The Intergenerational Mobility of Immigrants in the UK

Abstract

This paper presents an analysis of the intergenerational mobility of immigrants in the UK. Providing there exists some transmission process across generations, the factors and skills that determine the migration decision of the 1st generation will be reflected in their descendants. Thus the source country factors that determine the labour market experiences of foreign-born workers, reflected by the dispersion of success between national origin groups, will influence the experiences of their children. Thus current policy in regards immigration determines future differences in the labour market.

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I. Introduction

In 2001 3.1 million people in the United Kingdom or 6% of the population were foreign born, a further 3.4 million people or 6.5% of the population had foreign-born parents.[1] The economic impact of immigration depends not only on how immigrants adapt to the economic environment in the host country but also the economic opportunities that their descendants experience. The traditional view of immigrants has been that initial settlers enter the host country (in this case the UK) with a severe economic disadvantage; their children, the second generation, then move up the socio-economic ladder somewhat, but still lag behind individuals who are native born and have native parents. Within a further one to two generations it is thought that any differential is completely eliminated. This gradual process describes the assimilation of an immigrant cohort into a host country over generation. This traditional perception is illustrated by the melting pot metaphor. When considering immigration to the USA, this metaphor has been used to describe the process by which immigrants are transformed from a collection of diverse national origin groups into a homogenous population. In the early 1960s, modern sociological research argued that this metaphor did not correctly interpret the experiences of immigrants in the US.[2] These studies instead suggested that many of the cultural and economic differences among immigrant groups are transmitted to their children, so that the heterogeneity that existed among yesterday's immigrants becomes the heterogeneity found among today's population.

Studies of intergenerational relationships and transmission among immigrants are found almost exclusively based on the experiences of the US. This of course is expected due to the nature of the country's origins and its long history of playing the host to immigration; and of course it is a requirement to have many generations of immigrants in a population to carry out a conclusive analysis of intergenerational transmission.

[1] National Statistics *"Census 2001: National Report for England & Wales"*
[2] Beginning with Glazer and Moynihan (1963)

This paper analyses the intergenerational mobility of UK immigrants within an economic model of immigration. If we assume that certain aspects of an individual's characteristics can be passed on to future generations, the skill structure that makes up an initial immigrant flow will be identifiable in their children. Hence the source country characteristics that determine the earnings of the first generation should also have an influence on the labour market success of their offspring. By the same argument source country characteristics that influence national origin wage differentials in the 1st generation, should be influential on the wage differentials of the 2nd generation.

In the next section I shall discuss the relevant preceding theoretical and empirical literature on this subject, both in terms of intergenerational mobility and UK immigration. I shall then go on to develop an economic model of immigration. In the subsequent section I use 4 UK General Household Surveys (1979, 1980, 2000-01, 2001-02) to estimate wage differentials and regression models to analyse intergenerational mobility among UK immigrants. The final section summarises important findings and concludes the paper.

The question of how foreign-born residents in the UK, and their descendants differ with respect to natives[3] in terms of labour market behaviour is of great interest and importance, particularly in terms of immigration policy. The nature of immigration means that current policy will determine environment not only of immigrants arriving today, but also of their children and grandchildren, if not further generations of immigrants.

II. Literature Review

In contrast to the vast amount of literature investigating the economic status of immigrants, few studies have been carried out on the performance of their children. Some early work was however carried out by Barry Chiswick (1977) and Geoffrey Carliner (1980); separately they analysed 1970 US Census cross-sectional data in Chiswick's

[3] When referring to natives, I am defining them to be born in the UK, and with UK born parents

1977 paper "*Sons of Immigrants: Are They at an Earnings Disadvantage?"* [4] And Carliner's 1980 paper *"Wages, Earnings, and Hours of First, Second and Third Generation American Males."* [5]

In 1977, Chiswick is the first to formally discuss the possible advantages and disadvantages faced by 2nd generation immigrants in terms of labour market performance. He suggests that advantages may be acquired from ones parents (either through inheritance or environment) from the selectivity bias in migration. Carliner expands on this by explaining why immigrants are more highly motivated than natives, in terms of migrants implicitly having above average motivation among people in their home country. Then making the assumption that all humans have the same average level of motivation regardless of national origin, consequently immigrants are more motivated than non-migrants in their host country. Carliner then goes on to construct a model for the transmission of motivation across generations:

$$\text{Log } M_{gi} = (g-1) \log \rho + \log M_{1i} + \omega_{gi}$$

Where M_{gi} is motivation of person i of the g^{th} generation, M_{1i} is the motivation of the first generation ancestor of individual i, ρ is the fraction of motivation which parents can pass on to children ($0<\rho<1$) and is assumed constant across all generations. ω_{gi} is a random stochastic variable[6]. In a cross-section where individuals are members of different generations, g becomes a variable and the expected value of M_{gi} is a function of generation, where $M_g'<0$, since $\log \rho<1$. Thus the second generation as well as the first will have above average motivation, however after a few generations a regression to the mean will occur, and the grandchildren of immigrants will have the same motivation as the rest of the population.

In terms of possible disadvantages faced by immigrants Chiswick discusses being brought up and educated in an environment less familiar with US language, customs and institutions; as well as possible discrimination in terms of wages, employment or union membership. Carliner discusses these issues in more detail; in terms of education he

[4] Chiswick, BR, *"Sons of Immigrants: Are They at an Earnings Disadvantage?"* American Economic Review, Papers and Proceedings 67 (Febuary 1977): pp 879-921

[5] Carliner, G, *"Wages, Earnings, and Hours of First, Second and Third Generation American Males."* Economic Inquiry 18 (January 1980): pp 376-80

[6] Mean zero, finite variance and zero correlation across generations

points out that the aspect of schooling 'quality' must consider the ease by which immigrants can transfer skills and credentials to the US labour market. He also touches on the assimilation process over time, whereby as time spent in the US increases, immigrants increase their knowledge of US language, customs and labour market. Both Chiswick and Carliner qualify their arguments by stating that the net effect of the advantages and disadvantages is uncertain

In terms of empirical results, Chiswick (1970) examined the effect of foreign-born parentage on the earnings of native-born white men of working age, while controlling for labour market experience and socio-economic factors such as education, marriage, region of employment and language. Carliner (1980) examined the impact of being an immigrant of a given generation and national origin on labour market performance across 8 ethnic groups controlling for age and socio-economic factors such as language, marriage, education, and region of employment.

Chiswick found that second generation white men differed very little from white native men; he concludes that "If there is any discrimination against second generation Americans it appears to be overcome by other factors." He goes on to suggest that such factors may be associated with the characteristics of the 1st generation, but that such positive influences on labour market performance regress to the mean from one generation to the next. Carliner's finding are of much greater interest in that his work suggests that other things being equal first generation immigrants earn less than the second, but the second generation earn more than the third[7]. He goes on to state "these findings are consistent with the hypothesis that increases in US specific human capital over generations are offset by decreases in motivation." Carliner is the first to distinguish between national origin groups in terms of the coefficients for age and socio-economic coefficients.

Barry Chiswick also carried out a study of UK immigrants based on 1971 Census data[8], his main findings concern immigrants as a whole with little distinction between

[7] The third generation include all US born persons with US born parents, that belong to a given ethnic group

[8] Chiswick, BR, *"The Earnings of White and Coloured Male Immigrants in Britain."* Economica 47(185) (Febuary 1980): pp 81-87

generations allowed due to their very small presence in the population at that time. Only 8 men out of a sample of 5,578 are identified as "coloured men who are native born." In his conclusions Chiswick states, "Although the sample of native-born coloured is small, the data suggests they (the 2nd generation) are at a much smaller earnings disadvantage than foreign-born coloured men."

In 1993 George Borjas[9] put forward an argument explaining that any conclusions made from cross-sectional datasets (as the early works of Chiswick and Carliner were) are premature. Borjas stated that the inferences about the path of immigrant earnings over generations were made from cross sectional analysis based on a single snapshot of the population. In any given cross-section family ties among generations identifiable in the data are questionable. At the time of the survey, members of the first generation that have just arrived in the host country cannot possibly have any native born descendants employed in the labour market. It is also unlikely that those identified as 3rd generation workers in Carliner's study are direct descendants of immigrants in the given Census cross-section, after all this would require these working age 3rd generation persons to have grandparents still in employment.[10] Obviously as a result of these problems it is very difficult to make any inferences about intergenerational mobility experienced by the 3rd generation in the United States. Cross-sectional analysis does however allow the study of mobility between the first and second generation, however any discussion must ensure that immigrants have been in the country long enough to have children of working age in the second generation.

The use of intercensal tracking overcomes this problem, the use of such analysis allows for a more robust comparison of second-generation workers, with the labour market performance of their parents' generation. Borjas uses 1940, 1950, 1960 and 1970 US Census to analyse intergenerational mobility. Although a crude method of ensuring familial links across generations; it seems reasonable to consider a parental 1st generation group to be foreign born workers who have been in the US at least 5 years in 1950 for

[9] Borjas, GJ, *"The Intergenerational Mobility of Immigrants,"* Journal of Labour Economics 11(1) (1993): pp 113-135

[10] In fact the 3rd generation workers are a diverse collection of workers whose family presence in the US could vary from 40 to 400 years.

example, while considering the 2nd generation group to be workers with foreign born parents in 1970.[11]

Having made the above identification Borjas finds that there is a significant relationship between the earnings of first and second generations. His findings also suggest some regression towards the mean across generations. The analysis further indicates the wage of 2nd generation ethnic groups depends on the wage of the 1st generation national origin group. Borjas also investigated whether the home country characteristics which influenced initial immigration decisions, were still influential on the labour market performances of the 2nd generation American born. He found that there was strong evidence to suggest that these characteristics still had some bearing on the earnings of the children of immigrants.

III. Model Development

For the purpose of my analysis of intergenerational mobility in the UK I am using the model laid out in Borjas (1993)[12]. In this model he explains the migration decision faced by the first generation in a two country model, firstly when they consider the maximisation of only their own income; and then when they consider the maximisation of dynastic income: the income stream gathered by their descendants.

[11] The reference of being in the US for 5 years is just one example of a definition for parental generation; Borjas investigate a large number of definitions in terms of age groups and years since arrival in US.

[12] Borjas, GJ, *"The Intergenerational Mobility of Immigrants,"* Journal of Labour Economics 11(1) (1993): pp 113-135

The 1st generation workers live in country x and consider migrating to country y (in this case the UK). The log income distributions facing this group of people in each country are given by:

$$\log I_{x1} = \mu_{x1} + \eta v_1 \qquad (1)$$

and

$$\log I_{y1} = \mu_{y1} + v_1 \qquad (2)$$

Where I_{x1} and I_{y1} are the incomes in the source country and the UK respectively. μ_{x1} is the population mean of the income distribution in the source country for the first generation, while μ_{y1} is the mean income faced by this generation of people should all persons in the source country migrate to the UK. Note in general, the parameter μ_{y1} will differ from the mean income faced by natives of the UK. Furthermore, the parameter μ_{y1} will differ across national origin groups due to the dispersion of skills among different groups. The continuous variable v_1 measures individual-specific deviations from the mean incomes in the first generation and has finite variance; it can be seen to reflect individual skill levels.

The form of equations (1) and (2) assume that v_1 determines individual earnings in either country, up to a factor of proportionality η. This factor can be interpreted as the relative rate of return to skills in the source country, to the rate of return in the UK[13]. Assume that the costs associated with migrating (C) are always a fixed fraction an individuals earnings in the source country (λ).

In this initial case assume that the 1st generation's objective is to maximise its own income, individuals migrate if the following function is greater than zero:

$$M = \log (I_{y1} + C) \approx (\mu y1 - \mu x1 - \lambda) + (1-\eta)v_1 \qquad (3)$$

where $\lambda = C/I_{x1}$

If we define an immigrant flow to be positively selective when it has above-average skill levels, i.e.:

$$E(v_1 | M>0) > 0 \qquad (4)$$

[13] It can also be interpreted as the ratio of the standard deviation in income between the two countries.

And define negatively selective to be the converse:

$$E(v_1 | M>0) < 0 \qquad (5)$$

We can infer from (3) that the immigration flow will be positively selective when $\eta<1$, and negatively selective when $\eta>1$, i.e. higher skilled workers look to migrate to countries where they will receive relatively higher labour market rewards for their skills.

In this model, skills are passed on from generation (t-1) to generation t according to the Markov equations:

$$v_{xt} = \alpha_{xt} + \delta_x v_{x(t-1)} + \varepsilon_{xt} \qquad (6)$$

and

$$v_{yt} = \alpha_{yt} + \delta_y v_{y(t-1)} + \varepsilon_{yt} \qquad (7)$$

for $t>1$

Where v_{it} gives the individual skill variable an individual of the t^{th} generation in country i. δ_x and δ_y can be interpreted as the ratio of intergenerational transmission and differ across countries, this captures the degree to which countries are "open" or "closed".

$$0<\delta_i<1$$

$i= x,y$

Western industrialised countries such as the UK are widely considered to be "open," in terms of generational skill transmission. Hence δ_y would be expected to be small, and there would be a faster regression to the mean across generations, than a more "closed" country. The random variables ε_{xt} and ε_{yt} have mean zero and finite variances, they are distributed independently of skill and are uncorrelated over time.

The income distributions for the t^{th} generation are known by the first generation and can be described by:

$$\log I_{xt} = \mu_{xt} + \eta v_{xt}$$
$$= \mu_{xt} + \eta(\alpha_{xt} + \delta_x v_{x(t-1)} + \varepsilon_{xt}) \qquad (8)$$

and

$$\log I_{yt} = \mu_{yt} + \eta v_{yt}$$
$$= \mu_{yt} + \eta(\alpha_{yt} + \delta_y v_{y(t-1)} + \varepsilon_{yt}) \qquad (9)$$

Where the relative rate of return for skills η is assumed constant across generations; while μ_{xt} and μ_{yt} vary as the assimilation process could affect future income opportunities in the UK for following generations, or due to international differences in rates of economic growth.

Maximisation of dynastic income for the first generation would require the comparison of income streams across both countries. As these streams are determined by stochastic shocks in the transmission process, ε_{xt} and ε_{yt}, which cannot possibly be anticipated by individuals in the first generation, the migration decision is based upon the comparison the expected present values for future incomes. First generation agents choose whichever dynastic income stream has the highest expected value net of migration costs.

As a first order approximation, individuals migrate to the UK when:

$$v_1 \left(1 - \eta \frac{[1 + r - \delta_y]}{[1 + r - \delta_x]}\right) > D \qquad (10)$$

Where D is a constant, and r is the generational rate of discount.

Consider the case where both countries exhibit the same extent of regression towards the mean over generations: $\delta_x = \delta_y$. Just as in the single-generation model, it can be implied from equation (10) that positive selection will be observed when $\eta<1$, where as negative selection will be observed when $\eta>1$.

In the case where $\delta_x \neq \delta_y$ i.e. there are differences in the transmission process across both countries, if we consider the case where the rate of return for skills is equal across both countries, i.e. $\eta=1$; then equation (10) indicates highly skilled workers will chose to reside in the country with the highest δ, where there skills can be easily transferred to their children. Where as unskilled workers will be indifferent in terms of expected future incomes, by moving to a country where skills are not easily transferable to their children, and so future earnings are mainly determined by random shocks from the distribution of ε_y. We can deduce from this model that (given $\eta=1$) the UK will attract highly skilled workers from more "open" countries and unskilled workers from more "closed" countries.

In terms of my study of intergenerational mobility in the UK the key insight provided by this framework is that the relative rate of return in the source country determines the type of selection that characterises both the immigrant population and their offspring. National

origin groups that do well in the first generation will tend to do well in the subsequent generations; in the same way the descendants of national origin group that do poorly will tend to do poorly. Of course the main determinant of intergenerational mobility is the δ_y, estimates of this parameter are made in section V.

IV. Data and Descriptive Analysis

The empirical section of this paper analyses data from four UK General Household Surveys (GHS): 1979, 1980, 2000-2001 and 2001-2002. These surveys can be grouped into two periods: 1979-80, and 2000-2002. The GHS has the vital feature that it lists an individual's country of birth, and the birthplace of their parents.

Analysis is restricted to men over the age of 18, who had terminated their education, and were in full-time employment. The data allows the identification of 2 distinct generations of UK immigrants: the 1st generation who were not born in the UK, and the 2nd generation who were born in the UK but had at least one foreign born parent. The remaining individuals will be considered to be "native;" although it is entirely possible that they are higher generation immigrants, there is no way to identify their ethnic back ground in terms of country of origin.

The first section of figure 1 shows the estimated mean log earnings (per week) for groups of 1st and 2nd generation immigrants in each of the GHS periods. These means have been differenced by the mean values observed among native individuals. Two survey years have been used in each period to increase the number of observations (nobs) for immigrant groups. I shall later explain how I accounted for yearly wage inflation within each period when I discuss the composition of an adjusted log earnings variable.

Figure 1 Log Earnings Differentials 1st & 2nd Generation Immigrants relative to natives

	1980			2000		
	nobs	Differential	*t Ratio*	nobs	Differential	*t Ratio*
1. Unadjusted Earnings						
1st Generation						
All	1148	0.2081	*9.722*	787	-0.0611	*-1.305*
More than 5 years in UK	1035	0.2161	*9.656*	649	-0.0710	*-0.013*
Less than 5 years in UK	113	0.1016	*1.351*	138	-0.0146	*-1.392*
5-10 years in UK	129	0.2490	*5.806*	81	0.0467	*0.034*
10-20 years in UK	403	0.2464	*7.554*	132	-0.0881	*-0.075*
More than 20 years in UK	425	0.1729	*4.593*	470	-0.0746	*0.047*
2nd Generation	665	0.1015	*3.501*	762	0.0474	*1.954*
2. Adjusted Earnings						
1st Generation						
All	1148	0.1981	*15.866*	787	0.1432	*8.291*
More than 5 years in UK	1035	0.1683	*3.529*	649	0.2461	*6.717*
Less than 5 years in UK	113	0.2024	*15.541*	138	0.1213	*6.347*
5-10 years in UK	129	0.2048	*6.147*	81	0.2776	*6.729*
10-20 years in UK	403	0.2212	*11.447*	132	0.2035	*5.537*
More than 20 years in UK	425	0.1758	*8.297*	470	0.0814	*3.535*
2nd Generation	665	0.0952	*6.310*	762	0.0879	*5.571*

Adjusted earnings differentials take account of differences in education, age, region, inter-periodic earnings increase, and sector of employment. Details of regression used to estimate this variable is given in the appendix. There were 10345 native observations in 1980, and 10823 in 2000.

The GHS enables the identification of the time since arrival in the UK, and hence the summary statistics for a number of immigrant cohorts can be calculated.

The data suggests that all immigrants had an earnings advantage over natives in 1980, those who arrived in the UK between 1960 and 1975 earned nearly 25% more, while immigrants that arrived before 1960 earned on average 17.2% more. These statistics seem extremely surprising, however if we use Carliner's hypothesis of immigrants facing the advantage of having above average motivation, while facing several possible

disadvantages. It would seem that the above average motivation of immigrants out weighed any disadvantages.[14]

There seems to have been a fundamental change in the labour market performance of arriving immigrants in the 20 years following 1980, not a single 1st generation differential in 2000 is significant. This would seem to suggest that immigrants that arrived in this period on average earned the same as natives in 2000.[15]

In terms of the 2nd generation, both differentials are positive, with UK born individuals with foreign-born parents earning 10% more than natives in 1980 and 4.7% more in 2000. As discussed in the literature review, in terms of intergenerational mobility, comparing the 1st and 2nd generation in a single cross-section can be misleading as any familial connections will be tenuous. However the crude comparison of the 2nd generation in 2000 to their parents' generation in 1980 indicates that the earnings advantage declines substantially from a differential of 21% among the 1st generation in 1980, to only 4.7% among the 2nd generation in 2000.

Section 2 of figure 1 presents the respective wage differentials after controlling for the demographic and socio-economic factors age, area and sector of employment, education, and wage inflation between surveys in the same period. A regression was estimated of log earnings on age, the square of age, terminal age of education, a dummy variable equal to one if region of residence is London or the South East, dummy variables for sector of employment, and a dummy variable to take account of the survey year the individual belonged to. One regression was run for each period, and the predicted values of log earnings were calculated for each individual. These predicted values were then used to calculate mean earnings differentials.

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[14] In fact in a study of the performance of immigrants between 1973 and 1992, Brian Bell (1997) found that "there is a significantly higher level of schooling attained by immigrants relative to natives… (Which) has risen over successive cohorts primarily because of changes in the national origin of cohorts." He goes on to break down the composition of the immigrant population in 10 year periods, between 1960 and 1979 the majority of immigrants originated from new-Commonwealth countries, in contrast to immigrants from European states pre 1960. This is as a result of Commonwealth citizens being given the status of British subjects in the 1948 British Nationality Act. It would seem reasonable to infer that immigrants from these new-Commonwealth countries, whose modern foundations were put in place by the British Empire, would not be at a major disadvantage to natives in terms of their knowledge of UK institutions and customs.

[15] It is vital to note however, that the above comparisons may are contaminated by periodic effects. In this discussion we implicitly assume that periodic effects, such as the impact of business cycle fluctuations on

Having taken into account the above factors, the earnings advantage of immigrants in 1980 reduced marginally, the differentials for immigrants in 2000 on the other hand, all become significant, and positive. In fact the advantages experienced by immigrants in 2000 mirror that of immigrants in 1980[16].

In terms of the adjusted earnings differentials, again a reduction in the earnings advantage of the 2nd generation to their parents can be identified, with the 1st generation in 1980 earning 19.8% more than natives, while the 2nd generation in 2000 only earn 8.79% more. Both unadjusted and adjusted differentials suggest some regression towards mean native earnings over generation.

The inter-period link between parents and children can be improved further by focussing on workers within certain age groups. For example the children of immigrants who are 45-64 are likely to be relatively old in 2000, while the children of immigrants who are 20-44 in 1980 are likely to be relatively younger[17]. Figure 2 shows the log earnings and adjusted log earnings differentials for men aged 20-44, 45-64, and 20-64 in 1980 and 2000. The unadjusted differential suggest that the advantage of younger immigrants (relative to younger natives) reduces over generation from 28% in the 1st generation to 23% in the second, while the advantage of older immigrants increases slightly from 22% to 24%. When socio-economic factors are taken into account, the relationship between the 1st and 2nd generations returns to that in figure 1; refining the data in this way does not change the implications that there is a regression towards mean native earnings over generations.

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log earnings, are the same for natives, and all immigrants. Hence relative wages are do not vary over the business cycle.

[16] In terms of the history of British immigration and policy, since the 1971 immigration act where by Commonwealth citizens were placed on the same level as other foreign nationals; the only region where citizens have unrestricted right to migrate to this country is the EU. And so the composition of new immigrants will be made up of a significant number of Europeans, moreover during the 1990s, there has been significant migration of workers to the UK to fill skill shortages in the health service and other sectors of the economy, such as technology, that experience huge growth over the 90s.

[17] Assuming that most children are born while their parents are in their twenties

Figure 2 Differentials in Log Earnings by Age Groups, Relative to Natives

	1st Generation in 1980		2nd Generation 2000	
1. Unadjusted Wages				
20-44	0.2795	*8.2390*	0.2298	*8.2909*
45-64	0.2216	*5.4476*	0.2421	*6.7166*
25-64	0.2584	*9.9937*	0.2107	*6.3471*
2. Adjusted Wages				
20-44	0.2800	*16.0572*	0.1279	*5.5373*
46-64	0.1764	*8.4021*	0.1437	*6.7293*
25-64	0.2358	*17.5917*	0.1386	*5.5712*

t Ratios are in italics, Adjusted wage differentials are derived by same regression model as above

V. National Origin and Intergenerational Mobility

Studies of UK immigrants from 1973-1992 GHS by Brian Bell (1997) suggest that there is substantial divergence between the relative earnings of Indian, West Indian and White immigrants. As discussed above, skill and motivational differentials among national origin groups could describe such divergences; and the differences in characteristics between initial immigrant groups may well be transmitted to their offspring. Figure 3 reports the earnings differentials for 1st and 2nd generation workers (relative to natives) for 12 national or region groups detailed in the GHS. The ethnic origin of a second-generation individual is determined by their father's place of birth (unless only their mother is foreign born.)

Figure 3 shows a dispersion in the differentials of different immigrant groupings, 2nd generation immigrants of EU origin experience a 2% unadjusted earnings advantage over natives, where as 2nd generation immigrants of East African origin experience a 21% advantage[18].

[18] 2nd generation East African immigrants could well be an anomaly in the data, this will be discussed in more detail later.

In analysing the nature of intergenerational mobility, it is useful to compare earnings of the 1st and 2nd generation by estimating the following regression model:

$$X_{2j}(2000) = \beta_1 + \beta_2 X1j(1980) + \varepsilon_j \qquad (11)$$

Where $X_{ij}(T)$ is the mean earnings relative to natives of the i^{th} generation from source region j in period T; figure 6 reports the OLS[19] estimators of regressions using various subsets of the data..

Figure 6 Estimators from regression of 2nd Generation Differentials (2000) on 1st Generation Differentials (1980)

Intercept	*T Ratio*	b_2 (1980)	*t Ratio*	R^2	nobs	Notes
0.1270	*3.41*	-0.3788	*-1.88*	0.2608	12	All unadjusted
-0.0198	*-0.55*	0.4691	*2.29*	0.3684	11	All unadjusted drop Bangladesh
-0.0004	*-0.02*	0.1615	*1.54*	0.1910	12	All adjusted
0.6631	*4.85*	0.6631	*4.85*	0.7020	12	Men ages 44-64 Unadjusted Wages
0.0065	*0.38*	0.4611	*20.91*	0.6776	12	Men ages 44-64 Adjusted Wages
-0.0146	*-0.42*	0.7109	*4.58*	0.5771	12	Men ages 20-44 Unadjusted Wages
0.0316	*1.38*	0.4576	*19.07*	0.6732	12	Men ages 20-44 Adjusted Wages

The first row reports estimates of equation (11) using the unadjusted earnings differentials in from figure 3, the estimate of the coefficient β_2 implies a negative relationship between 2nd generation earnings potential and 1st generation potential. The second row estimates the same model, but omits Bangladesh as an outlier. As discussed above, East Africa could also be considered and outlier, however on careful consideration and due to the small number of regional groups to begin with only Bangladesh was omitted.[20]

[19] The regressions were estimated using generalised least squares, due to the dependant being an estimate of the true variable, this correction had little impact on the estimated coefficients, the OLS results are reported.

[20] In terms of primary observations, Bangladesh had no more than 5 observations in all four generations identified; this was by far the lowest amount of all groups, and its omission certainly leads to a more explainable relationship for intergenerational mobility.

In terms of the unadjusted earnings estimates, the intercept term is –0.0198 for all men and –0.0146 for the younger sample of men. In terms of Carliner's motivation hypothesis, this can be explained by a reduction in motivation levels over generations; and thus the above average motivation levels that caused the 1st generation to leave their home country and then a positive earnings differential to natives in the UK, have not been fully transmitted to their children's generation. Hence there is between a 14.6-19.8% reduction in earnings differential for the 2nd generation, this is common to all regional groups. The intercept term for the older sample of men is 0.66; the positive intercept corresponds to the increase in differential illustrated in the summary statistics (a 66% increase in earnings differential across generation seems excessively high.[21])

There is some regression towards a native level of earnings across generations, as all estimates β_2 lie between zero and one. This regression however is not strong enough for national origin to become insignificant after one generation. In terms of the estimated parameter for all men (excluding Bangladeshis) of 0.45, even after a further generation the earnings of the third generation will depend upon their grandparents.[22]

In terms of the separate estimates for young and old men, the transmission of characteristics between generations appears to be stronger. In terms of unadjusted earnings, estimates of β_2 using this distinction are significantly larger than considering all men together. As noted earlier this distinction enables a better link between parents and children in inter-period comparisons.

It is also interesting to establish if there is the same degree of mobility when earnings are adjusted for socio-economic factors. The adjusted earnings are given by the predicted values of the regressions given earlier in the paper for each period, the mean of these values are then differenced from that of natives in the same period for each regional origin group and generation. The resulting estimation based on equation (11) shows estimates of β_2 to be smaller than corresponding estimates using unadjusted wages. These estimates also have more explanatory power, with R^2 for separate age groups being over 0.67.

[21] We must consider that we have a small number of observations, and are only regressing one dependant variable. All but one estimation failed RESET tests for omitted variables. However for the purpose of analysing Intergenerational mobility this single variable regression is required.

The regressions reported in figure 6 suggest that there is a strong link between the earnings of 1st and 2nd generation workers. The intergenerational transmission parameter is sufficiently high, in effect any changes to immigration policy that alters the characteristics or skills of immigrants will also have an effect on the characteristics of their children and grandchildren.

VI. Source-Region Characteristics and Earnings

The regressions reported in figure 6 do not directly test the implications of the framework laid out in section III. A more direct test would investigate the impact of source country (regional) characteristics on the earnings of both 1st and 2nd generation workers.

In the following analysis the earnings differentials of the 1st and 2nd generation are related to a number of source region specific variables[23]; including log GDP per capita, the extent of income inequality given by the GINI coefficient[24], a dummy variable indicating if English was an official language[25], and a dummy variable equal to one if the country/ region is a member of the British Commonwealth of Nations

A key implication of the model in section III is that immigrant earnings are lower if the source country has relatively higher payoff for skills. Providing there exists some degree of intergenerational transmission, the income inequality variable should have a negative impact on both 1st and 2nd generation earnings. In terms of the GDP per capita variable, it is likely that the skills of immigrants from higher GDP per capita regions are more easily transferable to the UK labour market, generating a positive correlation between immigrant earnings and GDP per capita in the source country.

[22] Of course such discussion assumes that the transmission mechanism remains the same across generations; as it is only possible to identify two generations, it is not possible to investigate this further.

[23] A list of countries included in each region is given in Appendix

[24] In transforming log GDP and GINI variables from country indicators to region indicators, a very crude average was used. There is not sufficient information in the GHS to give specific country of origin breakdowns of immigrant numbers in the UK.

[25] In the case of regions the value of this variable was determined by the majority

Figure 7 Source-Country Characteristics and the earnings of 1st and 2nd Generation immigrants

Variable	1st Generation (1980) unadjusted		1st Generation (1980) adjusted		2nd Generation (2000) unadjusted		2nd Generation (2000) adjusted	
Intercept	0.143	*0.320*	0.324	*1.650*	0.000	*-0.390*	0.092	*1.150*
Log (per Capita)	0.000	*0.590*	0.000	*-0.940*	0.000	*-0.390*	0.000	*-1.270*
Income inequality	0.000	*0.000*	-0.001	*-0.350*	-0.001	*-0.190*	-0.001	*-0.970*
English	0.013	*0.110*	0.003	*0.070*	0.116	*1.620*	0.000	*-0.020*
Commonwealth	-0.087	*-0.580*	-0.056	*-0.860*	-0.093	*-1.020*	-0.013	*-0.560*
1st gen. earnings 1980					-0.347	*-1.560*	0.097	*0.750*
R^2	0.163		0.178		0.547		0.386	
Nobs	12		12		12		12	

t-Ratios in italics, the log GDP per Capita in the source country is for 2000, income inequality is given by the GINI coefficient for the source country in 2000.

Figure 7 gives the estimators of coefficients on the source-country indicator variables. In the first generation (1980,) the variables do not explain a significant proportion of the variance in the earnings differentials, with R^2 values of less than 0.18, in fact the adjust R^2 values indicated even less significance. All variables are also statistically insignificant. The explanatory power of the models improves when we consider the 2nd generation (2000), and a variable for the mean log earnings differential experienced by the 1st generation (1980) is included, however the adjusted R^2 values for these regressions also indicated a low explanatory power. All four regressions failed RESET tests for omitted relevant variables.

Problems arise in this analysis due to the mean estimation of indicators by region, where there exists significant variance in log GDP per capita and GINI coefficient variables within regions. Hence these variables cannot be used to represent the source country characteristics that the average UK immigrant of region j experienced. Hence, firstly no relationship between variables and labour market performance can be identified; secondly these aggregations do not reflect the real source country characteristics that influenced the migration decisions of the 1st generation.

VII. Summary

This paper presented an analysis of the intergenerational mobility of immigrants in the UK. Providing there exists some transmission process across generations, the factors and skills that determine the migration decision of the 1st generation will be reflected in their descendants. Thus the source country factors that determine the labour market experiences of foreign-born workers, reflected by the dispersion of success between national origin groups, will influence the experiences of their children. Thus current policy in regards immigration determines future differences in the labour market.

The empirical analysis used two periods of GHS data, allowing the identification of 2 distinct generations of immigrants. The data suggests a significant relationship between the earnings of the 1st generation and the 2nd. There is also evidence to suggest that there is a degree of regression towards the earning levels of natives over generation. The analysis also clearly indicates that the wage of 2nd generation ethnic groups crucially depends on the wage of the 1st generation national group.

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Appendix I

Regression output for adjust earnings in 1980

fit lpayweek age age2 TEA dagric demp1 darm dGHS southeast

```
      Source |       SS       df       MS              Number of obs =   12158
-------------+------------------------------           F(  8, 12149) =  347.83
       Model |  1269.21664     8   158.65208           Prob > F      =  0.0000
    Residual |  5541.37224 12149   .45611756           R-squared     =  0.1864
-------------+------------------------------           Adj R-squared =  0.1858
       Total |  6810.58888 12157  .560219534           Root MSE      =  .67536

------------------------------------------------------------------------------
    lpayweek |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         age |   .0489499   .0027846    17.58   0.000     .0434916    .0544081
        age2 |  -.0006052   .0000348   -17.39   0.000    -.0006735    -.000537
         TEA |   .0148829   .0017372     8.57   0.000     .0114777     .018288
      dagric |  -.6232242   .0232556   -26.80   0.000     -.668809   -.5776395
       demp1 |   .5476561   .0195624    28.00   0.000     .5093106    .5860015
     dservice |    .634485   .1144399     5.54   0.000     .4101646    .8588054
        dGHS |   .2195167   .0237804     9.23   0.000     .1729034    .2661301
   southeast |   .1273472   .0142379     8.94   0.000     .0994385    .1552558
       _cons |   2.883453   .0576356    50.03   0.000     2.770478    2.996428
------------------------------------------------------------------------------
```

lpayweek – log weekly earnings
age – age
age2 – age^2
TEA – Terminal Age of Education
Dagric – equal to one if employed in agriculture
Demp1- equal to one if employed in management, self employed with high earnings, or professional
Dservice – equal to one if employed in service sector
Sample group employed in manual sector
Southeast – equal to one if live in London or Southeast
DGHS equal to one if survey year is 1980, equal to zero if 1979

```
. ovtest, rhs
(note:  age2 dropped due to collinearity)
(note:  age2^2 dropped due to collinearity)

Ramsey RESET test using powers of the independent variables
      Ho:  model has no omitted variables
           F(8, 12142) =     93.36
```

```
              Prob > F =      0.0000

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of lpayweek

        chi2(1)      =   279.52
        Prob > chi2  =   0.0000
```

Regression output for adjust earnings in 1980

```
------ fit  lgrind age age2 tea demp1 dsmanual dagric southeast dGHS

      Source |       SS       df       MS              Number of obs =    9989
-------------+------------------------------           F(  8,  9980) =  224.75
       Model |  1823.37198     8  227.921498            Prob > F      =  0.0000
    Residual |  10120.7792  9980  1.01410613            R-squared     =  0.1527
-------------+------------------------------           Adj R-squared =  0.1520
       Total |  11944.1512  9988  1.19585014            Root MSE      =   1.007

------------------------------------------------------------------------------
      lgrind |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         age |   .0835252   .0048363    17.27   0.000     .0740451    .0930052
        age2 |  -.0009692   .0000543   -17.84   0.000    -.0010757   -.0008628
         tea |   .0266181   .0034319     7.76   0.000     .0198909    .0333452
       demp1 |   .3265646   .0286901    11.38   0.000     .2703262    .3828029
    dsmanual |  -.2180609   .0278096    -7.84   0.000    -.2725734   -.1635484
      dagric |  -.6264253   .0342641   -18.28   0.000    -.6935899   -.5592607
   southeast |   .1474726   .0233878     6.31   0.000     .1016279    .1933173
        dGHS |   .0800604   .0202464     3.95   0.000     .0403733    .1197475
       _cons |   3.570305   .1187716    30.06   0.000     3.337489    3.803121
------------------------------------------------------------------------------
```

lgrind – log weekly earnings
age – age
age2 – age^2
TEA – Terminal Age of Education
Dagric – equal to one if employed in agriculture
Demp1- equal to one if employed in management, self employed with high earnings, or professional
Dmanual – equal to one if employed in manual labour

Sample group employed in service sector
Southeast – equal to one if live in London or Southeast
DGHS equal to one if survey year is 1980, equal to zero if 1979

. ovtest, rhs
(note: age2 dropped due to collinearity)
(note: age2^2 dropped due to collinearity)

Ramsey RESET test using powers of the independent variables
Ho: model has no omitted variables
F(8, 9973) = 54.28
Prob > F = 0.0000

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of lgrind

chi2(1) = 27.10
Prob > chi2 = 0.0000

Appendix II: Regression for figure 6

All men, unadjusted earnings

```
fit  _2nd_generation__2000__unadjuste _1st_generation__1980__unadjuste

      Source |       SS       df       MS              Number of obs =      12
-------------+------------------------------           F(  1,    10) =    3.53
       Model |  .032034651     1  .032034651           Prob > F      =  0.0897
    Residual |  .090784289    10  .009078429           R-squared     =  0.2608
-------------+------------------------------           Adj R-squared =  0.1869
       Total |  .122818939    11  .011165358           Root MSE      =  .09528

------------------------------------------------------------------------------
_2nd_gener~e |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_1st_gener~e |  -.3787698   .2016372    -1.88   0.090    -.8280456    .0705059
       _cons |   .1270316   .0372113     3.41   0.007     .0441197    .2099435
------------------------------------------------------------------------------

. ovtest

Ramsey RESET test using powers of the fitted values of _2nd_generation__2000__u
> nadjuste
       Ho:  model has no omitted variables
                 F(3, 7) =      6.50
               Prob > F =      0.0196

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of _2nd_generation__2000__unadjuste

         chi2(1)      =     2.18
         Prob > chi2  =   0.1402
```

All men, unadjusted earnings [Bangladesh omitted]

```
fit  _2nd_generation__2000__unadjuste _1st_generation__1980__unadjuste

      Source |       SS       df       MS              Number of obs =      11
-------------+------------------------------           F(  1,     9) =    5.25
       Model |  .014346605     1  .014346605           Prob > F      =  0.0477
    Residual |   .02459686     9  .002732984           R-squared     =  0.3684
-------------+------------------------------           Adj R-squared =  0.2982
       Total |  .038943464    10  .003894346           Root MSE      =  .05228

------------------------------------------------------------------------------
_2nd_gener~e |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_1st_gener~e |   .4691339    .204758     2.29   0.048     .0059392    .9323286
       _cons |  -.0198035   .0361541    -0.55   0.597    -.1015897    .0619826
------------------------------------------------------------------------------

. ovtest

Ramsey RESET test using powers of the fitted values of _2nd_generation__2000__u
> nadjuste
       Ho:  model has no omitted variables
                 F(3, 6) =      1.09
                 Prob > F =      0.4216

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of _2nd_generation__2000__unadjuste

         chi2(1)      =     3.31
         Prob > chi2  =   0.0689
```

All men adjusted earnings

```
fit  _2nd_generation__2000__adjusted _1st_generation__1980__adjusted

      Source |       SS       df       MS              Number of obs =      12
-------------+------------------------------           F(  1,    10) =    2.36
       Model |  .001103852     1  .001103852           Prob > F      =  0.1554
    Residual |  .004675738    10  .000467574           R-squared     =  0.1910
-------------+------------------------------           Adj R-squared =  0.1101
       Total |   .00577959    11  .000525417           Root MSE      =  .02162

------------------------------------------------------------------------------
_2nd_gener~d |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_1st_gener~d |   .1614787   .1050957     1.54   0.155    -.0726891    .3956464
       _cons |  -.0004103   .0211204    -0.02   0.985    -.0474694    .0466489
------------------------------------------------------------------------------

. ovtest

Ramsey RESET test using powers of the fitted values of _2nd_generation__2000__a
> djusted
       Ho:  model has no omitted variables
                 F(3, 7) =      0.87
                Prob > F =      0.5000

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of _2nd_generation__2000__adjusted

         chi2(1)      =     0.46
         Prob > chi2  =   0.4981
```

Men Aged 44-64 Unadjusted Earnings

```
. fit  _2nd_generation__2000__unadjuste _1st_generation__1980__unadjuste

      Source |       SS       df       MS              Number of obs =      12
-------------+------------------------------           F(  1,    10) =   23.55
       Model |  .065045357     1  .065045357           Prob > F      =  0.0007
    Residual |  .027614263    10  .002761426           R-squared     =  0.7020
-------------+------------------------------           Adj R-squared =  0.6722
       Total |   .09265962    11  .008423602           Root MSE      =  .05255

------------------------------------------------------------------------------
_2nd_gener~e |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_1st_gener~e |   .6630601   .1366191     4.85   0.001     .3586538    .9674665
       _cons |  -.0197853   .0318487    -0.62   0.548    -.0907486     .051178
------------------------------------------------------------------------------

. ovtest

Ramsey RESET test using powers of the fitted values of _2nd_generation__2000__u
> nadjuste
       Ho:  model has no omitted variables
                 F(3, 7) =      1.33
                 Prob > F =      0.3396

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of _2nd_generation__2000__unadjuste

         chi2(1)      =     0.92
         Prob > chi2  =   0.3375
```

Men aged 44-64 Adjusted Earnings

```
fit _2nd_generation__2000__adjusted _1st_generation__1980__adjusted

      Source |       SS       df       MS              Number of obs =      12
-------------+------------------------------           F(  1,    10) =  437.03
       Model |  1.15427252     1  1.15427252           Prob > F      =  0.0000
    Residual |  .026411913    10  .002641191           R-squared     =  0.6776
-------------+------------------------------           Adj R-squared =  0.9754
       Total |  1.18068443    11  .107334948           Root MSE      =  .05139

------------------------------------------------------------------------------
_2nd_gener~d |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_1st_gener~d |    .461069   .0220552    20.91   0.000     .4119269    .5102111
       _cons |   .0064813    .017274     0.38   0.715    -.0320076    .0449702
------------------------------------------------------------------------------

. ovtest

Ramsey RESET test using powers of the fitted values of _2nd_generation__2000__a
> djusted
       Ho:  model has no omitted variables
                 F(3, 7) =      3.13
                Prob > F =      0.0970

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of _2nd_generation__2000__adjusted

         chi2(1)      =     0.28
         Prob > chi2  =   0.5943
```

Men Aged 24-44 Unadjusted Earnings

```
fit  young_2nd_generation__2000__unad young_1st_generation__1980__unad

      Source |       SS       df       MS              Number of obs =      12
-------------+------------------------------           F(  1,    10) =   20.97
       Model |  .080110361     1  .080110361            Prob > F      =  0.0010
    Residual |  .038208297    10   .00382083           R-squared     =  0.5771
-------------+------------------------------           Adj R-squared =  0.6448
       Total |  .118318658    11  .010756242           Root MSE      =  .06181

------------------------------------------------------------------------------
young_2nd_~d |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
young_1st_~d |   .7108731   .1552482     4.58   0.001     .3649586    1.056788
       _cons |  -.0146027   .0345675    -0.42   0.682    -.0916238    .0624184
------------------------------------------------------------------------------

. ovtest

Ramsey RESET test using powers of the fitted values of young_2nd_generation__20
> 00__unad
       Ho:  model has no omitted variables
                 F(3, 7) =      1.47
                Prob > F =      0.3022

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of young_2nd_generation__2000__unad

         chi2(1)      =     2.86
         Prob > chi2  =   0.0906
```

Men Aged 24-44 Adjusted Earnings

```
      Source |       SS       df       MS              Number of obs =      12
-------------+------------------------------           F(  1,    10) =  363.66
       Model |  1.82128932     1  1.82128932           Prob > F      =  0.0000
    Residual |  .050082291    10  .005008229           R-squared     =  0.6732
-------------+------------------------------           Adj R-squared =  0.9706
       Total |  1.87137161    11  .170124692           Root MSE      =  .07077

------------------------------------------------------------------------------
young_2nd_~u |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
young_1st_~u |   .4576348   .0239978    19.07   0.000     .4041643    .5111053
      _cons |   .0315865   .0228676     1.38   0.197    -.0193656    .0825387
------------------------------------------------------------------------------

. ovtest

Ramsey RESET test using powers of the fitted values of young_2nd_generation__20
> 00__adju
       Ho:  model has no omitted variables
                 F(3, 7) =      0.47
                 Prob > F =      0.7147

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of young_2nd_generation__2000__adju

         chi2(1)      =     0.33
         Prob > chi2  =   0.5634
```

Appendix III: Source Country Characteristics

1st Generation (1980) Unadjusted Earnings

```
. fit  _1st_generation__1980__unadjuste gdp_capita gini english commonwealth__e
> u__

      Source |       SS       df       MS              Number of obs =      12
-------------+------------------------------           F(  4,     7) =    0.34
       Model |  .036448222     4  .009112055           Prob > F      =  0.8421
    Residual |  .186841746     7  .026691678           R-squared     =  0.1632
-------------+------------------------------           Adj R-squared = -0.3149
       Total |  .223289968    11  .020299088           Root MSE      =  .16338

------------------------------------------------------------------------------
_1st_gener~e |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  gdp_capita |    .000012   .0000204     0.59   0.574    -.0000362    .0000602
        gini |  -8.30e-06   .0098602    -0.00   0.999    -.0233239    .0233073
     english |   .0129473   .1217626     0.11   0.918    -.2749754      .30087
commonweal~_ |  -.0872985   .1510124    -0.58   0.581    -.4443861     .269789
       _cons |   .1431101   .4541937     0.32   0.762    -.9308873    1.217107
------------------------------------------------------------------------------

. ovtest

Ramsey RESET test using powers of the fitted values of _1st_generation__1980__u
> nadjuste
       Ho:  model has no omitted variables
                 F(3, 4) =      0.09
                 Prob > F =      0.9615

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of _1st_generation__1980__unadjuste

         chi2(1)      =     3.67
         Prob > chi2  =   0.0554
```

1st Generation (1980) Adjusted Earnings

```
fit _1st_generation__1980__adjusted gdp_capita gini english commonwealth__eu
> __

      Source |       SS       df       MS              Number of obs =      12
-------------+------------------------------           F(  4,     7) =    0.38
       Model |  .007532252     4  .001883063           Prob > F      =  0.8174
    Residual |  .034800887     7  .004971555           R-squared     =  0.1779
-------------+------------------------------           Adj R-squared = -0.2918
       Total |  .042333139    11  .003848467           Root MSE      =  .07051

------------------------------------------------------------------------------
_1st_gener~d |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  gdp_capita |  -8.24e-06   8.79e-06    -0.94   0.380     -.000029    .0000125
        gini |  -.0014942   .0042554    -0.35   0.736    -.0115567    .0085683
     english |   .0034274   .0525499     0.07   0.950    -.1208334    .1276882
commonweal~_ |  -.0561415   .0651735    -0.86   0.418    -.2102523    .0979692
       _cons |   .3237349   .1960195     1.65   0.143    -.1397775    .7872474
------------------------------------------------------------------------------

. ovtest

Ramsey RESET test using powers of the fitted values of _1st_generation__1980__a
> djusted
       Ho:  model has no omitted variables
                 F(3, 4) =      0.15
                 Prob > F =      0.9242

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of _1st_generation__1980__adjusted

         chi2(1)      =     0.68
         Prob > chi2  =   0.4108
```

2nd Generation 2000 (Unadjusted)

```
fit _2nd_generation__2000__unadjuste gdp_capita gini english commonwealth__e
> u__ _1st_generation__1980__unadjuste

      Source |       SS       df       MS              Number of obs =      12
-------------+------------------------------           F(  5,     6) =    1.45
       Model |  .067196369     5  .013439274           Prob > F      =  0.3292
    Residual |   .05562257     6  .009270428           R-squared     =  0.5471
-------------+------------------------------           Adj R-squared =  0.1697
       Total |  .122818939    11  .011165358           Root MSE      =  .09628

------------------------------------------------------------------------------
_2nd_gener~e |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  gdp_capita |  -4.83e-06   .0000123    -0.39   0.708    -.0000349    .0000253
        gini |  -.0011155   .0058109    -0.19   0.854    -.0153344    .0131034
     english |   .1164693   .0718168     1.62   0.156    -.0592601    .2921987
commonweal~_ |  -.0933414   .0910965    -1.02   0.345    -.3162464    .1295636
_1st_gener~e |  -.3469073   .2227476    -1.56   0.170    -.8919509    .1981363
       _cons |   .1926772   .2695635     0.71   0.502     -.466921    .8522754
------------------------------------------------------------------------------

. ovtest

Ramsey RESET test using powers of the fitted values of _2nd_generation__2000__u
> nadjuste
       Ho:  model has no omitted variables
                 F(3, 3) =      7.31
                 Prob > F =      0.0683

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of _2nd_generation__2000__unadjuste

         chi2(1)      =     0.64
         Prob > chi2  =   0.4223
```

Appendix IV

Source Region Characteristics

Region	GDP/Capita	GINI	English	Commonwealth
Eire	5562.47	35.65	1	1
EU	8549.158462	28.99338	0	0
Other Europe	9503.46	29.28	0	0
Old Commonwealth	8399.4475	32.10623	1	1
India	670.12	32.14	1	1
East Africa (commonwealth)	445.0266667	38.75	1	1
Rest Africa (commonwealth)	1526.744286	50.73	0	1
Caribbean (commonwealth)	3397.42	44.17	1	1
Mediterranean (commonwealth)	4289.31	*33.29*	0	1
Pakistan	756.8	35.666	1	1
Bangladesh	531.81	39	1	1
Rest of World	2994.971667	41.4225	0	0

Countries by Region

Caribbean (common wealth)	Mediterranean (commonwealth)	East Africa (common wealth)	Rest Africa (commonwealth)	Old Commonwealth	Rest of World including
Trinidad and Tobago	Cyprus	Tanzania	Zambia	South Africa	Papua New Guinea
St Kitts and Nevis	Malta	Uganda	Zimbabwe	New Zealand	Samoa
St Lucia	Gibraltar	Kenya	Swaziland	Canada	Singapore
St Vincent and the Grenadines			Sierra Leone	Australia	Solomon Islands
Jamaica			Seychelles		Belize
Guyana			Nigeria		Brunei Darussalam
Grenada			Mauritius		Fiji
Dominica			Mozambique		Kiribati
Barbados			Namibia		Malaysia
The Bahamas			Lesotho		Maldives
Antigua and Barbuda			Malawi		Nauru
			Gambia, The		Sri Lanka
			Ghana		Tonga
			Cameroon		Tuvalu
			Botswana		Vanuatu
					USA
					Russia