally, increases on the health of any individual in society translate into an increase on the social welfare.

The HRSWF is the instrument proposed by Alan Williams (1997) to calculate the fair innings level. He proposes a constant elasticity of substitution HRSWF, commonly use in health and equity literature⁴. The formulation is as follows:

$$W = [\alpha H_{ax}^{-r} + (1 - \alpha)H_{bx}^{-r}]^{-\frac{1}{r}} \quad H_{ax} \geq 0; 0 \leq \alpha \leq 1; r \geq -1; r \neq 0 \quad (1)$$

Where W represent the level of the HRSWF⁵, α will reflect the level of responsibility attached to each group, r is the coefficient representing the level of inequality aversion and H_{ax} and H_{bx} are the level of health of each group.

The parameter r is estimated according to the society willingness to forego (WTF) health gains. When r equals -1, the society is not concern about inequalities while when the value approaches infinity, we will find a Rawlsian welfare function, where the equity of the worst off in the society is what matters.

Moreover, the α parameter affects the steepness of the social welfare curve. It is meant to adjust the social value of health gains associated to the H_{ix} group. William (1997) and Tsuchiya and Dolan (2008) propose α to be use to control for factors which individuals are supposed to be responsible for. A lower value of α will imply higher level of responsibility and therefore lower weight to the corresponding group. For example, a society that believes smokers inflict their own health state will be willing to give the group b (smokers) a smaller α than 0.5⁶. If on the contrary, we assume that both groups are equally responsible, the parameter takes the value 0.5.

Furthermore, Tsuchiya and Dolan (2008) expand the calculations done by Williams (1997), demonstrating that static weights are formulated as:

⁴ Dolan and Tsuchiya (2009), Wagstaff (1991) and Absolo and Tsuchiya (2004), who also quote other examples.

⁵ Which is measured in Williams (1997) as the "value it takes at its intersection with the perfect equality locus" (pg. 131, reference number 22)

⁶ An α value equal to 0.5 refers to consider individuals equally responsible for their health state.

$$SW_{a:b} = \frac{\alpha}{1-\alpha} \left[\frac{H_{ba}}{H_{aa}} \right]^{(1+r)} \quad (2)$$

They also formally calculated the dynamic weights. As I mentioned on the fair innings argument subsection, these weight intend to account for the change on innings achieved by the corresponding group of individuals. They are formulated as follows:

$$DW_{a:b} = \frac{\alpha}{1-\alpha} \left[\frac{FI_r}{H_{ix}} \right]^{(1+r)} \quad (3)$$

Where FI is the fair innings level and H_{ix} represents the population group at age x. The FI is calculated as the point where the SWF is tangent to the 45° line (from the origin).

Equations (2) and (3) originate from the derivate of equation number (1); they picture the marginal increase in health of one group in terms of the other. This increase will be higher or lower not only due to differences on the health outcomes of each group (H_{ix}) but also depending on the values of r and α .

Regarding tradeoffs, on usual welfare analysis efficiency and equity is measure by combining the production possibility frontier (PPF) and the social welfare function. But Williams (1997) excludes the PPF from the analysis under the argument that all which is needed is to know the willingness to forego of the society. He also states that pursuing to arrive to the PPF without taking into account distributional issues could lead to a situation where redistribution is not possible. Furthermore, Tsuchiya and Dolan (2008) add that since we are looking at preferences, the PPF losses its importance since it refers to production and resources. Consequently, WTF is used as signalling efficiency.

2. Acceptable inequalities?

Under the fair innings argument, disparities from the fair innings level are considered unfair. Authors such as Williams (1997) and Olsen et al (2003) argue that society is willing to consider fair those inequalities resulting from health states that the individual has caused himself, e.g. lower priority to a smoker. This means that society is willing to discriminate against those responsible for their lower health outcome. If so, the values of α in the SWF will differ if immigrants can be considered to have caused their lower health state. For this reason I will review where do immigrants tend to differ on their health as compared to natives, and if

those differences may be attributed to responsibility. Hence, I will also discuss the concept of fairness and responsibility.

Fairness

Society will decide the amount willing to forego of e.g. income or health, according to its understanding of fairness. By definition fair is a synonymous of just, or ethically correct. This concept has given place to numerous discussions between the role of responsibilities and capabilities when pursuing equality⁷. For example, Roemer (2002) presented a model on equalities of opportunities where he distinguishes among circumstances factors, effort factors and types⁸ when pursuing equality.

According to his argument, it is not possible to consider “unfair” when individuals from different types (e.g. social classes) have different outcomes (e.g. life expectancy) while exercising the same level of effort (e.g. hours exercising). In order to compare the level of effort as independent of circumstances he does comparisons between individuals from different types but from the same quintiles. For example, the 10% of individuals with higher level of effort within the blue collar type are compared to the 10% of individuals with higher level of effort within the white collar type

Olsen (2008) and Dolan and Tsuchiya (2009) agree on taking into account the individual responsibility for their bad health status. Olsen (2008) defines fairness as a social judgment and concludes that while not being able to pay should not be a hindrance towards receiving health care, individual responsibility could be. Dolan and Tsuchiya (2009) expand on the possibility to include the degree of responsibility on the health related social welfare function and on the empirical evidence towards discriminating according to responsibility. Their findings demonstrate that society is willing to discriminate based on responsibility⁹. This is in accordance with Olsen’s (2003) review on the ethics behind setting health care priorities. He concludes that individuals discriminate according to personal characteristics. He looks into empirical findings where individuals will give lower priority to those that consume illegal drugs or high levels of alcohol.

⁷ For a brief review see Rosa Dias and Jones (2007)

⁸ Roemer (2002) classifies individuals into types according to their common circumstances factors. He argues that while inequalities within a type are due to effort, most of the inequalities between types are due to circumstances.

⁹ The empirical evidence is based on interviews with individuals living in York. Individuals were willing to give less priority to those whose cause of their sickness was smoking.

It then follows that it is necessary to distinguish the reasons behind differences in health among immigrants and natives. If immigrants are responsible for their own ill health, society might then be willing to give lower weight to their health gains.

Health differences

There are three major reasons which will influence the different health outcomes for immigrants. The first reason is the country of origin. Immigrants tend to come from countries where demanding health care is more costly. This will reflect on lower levels of investment on health and consequently, lower health outcomes. An overview on country differences regarding health supports it. For instance, Table 1 presents some crude health indicators for countries with high shares of immigrant population living in Sweden in 2006. The most extreme difference is shown by Somalia. In 2006, 12.89% of the population in Sweden was foreign-born. From those 12.89%, 1.56% came from Somalia. Though improvement of life expectancy is likely to occur due to migration, greater efforts and needs would be needed in order for Somalis to achieve a life expectancy nearer to the one expected to achieve by Swedes.

Table 1 Country data for 2006 regarding life expectancy, health expenditures and percentage of foreign-born living in Sweden

	Sweden	Chile	Iraq	Bosnia and Herzegovina	Somalia
Life expectancy at birth (2006)	81	78	56	75	55
Per capita total expenditure on health at average exchange rate (US\$)	3870	473	67	258	-
Total health expenditure as % of GDP	8,9	5,3	3,8	8,3	-
General government expenditure on health as % of total expenditure on health	81,2	52,7	72,5	57,2	-
Percentage born abroad	12,89				
Percentage of Immigrants living in Sweden		2.38	7.05	4.72	1.56

Data source: WHOSIS and SCB

Besides, country of origin could be associated with different types of sicknesses prevalent in the country of origin. A review on the differences of the most common causes of mortality across countries may give a brief picture. For example, one of the major causes of death in Chile is cirrhosis of the liver. This sickness is not part of Sweden's top ten causes of death. Therefore Chileans might present an earlier death or live a lower quality of life due to such an illness. Also in Chile, lower respiratory infections account for the 6% of the ten most common mortality causes, while it only accounts for 3% in Sweden (see Annex 1). Moreover, Albin et al. (2006) distinguish across the different motives that cause death among the immigrants and

native Swedes. Not only did their result show a mean age at death lower for immigrants than Swedes, but they also found a relationship between causes of death and country of birth. The findings evidence higher number of death among immigrants related to neoplasm, circulatory system diseases, symptoms signs, ill defined conditions¹⁰ and injury/poisoning. It is noteworthy that higher proportions of death among those coming from former Yugoslavia compared to Swedish were caused by symptoms, signs and ill-defined. The authors suggest that their findings could also signal lack of understanding or communication barriers between patient and physician. .

A second factor associated with differences in health outcomes is their exposure to poorer socio-economic conditions. Lack of integration in their host country translates into lower health investments. On theoretical ground we could point to Grossman model¹¹ on health investments, which highlights the influence of monetary constrains, where lower wages translates into lower health investments. On empirical grounds, Bevelander (2000) exposes the negative changes on the labour opportunities for immigrants in Sweden since 1970's, which leads to higher monetary constrains for immigrants. Studies as Tinghög et al (2007) or Lindström et al. (2001) also provides empirical support for this.

Lindström et al (2001) looked into the probability of poor self-reported health. They found a reduction of the differentials across Swedes and other immigrants groups when social network, social support and economic factors where correct for. Consequently, Tinghög et al. (2007) research stated that those immigrants from non-Scandinavian countries have higher risk to present a lower Subjective Well Being index (SWB) due to their lower level of social interaction, type of employment, level of income and lower economic security¹². One last example would be Pudaric et al (2003). They found that poor social network and low level of education account for part of the differences regarding difficulties on performing daily activities¹³

The third factor concerns the event of migration. Changing geographical location is commonly associated with conflicts related to adaptation and acculturation. Higher risk of depression, stress and anxiety are associated with it. Tinghög et al. (2007) found that while

¹⁰ Classification made based on the International Classification diseases. Within this classification enter the following diagnoses: palpitations, coma, fatigue, mental status changes, etc.

¹¹ Grossman (1972) presents a health investment model which is commonly use and empirically tested.

¹² Economic security was classified from answers concerning how able the individual was to obtain 1400 SEK in an unexpected situation.

¹³ When the individual could not shop, cook or do housework without someone's help.

the differences in risk associated to low SWB disappears when controlling for the socioeconomic factors, the risk for depression did not disappear for those coming from non European countries. An empirical study on the risk of taking benzodiazepine¹⁴ was done by Bayard-Burfield et al. (2000). Risk for depression was found to be higher for all immigrants groups when compared to Swedes and remained so even when corrections were made for educational levels or other social economic and demographic variables. Furthermore, those coming from Southern European countries had a probability 2 to 3 times higher to present prevalence of long standing psychiatric illness than Swedish born individuals.

Summarizing, immigrants will tend to present higher health problems associated with diseases contemplated in the ICD¹⁵ as symptoms, signs and ill-defined. Inside this group of diseases it is expected that mental illness will be the most common. Moreover, although differences considerably decrease when the studies correct for country of origin and socio-economic aspect, they did not disappear. Though the empirical papers presented correspond to Swedish data, the situation in other countries is not expected to differ greatly as long as we refer to migration from countries considered developing countries to those considered developed. Uiters and Devillé (2006) use data from Netherlands and still arrive to the same conclusions. Being part of an ethnic minority was associated to lower income, poor health and higher use of health care services. They also found Antillean minority to have higher use of mental health care.

Responsibility

The above picture of immigrants' health compared to natives enforces the existence of differences and their less favoured position compared to natives. Nonetheless, these reasons do not seem to point towards unhealthier behaviours. We cannot hold the immigrants accountable for their lower socio-economic situation which is a result of the discrimination¹⁶ and country barriers (e.g. language) they found in the host country. Similarly, we cannot use the event of migration as a reason to reduce the weight they should obtain. In the case of Sweden, immigrants came as asylum seekers and refugees. In such a case, it is clear that the gains made in their total outcome of health surpass the damage caused by the "event". When migrating, individual chooses to improve his quality of life and in the asylum seekers case, he could even be avoiding death.

¹⁴ Benzodiazepine is recommended for treating anxiety, insomnia, alcohol withdrawal...

¹⁵ ICD: International Classification Diseases

¹⁶ Rydgren (2004) provides evidence on the existence of three types of discrimination on the Swedish market. Also, Rooth (2001) shows how even adoptees will face discrimination.

The remaining possibility relies then on lower health due to country of origin. Disparities in such a case might rise as a consequence of deficiencies at their country health care systems. It could also be arguable that different sicknesses across countries are related to unhealthier behaviours of individuals in such countries. If we retake the example of Chile, cirrhosis in the liver can easily be linked to higher consumption of alcohol, which according to Olsen et al (2003) review; society will see such a difference as fair. This would be seen as an argument for giving a lower weight to Chile as a country when compared to Sweden and not accounting for such a difference might be seen as reducing incentives towards the improvement (or investment) on healthier behaviours. But when referring to immigrants, this argument does no longer seem appropriate since it would imply to hold individuals responsible for their country of birth.

Individuals do not decide their country of birth; consequently they do not decide their culture. Though they can be agents that shape and influence their environment, those changes will be influenced and limited by their current institutions. Therefore, the constraints facing different individuals when deciding how much they want to invest on health will be restraint by factors they do not fully control. For instance, diet is a factor that influenced health outcomes but that varies across cultures. Though more information could help reduce unhealthy habits, it will still be limited by tradition and resources.

Rosembaum (1999) highlights the need to account for culture as affecting individual's tastes. He looks the consumption of commodities as essential to form ones identity and relate to the social environment. He defends choices as not being the mere result of individuals' preferences but sensitive to the context. As a result, how we dress, how we spend our spare time and even what we eat will influence ones identity on the society that surrounds us.

Perhaps the more obvious effect of culture upon health outcomes can be found when looking at food traditions. Sheik and Thomas (1994) mention how the Asian diet is associated to coronary heart diseases, iron deficiency, biz and folic acid anemia. Bond (2009) does a review on the health benefits from the Mediterranean diet. In addition the daily routine is another factor which affects health but differs across countries. A study carried out by the National institute of Public Health (2004), showed immigrants to present different life-styles (e.g. smoking habits, exercising) compared to Swedes. Correcting for such aspects decreased the differences on their own perception of health¹⁷ compared to natives. But hold immigrants

¹⁷ Socio-economic differences were also taken into account.

responsible for *choosing* those unhealthier behaviours disregards the institutional environment and social pressures that influence individuals choices pre and post migration. It once more punishes the immigrant group for being born in a certain country. Therefore, I will conclude that both groups are equally responsible for their health state, and consequently give the same α value to both groups.

3. Achieving a fair inning

Williams (1997) proposed quality adjusted life expectancy (QALE) as the measure to use for comparison across individuals' life span. QALE data together with social preferences for equality and efficiency are used to calculate the fair inning level and their corresponding weights. I will discuss the shortcomings of those measuring tools when regarding immigrants and natives.

Measuring innings

Williams proposed the quality adjusted life years (QALYs) as a suitable measure for quantifying innings. This measure is used at most health related cost-utility analysis. It is meant to quantify the health status and length of life, where every unit is equivalent to one year of full health life. It is constructed by estimating values associated to different health states on a 0 to 1 scale and combining such values with life expectancy¹⁸.

There is scarce material directed to account for ethnicity inequalities in terms of QALYs. As we presented before, most of the studies regarding health and ethnicity are based on self reported health or health care demands. Most studies which use QALYs and account for ethnicity refer to cost-utility analysis and disregard distributional issues of health outcomes as well as previous QALYs already achieved.¹⁹

But the evidence presented in the previous section regarding health differences, point towards lower QALYs for immigrants. Their self-rated health and life expectancy were lower than for the indigenous individuals. Therefore, visual analog scores²⁰ and longevity of life, both used for the calculation of QALYs, will be expected to be lower than indigenous. This assumption can also relay on Barton et al (2008) findings. In their study, different health related quality of

¹⁸ The value 0 stands for death and 1 for full health. For a deeper understanding and background of the measure, it is recommendable Gold et al (2002) and Kind (2008).

¹⁹ The two studies found refer to specific health problems: osteoporosis and tuberculosis treatments. In respective order: Tosteson et al (2008) and Tan et al (2008)

²⁰ Visual Analog Scores (VAS) is a technique use to value different health states. It is based on self-rated health.

life indicators showed significant differences between groups with different socio-demographic factors. One of the measures was EQ-VAS. The values of QALYs calculated following this procedure were able to predict QALY differences between white and non-white ethnic groups.

Empirical work has been done regarding calculations of QALYs and income related inequality. A view to these helps to represent the extent to which immigrants could differ from the natives due to socio-economic factors. Immigrants will tend to be over represented in lower income groups compared to higher income groups.

Two examples on differences within income groups are Gerdtham and Johannesson (2000) and Burström et al (2005) results for the Swedish population. As expected, higher income groups had higher health outcomes. Gerdtham and Johannesson (2000) estimated the differences within ten different income groups, while Burström et al (2005) differentiated between types of employment. The later study also looked on how those differences changed from 1980 to 1997, concluding on an increase of the differences between the higher non-manual workers and the unskilled manual workers. Table 2 shows their findings for QALYs at 20 years old and 65 years old, by gender and socioeconomic group. For 1997, at the age of 20, those from the higher non-manual group presented almost 5.76 QALYs and 4.13QALYs more than the unskilled manual workers, men and women respectively in 1980.

Table 2 Number of expected quality-adjusted life years and change in QALYs by socio-economic groups in 1980 and 1997 in Sweden, by age and sex

Socio-economic group	Male			Female		
	QALYS		QALYS change	QALYS		QALYS change
	1980	1997	1980-1997	1980	1997	1980-1997
20 years						
Higher non-manual	49,782	53,075	3,292	51,323	53,889	2,565
Lower non-manual	48,475	50,069	1,594	49,834	50,159	0,325
Skilled manual	45,69	47,124	1,434	47,959	48,887	0,928
Unskilled manual	44,022	46,013	1,991	47,186	48,234	1,048
65 years						
Higher non-manual	11,154	13,931	2,777	12,235	14,971	2,736
Lower non-manual	11,077	12,803	1,762	12,075	13,712	1,637
Skilled manual	9,605	10,864	1,26	10,926	12,54	1,614
Unskilled manual	9,084	10,598	1,514	10,976	12,918	1,942

Source: Burström et al. (2005). Table 4, pg 844

It is possible to assume that immigrants will pertain to the skilled and unskilled manual socio economic group despite the higher or lower levels of education; their employment position

will be commonly constraint by lack of country specific human capital and discrimination²¹. Based on data from 1990, a share of 29% of the male Swedish employed population worked on the industry sector while the share for the immigrant population was 36%²². Moreover, employment rates did also increase since 1980 among the immigrant population.

But in order to diminish the effect of socio-economic factors over health differentials, immigrants should be compared to natives within their own socio-economic group. Foreign born individuals should still differ with indigenous population since their pre-immigration constraints would have been different from natives. Differences can be attributed to factors associated with the event of migration over health (stress and anxiety resulting from the acculturation process) and their more disadvantage starting point (lower life expectancy associated to the country they were born).

In order to roughly compare the immigrants lower expected health outcome, we could compare health adjusted life expectancy (HALEs) across countries. Table 3 presents HALEs for Sweden and four countries with larger share of total foreign born living in Sweden. Chile is the country with the closest HALE to Sweden with a differential of 5.1 HALEs at birth and Somalia presents the highest differential with 37.3 HALE.

Table 3 Healthy life expectancy by gender and country, at birth and at age 60 in 2002.

Member State	Healthy life expectancy									
	(years)									
	2002								2005	
	Males				Females				Life Expectancy	
At birth	Rd birth	At age 60	Rd 60	At birth	Rd birth	At age 60	Rd 60		Rd	
Bosnia and Herzegovina	62,3	0,87	12,4	0,73	66,4	0,89	15,4	0,79	74,40	0,93
Chile	64,9	0,90	13,9	0,81	69,7	0,93	16,8	0,86	77,70	0,97
Iraq	48,8	0,68	9,2	0,54	51,5	0,69	10,6	0,54	70,20	0,88
Somalia	36,1	0,50	8,3	0,49	37,5	0,50	9,4	0,48	49,40	0,62
Sweden	71,9	1,00	17,1	1,00	74,8	1,00	19,6	1,00	80,10	1,00

* Rd stands for relative difference. Sweden the bench mark

Source: WHO, World Health report 2004

²¹ For the role of country specific human capital, see Rooth (1999). For discrimination, Rydgren (2004).

²² The share of immigrants refers to those which immigrated after 1975. Bevelander (2000). Studied the effect over immigrants of the structural change of Sweden between 1970-1980. It resulted on a negative impact over their employment possibilities. See also Annex 2

HALEs is a measure developed by the World Health Organization (WHO) in order to compute the burden of diseases across countries. In comparison to QALYs, HALEs are not rooted on individuals or society's utility. They are calculated based on disability adjusted life years (DALYs). It consists of adjusting life expectancy to the amount of years lost due to disability or premature mortality. The value attached to each sickness emerges from professionals' (e.g. physicians) valuation and an age-weight function²³. Also, the reference point use is the highest life expectancy within the WHO countries (Japan in 2002). But despite their differences, DALYs is considered the more appropriate measure (available) for country comparisons which intend to account for health maximization²⁴.

It is also important to note that developing economies tend to present high health inequalities within their inhabitants. If most of the immigrants come from high income groups within their countries their HALE should be underestimated or vice versa. It is therefore important to check if most of the immigrants come from one specific social class, which could be approximated by level of education attained before migrating. Immigrants with e.g. university education will commonly be associated to be part of the higher income groups or at least, higher health levels.

In Sweden, higher share of immigrants attained primary or secondary education before migrating with the exception of Iraq. Though Iraq had a high percentage of immigrants with primary education only (33.5% men, 47.6% women²⁵) they also presented higher percentage, even when compared to the Swedish population, on more than three years in university (25.9% for men and 15.5% for women). Therefore high discrepancies from the HALE are not expected within the immigrants and the HALE associated to their country of origin, with the exception of those coming from Iraq²⁶.

Although I have pointed the possible differences for immigrants and natives regarding QALYs and HALEs, both measures are not comparable. Differences in the unsuitability of HALEs become more evident when analyzing the innings achieve in other stages of life (e.g. 20 years old). Comparisons cannot be made solely in HALE since the measure will fail to account for the changes on the subjective wellbeing of the immigrants. This will be an important component of measuring differences in health outcomes due to the event of

²³ Tsuchiya (2000)

²⁴ Gold et al. (2002)

²⁵ See Annex 3

²⁶ Data from the year 1995, source: Rooth (1999)

migration and changes generated from the acculturation. Therefore, QALYs are so far the more desirable and HALEs should only be regarded as an approximation of the background concerning the immigrant.

Equity and Efficiency

The trade-offs will depend up on society's willingness to forego and the relative differences across both groups. The size of the sacrifice, at a given inequality level, will determine the inequality aversion of the society. Less equally distributed health outcomes will be associated to higher aversion and higher value attach to gains achieve by the worst-off.

Empirically, social preferences do present equality aversion. Johannesson and Gerdtham (1995) found individuals willing to trade one unit of QALY of the best-off group for a gain of 0.45 QALYs²⁷ in the worst-off group. Their results were not consistent for SWF with constant marginal elasticity of substitution, but the representativeness of their sample was questionable.

On the other hand Adersson and Lyttkens (1999) did also found inequality aversion and the relative difference to have explanatory power upon social preference. They analyze the impact upon individuals' preferences under a veil of uncertainty and without it. They concluded that the impact of knowing or not knowing the probability did not impact the media marginal tradeoffs, and therefore to elicit preferences under the veil of ignorance or not did not rise significant differences. But to what extend will this still hold when the individuals have the assurance that they are not part of the worst-off society is not clear, when their probability is equal to one. I believe social preferences in such a case will show discrimination against the immigrants.

Discrimination would arise based on the Carlsson et al. (2005) who highlights the need to distinguish between risk aversion and inequality aversion. They carried two types of experiments with a sample size of 324 respondents. The first experiment holds the degree of inequality constant between the different societies. At the second experiment individuals knew their social position (at the mean income) but the income distribution across the society changed. They found the median relative risk aversion to be between 2 and 3, and the inequality aversion between 0.09 and 0.22. Both values where calculated under the

²⁷ 0.45 is a mean value for the marginal trade-off. The calculation of the value was done through an experiment of 80 students.

framework of constant inequality elasticity and constant relative risk aversion for the individuals utility functions.

Risk aversion implies that individuals are willing to reduce inequalities given the probability to be part of the lower income group. But it is not clear if this will hold when the compared groups are foreign born and indigenous. In such a case there is no veil of ignorance; individuals know which group they will be part. Perhaps the only exception would be adoptees, since they will still have the risk to be regarded as immigrants²⁸. We could therefore expect that the weight given by society to decrease different health across natives will be higher than the weight natives will be willing to give to immigrants in order to decrease the same level of health differences.

4. Conclusions

Immigrants will tend to present lower levels of quality adjusted life years compared to natives. Their differential on QALYs will be low due to their worst socio-economic situation, the distress associated with the event of migration and health investments done prior to migration. None of these reasons seems to be associated to their own responsibility. Because previous investments on health will have been constraint to factors concerning their country of origin, it does not seem reasonable to accept the inequalities related to this aspect. Consequently, immigrants should be expected to be given higher equity weight within the fair innings argument. Their life expectancy at birth is lower than the native population and so will also be their quality of life.

Because the fair innings level and the equity weight are constructed based on society's willingness to forego health, it is probable that immigrants will not be given the same weight as a native. Neither will their level of fair innings will be consider the same. This will not necessary be due to pure (or only) discrimination but to risk aversion. Natives will know they are not part of the worst off group and therefore decided their willingness to forego solely based on their aversion to inequality, whereas if they were under the veil of ignorance the risk of being part of the worst-off will increase their willingness for a more equal distributed society.

²⁸ They have the risk to be seen as immigrants. It is also expected that they will differ from natives and be nearer to some immigrants groups health outcomes when comparing to differences rising from genetics.

Another problem with society's preferences is its tendency to present willingness to discriminate according to responsibility, which raises two issues. First, level of aversion to inequalities might come from failure of society to understand which factors are controllable and which are uncontrollable. Second, it could also be affected by individuals willing to discriminate even for the uncontrollable factors (due to e.g. racism).

It then becomes questionable the "fairness" of the weights, when derivate from the social welfare function. A society with high level of racisms, where immigrants are the minority, will give higher priority to efficiency and less to equity leading to lower weights to the immigrant group.

Finally, one of the main characteristic and differences of the fair innings compared to other equity principles is accounting for individuals previous innings achieved (or not achieved). In order to empirically take into account the previous innings of immigrants, QALY data across countries and especially across developing countries will be needed. A country comparison in such terms will bring a new perspective to the health inequalities among ethnic groups and probably uncomfortable situations will arise when looking at the existence inequality and our level to forego based on preferences.

References

- A, F. (2009). The fair innings argument and increasing life spans. *Journal of medical ethics : journal of the Society for the study of medical ethics* , 53-56 (1).
- Abasolo, I., & Tsuchiya, A. (2004). Exploring social welfare functions and violation of monotonicity: an example from inequalities in health. *Journal of Health Economics* , 313-329.
- Albin, B., Hjelm, K., Ekberg, J., & Elmståhl, S. (2006). Higher Mortality and Different Pattern of Causes of Death Among Foreign-Born Compared to Native Swedes 1970--1999. *Journal of Immigrant and Minority Health* , 101-113.
- Andersson, F., & Lyttkens, C. H. (1999). Preferences for equity in health behind a veil of ignorance. *Health Economics* , 369-378.
- Barton, G. R., Sach, T. H., Doherty, M., Avery, A. J., Jenkinson, C., & Muir, K. R. (2008). An assessment of the discriminative ability of the EQ-5Dindex, SF-6D, and EQ VAS, using sociodemographic factors and clinical conditions. *The European Journal of Health Economics* , 237-249.
- Bayard-Burfield, L., Sundquist, & J., J. S.-E. (2000). Self-reported long-standing psychiatric illness and intake of benzodiazepines. *European Journal of Public Health* , (10) 51-57.
- Bevelander, P. (2000). *Immigrant Employment Integration and structural Change in Sweden. 1970-1995*. Lund: Lund Studies in Economic History.
- Bond, J. B. (2009). The Mediterranean diet and your health. *American Journal of Lifestyle Medicine* , 44-56 (1).
- Dolan, P. (1998). The measurement of individual utility and social welfare. *Journal of Health Economics* , 39-52 (17).
- Fredrik, C., Dinky, D., & Olof, J.-S. (2005). Are People Inequality-Averse, or Just Risk-Averse? *Economica* , 375-396.
- Gerdtham, U., & Johannesson, M. (2000). Income-related inequality in life-years and quality-adjusted life-years. *Journal of Health Economics* , 1007-1026.

- Gerritsen, A. A., Bramsen, I., Devillé, W., van Willigen, L. H., Hovens, J. E., & van der Ploeg, H. M. (2006 (4)). Use of health care services by Afghan, Iranian, and Somali refugees and asylum seekers living in The Netherlands. *European journal of public health* , 394-399 .
- Gold, M. R., Stevenson, D., & Fryback, D. G. (2002). HALYs and QALYs and DALYs, Oh My: Similarities and Differences in Summary. Measures of Population Health. *Annual Review of Public Health* , 115-34 (23).
- Grossman, M. (1972). On the concept of health capital and the demand for health. *Journal of Political economy* , (80) 223-255.
- Harris, J. (1985). *The Value of Life*. London: Routledge and Kegan Paul.
- Kind, P. (2008). Putting the "Q" in QALYs. In A. Manson, & A. Towse, *The ideas and influences of Alan Williams. Be reasonable - Do it my way!* (pp. 111-125). Radcliffe Publishing Ltd.
- Kristina, B., Magnus, J., & Finn, D. (2003). The value of the change in health in Sweden 1980/81 to 1996/97. *Health Economics* , 637-654.
- M Lindström, M., Sundquist, J., & Östergren, P.-O. (2001). Ethnic differences in self reported health in Malmö in southern Sweden. *Journal of Epidemiology and Community Health* , 97-103(55).
- Nord, E. (2005). Concerns for the worse off: fair innings versus severity. *Social Science and Medicine* , 257-263 (2).
- Nord, E., Street, A., Richardson, J., Kuhse, H., & Singer, P. (1996). The Significance of Age and Duration of Effect in Social Evaluation of Health Care. *Health Care Analysis* , 103-111 (2).
- Olsen, J., Richardson, J., Dolan, P., & Menzel, P. (2003). The moral relevance of personal characteristics in setting health care priorities. *Social Science and Medicine* , 1163-1172 (7).
- Organization, W. H. (n.d.).
- Paul, D., & Aki, T. (2009). The social welfare function and individual responsibility: Some theoretical issues and empirical evidence. *Journal of Health Economics* , 210-220.

- Public, N. I. (2004). *The relevance of birthplace. The health of various immigrants groups in Sweden*. English summary of a full-scale Swedish report: Folkhälsoinstitut, Statens. Sweden.
- Pudacic, S., Sundquist, J., & Johansson, S.-E. (2003). Country of birth, instrumental activities of daily living, self-rated health and mortality: a Swedish population-based survey of people aged 55-74. *Social Science and Medicine* , 2493-2503.
- Roemer, J. E. (2002). Equality of opportunity: A progress report. *Social Choice and Welfare* , 455-471 (2).
- Rooth, D.-O. (1999). *Refugee Immigrants in Sweden. Educational Investments and Labour Market Integration*. Lund: Lund Economic Studies.
- Rosa Dias, P., & Jones, A. M. (2007). Giving equality of opportunity a fair innings. *Health Economics* , 109-112 (16).
- Rydgren, J. (2004). Mechanisms of Exclusion: Ethnic Discrimination in the Swedish Labour Market. *Journal of Ethnic and Migration Studies* , 697-716 (4).
- Sassi, F. (2006). Calculating QALYs, comparing QALY and DALY calculations. *Health Policy and Planning* , 402-408.
- SCB. (n.d.). *Swedish Statistic National Bureau*. Retrieved from <http://www.ssd.scb.se/databaser/makro/MainTable.asp?yp=tansss&xu=C9233001&omradeko d=BE&omradetext=Befolkning&lang=1>
- Sheikh, N., & Thomas, J. (1994). Factors Influencing Food Choice among Ethnic Minority Adolescents. *Nutrition and Food Science* , 18-22 (4).
- Stolk, E., Pickee, S., Ament, A., & Busschbach, J. (2005). Equity in health care prioritisation: An empirical inquiry into social value. *Health Policy* , 343-355 (3).
- Tan, M. C., Marra Carlo, A., Sadatsafavi, M., Fawziah, M., Onofre, M.-M., Susanne, M., et al. (2008). Cost-Effectiveness of LTBI Treatment for TB Contacts in British Columbia. *Value in Health* , 842-852.
- Tinghög, P., Hemmingsson, T., & Lundberg, I. (2007). To what extent may the association between immigrant status and mental illness be explained by socioeconomic factors? *Social Psychiatry and Psychiatric Epidemiology* , (42) 990-996.

Tosteson, A. N., Melton, L. J., Dawson-Hughes, B., Baim, S., Favus, M. J., Khosla, S., et al. (2008). Cost-effective osteoporosis treatment thresholds: the United States perspective. *Osteoporosis International* , 437-447.

Tsuchiya, A. (2002). QALYs and ageism: philosophical theories and age weighting. *Health Economics* , 57-68.

Tsuchiya, A., & Dolan, P. (2008). Being reasonable about equity and fairness: looking back and extending the Williams way. In A. Manson, & A. Towse, *The ideas and influence of Alan Williams. Be reasonable - Do it my way!* (pp. 85-101). Radcliffe Publishing.

Uiters, E., Devillé, W. L., Foets, M., & Groenewegen, P. P. (2006). Use of health care services by ethnic minorities in The Netherlands: do patterns differ? *European journal of public health* , 388-393 (4).

Wagstaff, A. (1991). QALYs and the Equity-Efficiency Trade-Off. *Journal of Health economics* , 21-42 (10).

WHO. (n.d.). *Eastern European health observatory*. Retrieved from <http://gis.emro.who.int/HealthSystemObservatory/PDF/Iraq/Health%20status%20and%20demographics.pdf>

WHO. (n.d.). *Europe Regional health observatory*. Retrieved from <http://data.euro.who.int/hfad/>

WHOSI. (n.d.). *World Health Organization Information System*. Retrieved from <http://apps.who.int/whosis/data/Search.jsp>

Williams, A. (1997). Intergenerational Equity: An exploration of the Fair Innings Argument. *Health Economics* , 117-132 (6).

Annexes

Annex 1 Top 10 causes of death for Sweden and Chile in 2002.

Sweden	%	Chile	%
All causes	100	All causes	100
Ischaemic heart disease	22	Ischaemic heart disease	11
Cerebrovascular disease	11	Cerebrovascular disease	10
Alzheimer and other dementias	6	Lower respiratory infections	6
Lower respiratory infections	3	Stomach cancer	4
Trachea, bronchus, lung cancers	3	Cirrhosis of the liver	3
Prostate cancer	3	Diabetes mellitus	3
Colon and rectum cancers	3	Hypertensive heart disease	3
Chronic obstructive pulmonary disease	3	Chronic obstructive pulmonary disease	3
Diabetes mellitus	2	Road traffic accidents	3
Breast cancer	2	Trachea, bronchus, lung cancers	2

Source: WHOSIS

Annex 2 Employment rates by nationality, sex and age for 1992 and 1995

Country/Age	1992			1995		
	20-34	35-44	45-64	20-34	35-44	45-64
Men						
Total/Sweden	79	91,2	83	72,1	85,6	77,8
Poland	44,5	58,2	51,4	29,1	65,9	53,8
Yugoslavia	41,5	31,3	28,3	31,1	34,5	28,8
Somalia	17,6	22,3	11,1	14,2	20,7	10,8
Iraq	21,8	20,2	16,2	23,8	23,6	18,8
Chile	55,4	70,4	74,2	46,1	60	62,3
Women						
Total/Sweden	68,2	83,2	75	77	89,6	78,1
Poland	38,3	58,5	59,3	37,9	55,9	45,7
Yugoslavia	17,8	13,7	8,7	17,2	22,5	21,6
Somalia	10,5	7,9	11,8	10,2	8,9	21,9
Iraq	14,8	13,3	5,6	11,3	17,3	6,4
Chile	47,6	58,8	60,6	34,3	47,3	49,7

Source: Rooth (1999) pg. 55

Annex 3 Age standardised pre-immigration educational attainment. Percent

Country	Primary Educ.		Secondary Educ		University<3years		University >3years	
	Men	Women	Men	Women	Men	Women	Men	Women
Total/Sweden	26,4	24	51,4	52,6	12,8	15	9,6	8,4
Yugoslavia	32,3	62,2	44,7	27,9	12,6	6,3	10,4	3,6
Somalia	28,8	48,2	50,4	40,9	11,4	6,9	9,4	4
Iraq	33,5	47,6	25	25	15,6	11,9	25,9	15,5
Chile	50,9	54,6	38,3	35	6,7	7,1	4,1	3,3

Source: Rooth (1999), pg.51