

# 1 Introduction

This document is a basic look at whether people with qualifications from outside of the UK are less rewarded by the market, and, if so, whether this has implications for how human capital is measured. Section 2 examines whether, and by how much, foreign qualifications are less remunerated. Section 3 examines how many foreign qualifications there really are in the UK to get some sense of scale of whether the gap is quantitatively important or not. Section 4 runs a few regressions with some covariates to see if these gaps are explained by anything else obvious that is worth knowing about. Section 5 does some speculative estimation of human capital accounting for whether qualifications are foreign or not, and calculates expected lifetime earnings for people with different qualifications.

First, a few comments about data. The analysis here uses various waves of the Quarterly Labour Force Survey (QLFS). From reading through various ONS publications, this seems like by far the most common dataset used when dealing with earnings estimates.<sup>1</sup> The QLFS has around 85,000-100,000 respondents (although it contains earnings data for only a subset of these)<sup>2</sup> and comes with weights designed to allow estimation at the population level. It is not a panel, although a respondent will stay in the survey for 5 consecutive quarters so it allows for some limited longitudinal analysis. There appear to be two other potential datasets. The first is the Annual Survey of Hours and Earnings (ASHE). This is generally viewed as the most reliable, largely because it uses employer records for earnings estimates (rather than the QLFS, which is self-reported by individuals). However, ASHE is a Secure Access dataset, which means you need to do lots of things to be allowed to use it (including an in-person training).<sup>3</sup> Moreover, I don't think that it has the granularity on highest qualifications held and country where these were earned (since the data come from employers) needed for this exercise.<sup>4</sup> The second is the Annual Population Survey (APS). This is just an annualised compilation of the QLFS for that year, with an additional "booster" in the Spring. The APS is freely available, although when I downloaded it it seems to miss a lot of key variables that are available in QLFS. Most importantly, it doesn't have enough detailed variables on qualifications and where they were earned. I think that it does have enough base variables that I could derive these, but that would take quite a lot of cleaning so I have opted to focus on the QLFS for now. Setting up the APS would probably be the next step if we were to continue with this analysis, since I am a bit concerned that some of the sub-groups studied start to rely on relatively small sample sizes.

An ongoing issue is that the data do not always make it straightforward to identify where a particular degree or qualification was earned. For most years, there is a variable called FORTYP

---

<sup>1</sup>A convenient guide can be found [here](#).

<sup>2</sup>Respondents stay in the survey for 5 consecutive quarters, and are only asked about their earnings in two of the five (the first and the fifth, so any particular survey will have three-fifths of the sample who are not asked).

<sup>3</sup>The same applies to the 2011 census. In addition, the census has very limited questions on earnings.

<sup>4</sup>The ONS write on their website: "The principal strength of using the LFS measures of earnings is the rich selection of classificatory variables that are gathered on the survey. While ASHE is often favoured for its accuracy, there are many individual characteristics that are only gathered on the LFS. For instance, information on education, ethnicity, nationality, disability and many other variables are captured on the LFS but not on ASHE. Analysing how earnings vary with any of these characteristics is typically done using LFS data."

which details the highest level of foreign qualification that someone earned, but it remains possible that they earned a higher one in the UK subsequent to this (e.g., someone who does a Bachelors in France and then does a Master's in the UK). In general, I am able to compare their highest foreign qualification with their highest qualification overall, so can back out whether their highest qualification was in the UK or not. However, unfortunately, the FORTYP question did not distinguish between undergraduate and postgraduate degrees until 2016 (there also seem to be data quality issues with this variable as there are implausibly few people with foreign degrees in general before 2016). To make matters even worse pre-2016, when constructing the variable of highest qualification, the statistician just classifies all foreign degrees as undergraduate degrees.<sup>5</sup> There is probably some rationale about this in documentation somewhere, but thusfar I have not found it. For now, the main point here is that I am suspicious of anything to do with degrees prior to 2016, which is a shame because one of the main results is that there is a huge difference in how remunerated foreign undergraduate degrees are relative to foreign postgraduate degrees. This issue means that I have largely refrained from commenting on whether the earnings gap has become bigger with time. A logical next step would be to construct a variable or method that works properly across years, which I assume is possible but would require more detailed data cleaning and preparation.<sup>6</sup>

To preface the results: In short, there appears to be a non-trivial earnings gap. Those born in the EU earn quite a bit less than an equivalently educated person born in the UK, and this is driven by EU8 and EU2 countries. Since this ignores the fact that many EU-born people complete their highest qualification in the UK, meaning that a large share of this group hold UK qualifications, it should underestimate our main gap of interest.<sup>7</sup> More relevantly, to the extent that I can calculate it, this gap is indeed larger when comparing those whose highest qualification is from the UK with those whose highest qualification is non-UK (irrespective of place of birth).<sup>8</sup> I do not find any particularly obvious confounders that would actually be considered in the measurement of human capital. However, while there is a gap, there aren't really that many people in the UK whose highest qualification is foreign (as a share of the total number of such qualifications in the UK), which suggests that the gap might not have particularly large effects in estimating aggregate human capital. I find broadly this when I estimate human capital using the same method as the ONS while allowing for these differences, although this is only a very rough estimate and is certainly not definitive.

---

<sup>5</sup>See page 185 of the 2012 LFS derived variable guide.

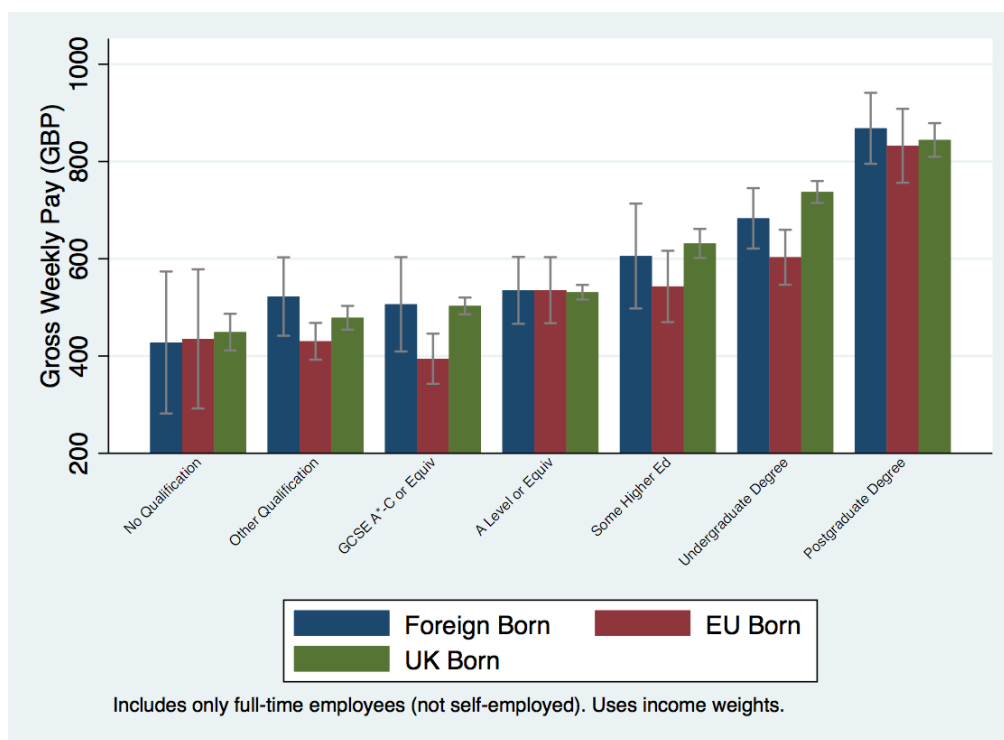
<sup>6</sup>The ONS themselves write the following on their website: "A further limitation of the LFS from an analytical perspective is the repeated changes to some classifications (for example, ethnicity) and year-specific variable names. Extensive recoding may be required where comparing some of these variables or characteristics over time."

<sup>7</sup>When working with place of birth, I ignore where the qualifications were received, but note that EU-born people are more likely to have EU qualifications and UK-born people are more likely to have UK qualifications. The benefit of working with place of birth is that it is unambiguous and never contains missings. It should also nest our comparison of interest: the EU-born people with EU qualifications are a subset of all EU-born people, so if EU-born people with UK qualifications earn the same as (equivalently qualified) UK-born people, we will underestimate any gaps.

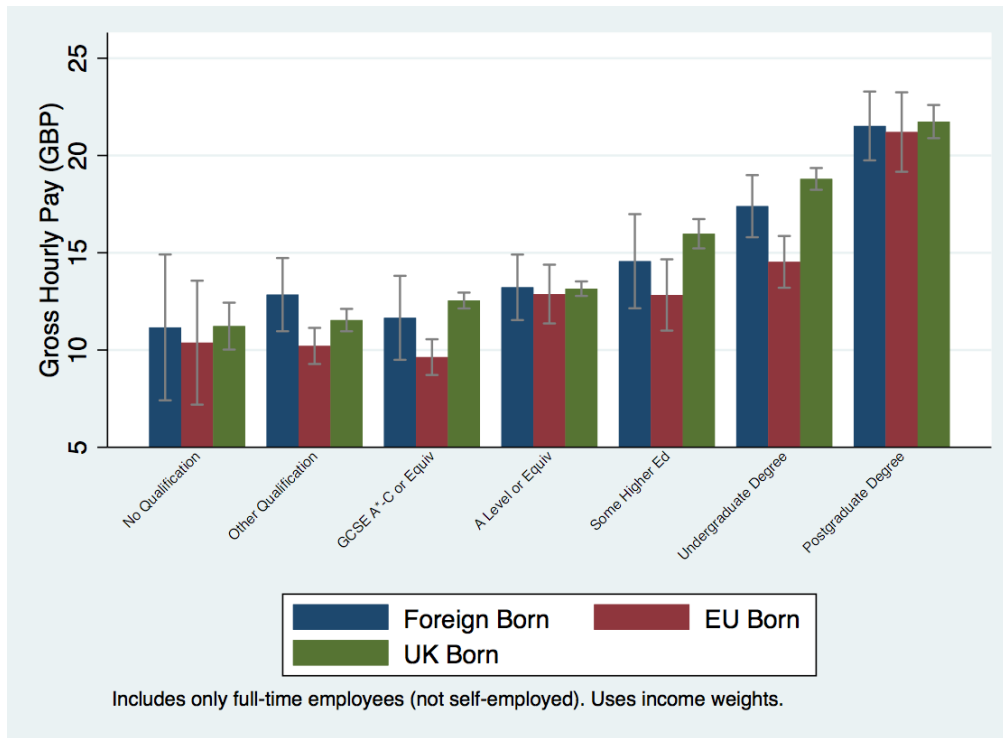
<sup>8</sup>I have focused on highest qualification for two reasons. First, it is the most conveniently available in the data. I think it is possible to be more granular for UK qualifications, but it would require quite a bit of cleaning. I am also not sure if this is possible for foreign qualifications. Second, at least in my own experience among university graduates (both BSc and MSc), what seems to matter most in the UK graduate labour market is the most recent qualification.

## 2 Is there an earnings gap?

Figures 1 and 2 take a crude measure by simply examining earnings by whether or not someone was born in the UK. The benefit of this is that it is the least ambiguous question/variable. The downside is that a lot of people who are born elsewhere will have studied in the UK (for degrees, this share is roughly 40% to 60%). Since it at least includes those with foreign qualifications, it should underestimate any earnings differentials by country of qualification. The charts show average earnings at different qualification levels, separately for whether the person is born in the UK, the EU, or elsewhere. The only difference between the two charts is the outcome variable: the first uses gross weekly earnings while the second uses gross hourly earnings. As far as I can tell, gross weekly earnings is the most commonly used earnings measure among users of this dataset, so I provide the hourly outcome as a check here to verify that the results aren't completely different, but the rest of the analysis uses gross weekly earnings.



**Figure 1:** Average weekly earnings by place of birth, separately by highest qualification. From QLFS Jul-Sept 2018.

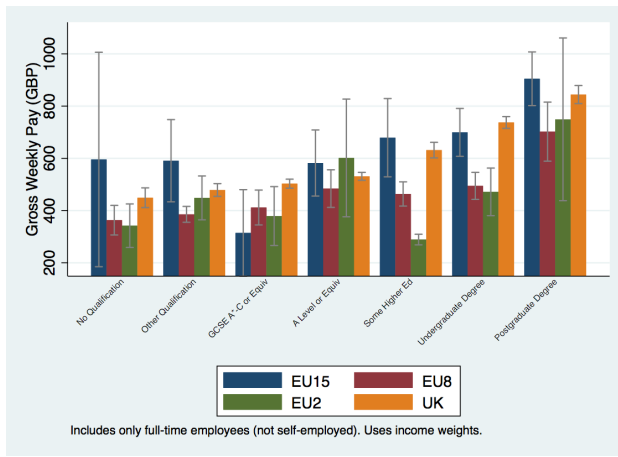


**Figure 2:** Average hourly earnings by place of birth, separately by highest qualification. From QLFS Jul-Sept 2018.

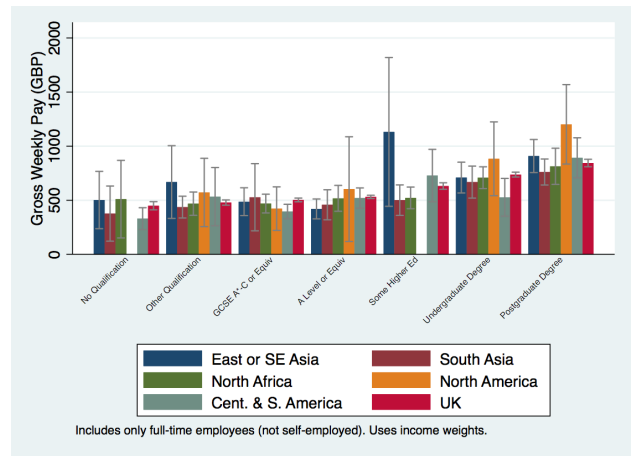
The charts do seem to indicate an earnings gap at many qualification levels, perhaps most strikingly at the undergraduate degree level. For UK and non-EU people, there is a fairly clear upward slope by education level; for EU-born people, the profile is much flatter and then there is a huge jump from undergraduate to post-graduate. The difference is not trivial: UK-born people with an undergraduate degree earn around 750 GBP per week, relative to EU-born equivalents that earn around 600 GBP per week, so a 25% increase.

Figure 14 in the Appendix presents the same chart (for gross weekly earnings) in 2016, 2014, 2012, and 2010. I note that the degree-level results are probably close to meaningless before 2016 for the reasons mentioned above. A gap generally continues to exist throughout, insofar as the green bars are usually above the red bars.

Figure 3 breaks down the "EU Born" and "Foreign Born" into smaller categories. Panel A looks within the EU, where it appears that EU15 countries exhibit a similar pattern to the UK - the gap comes mainly from EU8 and EU2. A UK-born person with an undergraduate degree earns more than 50% more than a Romanian-born person with an undergraduate degree. Panel B looks within the "Foreign Born", although it is hard to discern any obvious pattern or gap. There is also a lot of noise at this level of sub-group.



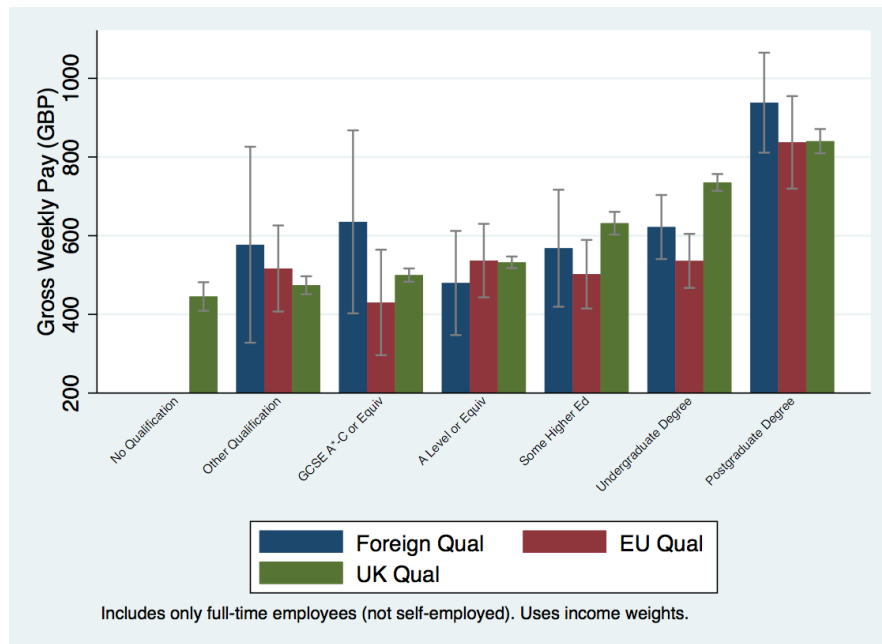
(a) Breakdown of EU



(b) Breakdown of non-EU

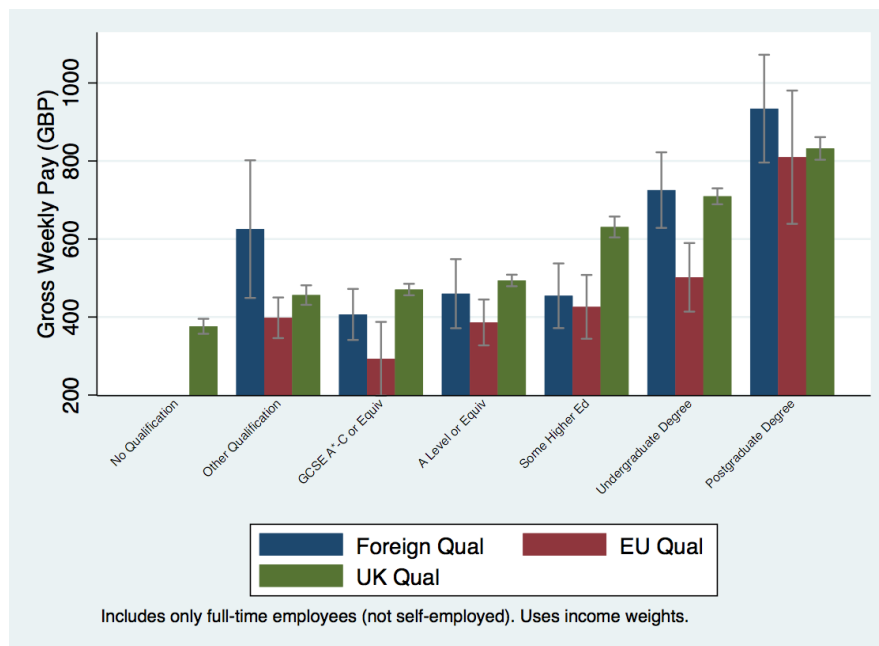
**Figure 3:** Average weekly earnings by place of birth, separately by highest qualification, with a detailed breakdown of the two regions. Region categories are not exhaustive. EU15 are the 15 members prior to 2004. EU8 are 8 of the 10 countries that joined in 2004. EU2 are Romania and Bulgaria. From QLFS Jul-Sept for 2018.

Since the previous graphs confounded people born in the EU (or elsewhere) with people whose degrees were actually awarded in those countries, the following graphs go some way towards solving this problem. I am able to partially back out whether a qualification is foreign from 2016 onwards - before this the variable is a bit sketchy. Figure 4 shows the same weekly earnings graph, in 2018, where I define someone as educated in a particular country if their highest qualification is from that country. So, for example, someone with a Bachelors from France but a Master's from the UK would be "UK educated", while they would be "EU educated" if they did their Master's in France.



**Figure 4:** Average weekly earnings by place where highest qualification was awarded, separately by highest qualification. Note that, due to data limitations, I can only say whether their highest qualification was non-UK (the country is still derived from country of birth). From QLFS Jul-Sept 2018.

Broadly, the graph tells a similar story. Many of the gaps in weekly earnings become even larger. Having said that, the numbers of people representing EU and Foreign become smaller so everything becomes a bit noisier (the classifications at the lower end are also not great as the foreign qualifications don't map very easily into the UK categories). Aside from the size of gaps, the earnings profile is fairly flat (except for postgraduate degrees) for non-UK degrees. Figure 15 in the Appendix breaks the "EU Qual" category down into smaller parts, again finding that the EU gap is driven by EU8 and EU2 countries, with EU15 looking similar to UK. For these EU8 and EU2 countries, the gap is substantial. Figure 5 shows the same thing for 2016, and Figure 16 in the Appendix for 2014 and 2012. While we can't say much about the degree-level results before 2016 (because of the issues discussed above) the gaps in the middle qualifications persist.



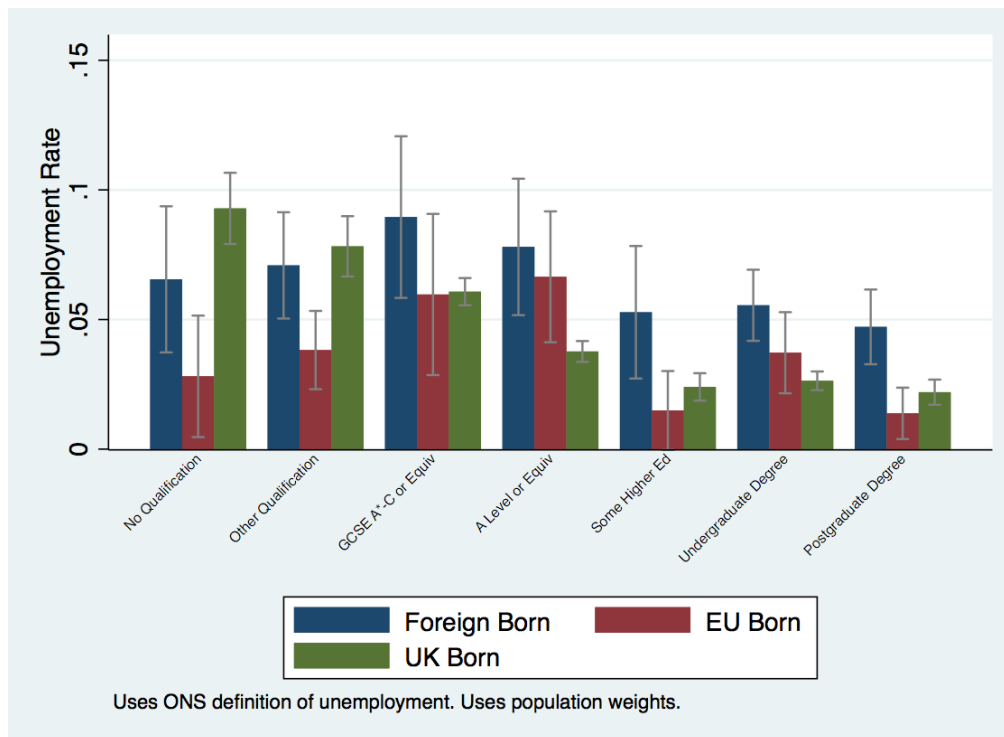
**Figure 5:** Average weekly earnings by place where highest qualification was awarded, separately by highest qualification. From QLFS Jul-Sept 2016.

To see whether these foreign degrees really are driving *all* of the earnings gap, I do two further things. First, Figure 17 in the Appendix excludes anyone born outside the UK but whose highest qualification is from the UK (and excludes anyone born in the UK with highest qualification from outside). This aims to compare UK-born + UK-educated people to EU-born + EU-educated people. By and large, the picture is similar. The profile for non-UK people is again quite flat. Second, Figure 18 in the Appendix looks only at those who are UK-educated and separates the effect by place of birth (i.e., the same as Figure 1 but excluding the degrees earned elsewhere). Some gaps persist, although they're smaller (and noisier). The profile for non-UK people displays much less flatness.

From the above, it seems (to me) that there is a gap in earnings between those earning qualifications elsewhere and those earning degrees in the UK. This is probably not a huge surprise, and a quick search of Google Scholar turns up quite a lot of policy-oriented articles about the need to improve recognition of foreign qualifications (I found a whole stream of these from Canada, although

I assume that it's fairly universal). Having said that, there is still a lot more to explore. One thing is to ask whether these non-UK people are different in other ways that might explain the earnings gap? (Although, we may not care about this if we aren't going to control for these in the measurement of human capital). Another is about whether these groups are really large enough in size to affect aggregate measurements of things like the value of a degree. I turn to this in the next section.

Briefly, before moving on, I also note that all of the preceeding analysis has been on the intensive margin. Figure 6 presents a similar graph to the ones seen above, but for unemployment. I use the same definition as the ONS (who use the same as the ILO). It is not obvious that EU-born people are more likely to be unemployed, although Foreign-born people certainly do seem more likely to be unemployed at every qualification level (which should be kept in mind when thinking about their similar earnings levels conditional on employment). Breaking these down into smaller sub-groups (not shown here) becomes extremely noisy, especially for the EU-born people.



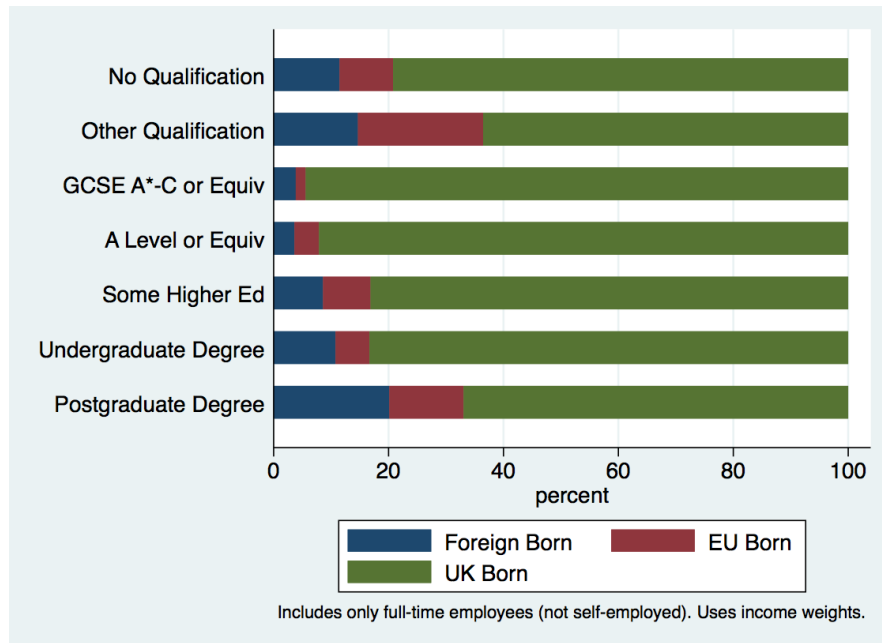
**Figure 6:** Unemployment rate by place of birth, separately for each level of highest qualification. I use the same definition of unemployment as the ONS, which in turn uses the same as the ILO. The headline unemployment rate in the UK is 4.4%. From QLFS Jul-Sept 2018.

### 3 How many non-UK qualifications are there?

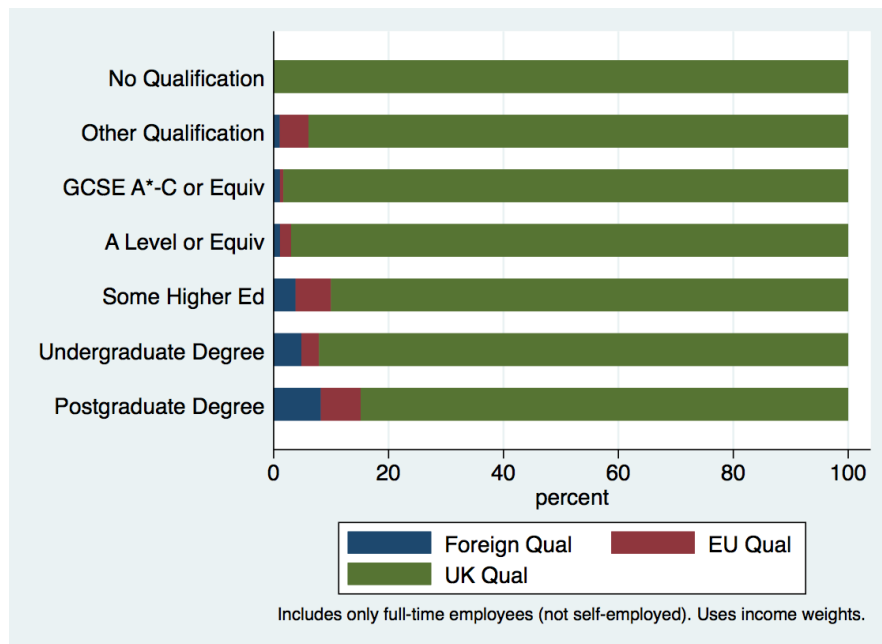
I was surprised at the lack of general statistics online about this. There is a lot of discussion about the number of foreign students, but much less about the number of foreign holders of particular qualifications. At a first pass, Figure 7 shows the share that non-UK born people occupy of each qualification band in 2018. Around 80 percent of undergraduate degree-holders were born in the UK, and around 65 percent of postgraduate degree-holders were born in the UK. EU-born postgrad-

uates occupy a larger share than EU-born undergraduates, which seems in line with the fact that postgraduate qualifications are much cheaper in continental Europe than in the UK.

Figure 8 shows the same graph, but split by where the qualification was awarded rather than where the person was born. The non-UK shares shrink dramatically. There are clearly a lot of foreign-born people educated in the UK.



**Figure 7:** Share of each qualification held by those born in the UK, EU, or elsewhere. Note that each group has different total numbers of people. From QLFS Jul-Sept 2018.



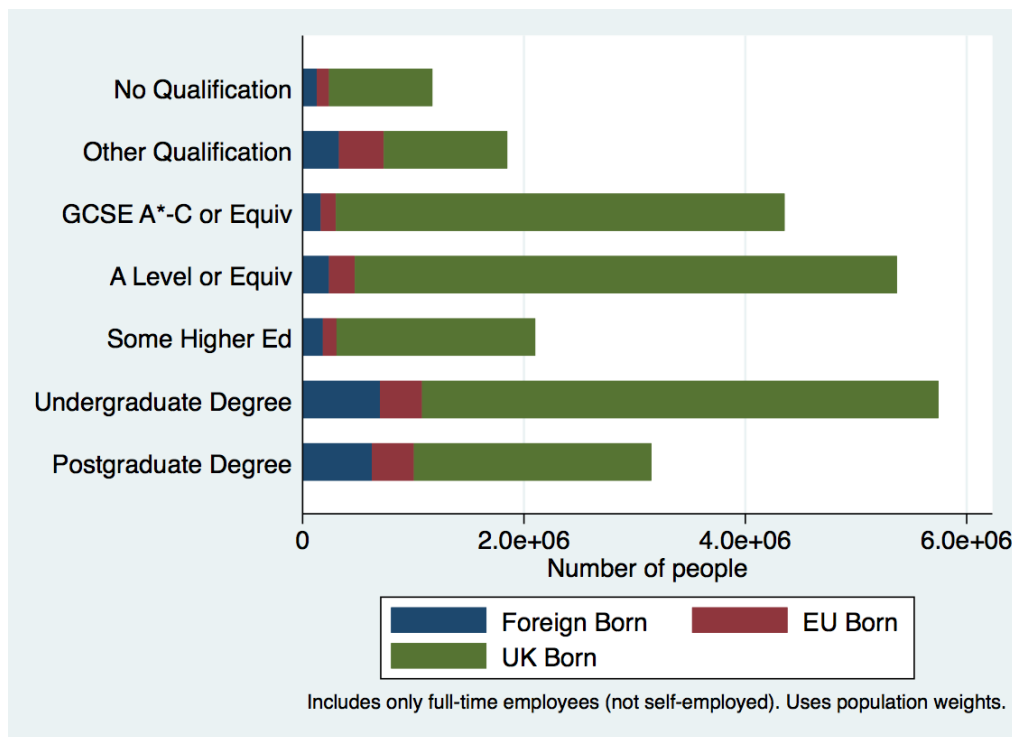
**Figure 8:** Share of each qualification held by the country of award. Note that each group has different total numbers of people. From QLFS Jul-Sept 2018.



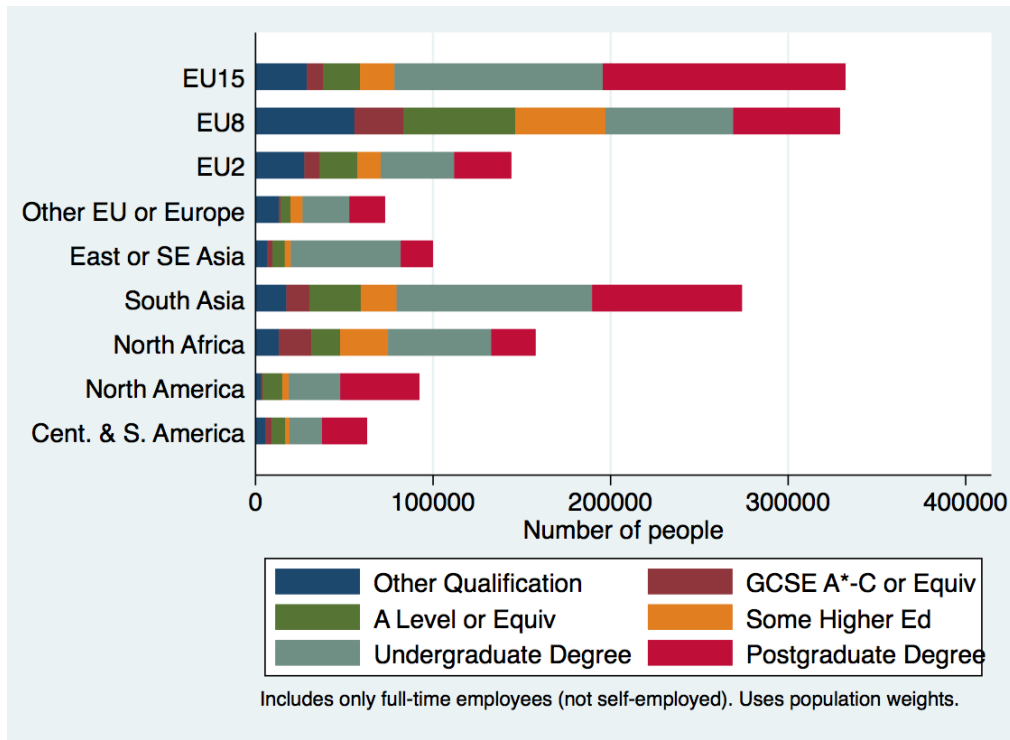
To get some sense of scale, Figure 9 shows the bars of the number of people (rather than as percentages). There are around 9 million people in the UK with a degree who are full-time employees. (There are around 14 million with a degree in total, but I am focusing on the subset who are full-time employees because these are the ones who we have earnings data for and thus that have been used in all of the preceeding analysis.)

Based on the above, there aren't that many people whose highest qualification is from outside of the UK. In terms of absolute numbers, there is clearly a non-trivial amount of such people (which is not a surprise), but I would have thought that it is unlikely that they are able to meaningfully distort aggregate statistics.

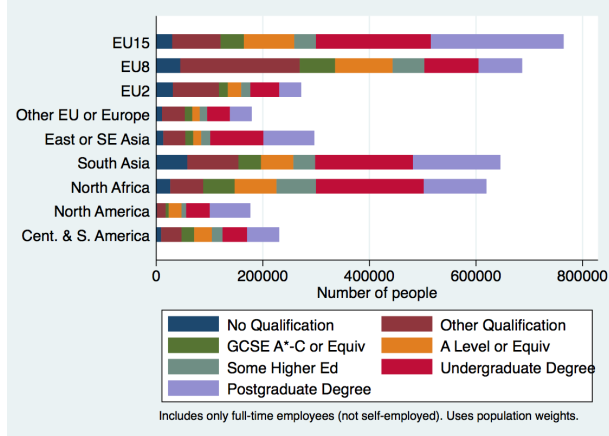
Figures 10 and 11 show the breakdown of qualifications for different groups of regions and countries. Figure 10 focuses only on those who did not earn their highest qualification in the UK (so represents the stock of foreign qualifications) and who are full-time employees. Figure 11 relaxes these restrictions to get overall population-level estimates of the numbers and breakdowns of foreign people in the UK. People from the EU15 tend to have higher qualifications than people from other parts of the EU.



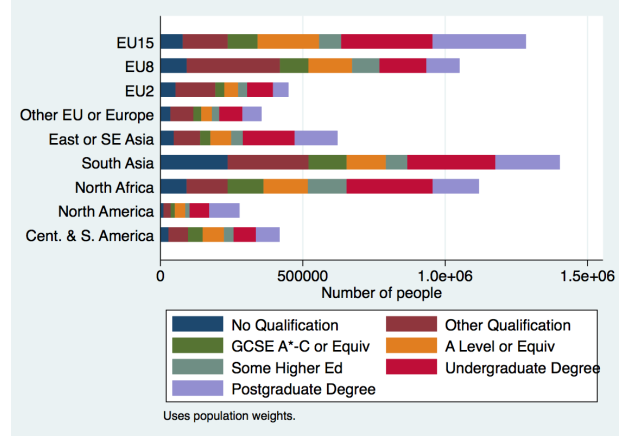
**Figure 9:** Number of people holding of each qualification, divided by those born in the UK, EU, or elsewhere. From QLFS Jul-Sept 2018.



**Figure 10:** Distribution of qualifications of migrants from different regions. Excludes people with highest qualification from the UK and includes only full-time employees. Region categories are not exhaustive. EU15 are the 15 members prior to 2004. EU8 are 8 of the 10 countries that joined in 2004. EU2 are Romania and Bulgaria. From QLFS Jul-Sept 2018.



(a) Including UK qualifications



(b) Including UK quals & not just full-time employees

**Figure 11:** Distribution of qualifications of immigrants from different regions. Relative to Figure 10, Panel A includes people with highest qualification from the UK (so includes French people with a UK Master's). Relative to Panel A, Panel B includes people who are not full-time employees.

## 4 Regressions and controlling for covariates

This section briefly attempts to see whether there are any obvious differences that might otherwise explain the earnings gaps discussed above. This is not meant to be a comprehensive set of checks - I am merely adding in some covariates that I already have in the datasets to see what happens. I note that, even if we were to find that foreign qualification holders sort themselves into lower-paying industries (or some story like this), this does not invalidate the concern over human capital measurement if aggregate measures of human capital do not disaggregate by industry.

First, some caveats about these regressions. The regressions are all using the 2018 Jul-Sept QLFS data. For ease of interpretation, I do not generally separate between EU and non-EU here, although Table 4 shows the effect of doing so. I also just treat highest qualification as a continuous variable going from 1 (no qualification) to 7 (postgraduate degree). There are other possible ways of doing this, such as using a dummy for "degree or higher", but I have just kept the above method at this stage in order to avoid proliferation of tables. Finally, the regressions are clearly going to be problematic because, as we have seen from the graphs above, the effect of qualifications are hardly linear (especially for non-UK people).

With that said, Table 1 shows the regression version of Figures 1 and 2. Columns 1-3 focus on gross weekly pay, while columns 4-6 repeat the same regressions for gross hourly pay. Column 1 includes only full-time employees (as in the graphs above) while Column 2 also includes part-time or self-employed people. The results are not really different between the two. We generally see that those with highest qualifications earn more, and this effect is slightly larger for those born in the UK. Since this masks the large undergraduate-postgraduate jump, Column 3 excludes postgraduates - we now see a large and significant interaction, meaning that the effect of increasing one's qualification band for an EU-born person is around 4/7 of the equivalent effect for a UK-born person. Table 5, in the Appendix, repeats the same regressions but restricts the sample to only UK, EU8, or EU2 - the gap increases substantially, with the equivalent fraction dropping to 1/3. Columns 4-6, focusing on hourly pay, replicate the same pattern.

Table 2 adds industry fixed effects (e.g., banking and finance, health, transport, etc.) and occupation fixed effects (e.g., manager or director, sales, administrative role, etc.). The occupation fixed effects seem to explain a lot of the qualifications premium, and removes the (linearly fitted) country differential. Table 3 includes various controls for age, size of workplace, and gender. Not much happens.

Table 4 looks briefly at the role of comparing UK versus EU. The first column includes everyone, while the second column removes those born neither in the UK nor EU. The UK-education premium increase a bit, but the effect is not very large (either statistically or economically). Column 3 excludes postgraduates, which again produces a large and significant coefficient.

**Table 1:** Qualifications Interacted with UK Born

	Gross Weekly Pay			Gross Hourly Pay		
	(1)	(2)	(3)	(4)	(5)	(6)
UK Born	-14.33 (32.43)	-32.82 (27.99)	-104.7*** (28.61)	-0.324 (0.784)	-0.848 (0.649)	-2.317*** (0.676)
Highest Qualification	70.39*** (6.731)	70.49*** (6.111)	41.32*** (6.606)	1.846*** (0.160)	1.765*** (0.139)	1.090*** (0.155)
UK Born * Highest Qual	4.489 (7.538)	6.363 (6.754)	30.82*** (7.358)	0.182 (0.182)	0.267* (0.156)	0.776*** (0.175)
Observations	6669	9148	7999	6641	9089	7949
Adjusted $R^2$	0.110	0.115	0.081	0.126	0.130	0.091
Mean Dep Var	618.4	520.9	486.24	15.52	14.52	13.61
Full-time employees only	Y	N	N	Y	N	N
Excludes Postgrads	N	N	Y	N	N	Y

Robust standard errors in parentheses. Uses income weights.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Table 2:** Qualifications Interacted with UK Born (with Fixed Effects)

	Gross Weekly Pay	
	(1)	(2)
UK Born	-32.15 (31.70)	-21.65 (27.74)
Highest Qualification	68.71*** (6.540)	33.14*** (6.022)
UK Born * Highest Qual	9.366 (7.313)	-0.959 (6.613)
Observations	6639	6668
Adjusted $R^2$	0.154	0.279
Full-time employees only	Y	Y
Industry FE	Y	N
Occupation FE	N	Y

Robust standard errors in parentheses. Uses income weights.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Table 3:** Qualifications Interacted with UK Born (with Covariates)

	Gross Weekly Pay		
	(1)	(2)	(3)
UK Born	-2.985 (32.41)	6.192 (32.37)	-33.92 (32.32)
Highest Qualification	70.51*** (6.681)	67.85*** (6.601)	72.01*** (6.596)
UK Born * Highest Qual	4.751 (7.441)	1.638 (7.420)	7.662 (7.397)
Age of respondent	42.92*** (2.118)		
Age Squared	-0.447*** (0.0259)		
Number of employees at workplace		21.45*** (1.740)	
Sex of respondent			-167.2*** (9.255)
Observations	6669	6636	6669
Adjusted $R^2$	0.183	0.133	0.157
Full-time employees only	Y	Y	Y

Robust standard errors in parentheses. Uses income weights.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Table 4:** Qualifications Interacted with UK Born (focusing on EU)

	Gross Weekly Pay		
	(1)	(2)	(3)
UK Born	-14.33 (32.43)	3.465 (36.81)	-50.73 (37.57)
Highest Qualification	70.39*** (6.731)	68.03*** (8.186)	40.68*** (8.543)
UK Born * Highest Qual	4.489 (7.538)	6.855 (8.861)	27.17*** (9.351)
Observations	6669	6114	5372
Adjusted $R^2$	0.110	0.109	0.078
Full-time employees only	Y	Y	Y
Only UK or EU	N	Y	Y
Excludes Postgrads	N	N	Y

Robust standard errors in parentheses. Uses income weights.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## 5 Human Capital

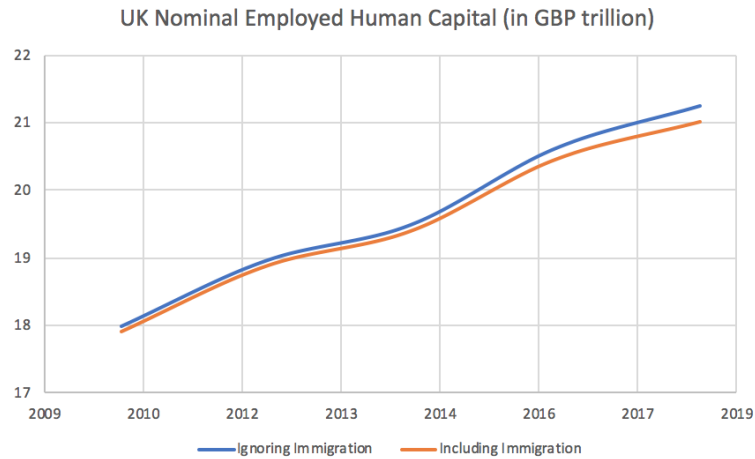
This section is likely somewhat frivolous. I wanted to see if the above results do meaningfully affect the way the UK measures human capital. According to the ONS, the main measure in the official statistics uses the lifetime-income method.<sup>9</sup> If we were estimating human capital by just the number of qualified people or average years of schooling (or some such measure), then an earnings gap could signal that we overestimate human capital (because it looks like there are lots of highly qualified people, yet the market does not reward them as such); however, with the lifetime-income method, I would have thought that we might underestimate human capital: the vast majority of young people are probably going to earn UK qualifications, but if we estimate their lifetime earnings based on current earnings of *all* qualification holders (i.e., UK and non-UK) then we will underestimate their lifetime earnings. In other words, we should be calculating their lifetime earnings based only on the earnings of holders of UK qualifications. Since young people have by far the highest human capital by this measure (as they have huge lifetime earnings potential), this could potentially matter.

To investigate this (and also just out of curiosity) I calculated human capital in the UK both with and without allowing for this difference. I followed the ONS' method, with a few approximations or simplifications,<sup>10</sup> which estimates the (discounted) lifetime earnings separately for each age-gender-qualification interaction and then aggregates these based on the respective shares in the population. To see the effect of the non-UK qualifications, I ran it again but at the age-gender-qualification-foreign level (where foreign is just 1 if born outside the UK). This means that a UK-born 16 year old's future earnings profile will be based on the current earnings profile of UK-born older people only (rather than EU-born older people). Figure 12 plots the results for the years 2010, 2012, 2014, 2016, and 2018 (although, as noted before, I am suspicious of some of the foreign qualification measures pre-2016). In general, I don't find much difference. It is different (and the order of magnitude here is enormous), although the difference caused by this is much smaller than things like variation over time and sensitivity to other assumptions. I must also confess that I am not sure why the estimate actually goes down when allowing for foreign-born people (since I thought it should have gone up). This might signal an error in the algorithm, although this change affects human capital in many more ways than only through the earnings profile of 16 year old UK-born people, and I have not investigated in detail what is causing the difference.

---

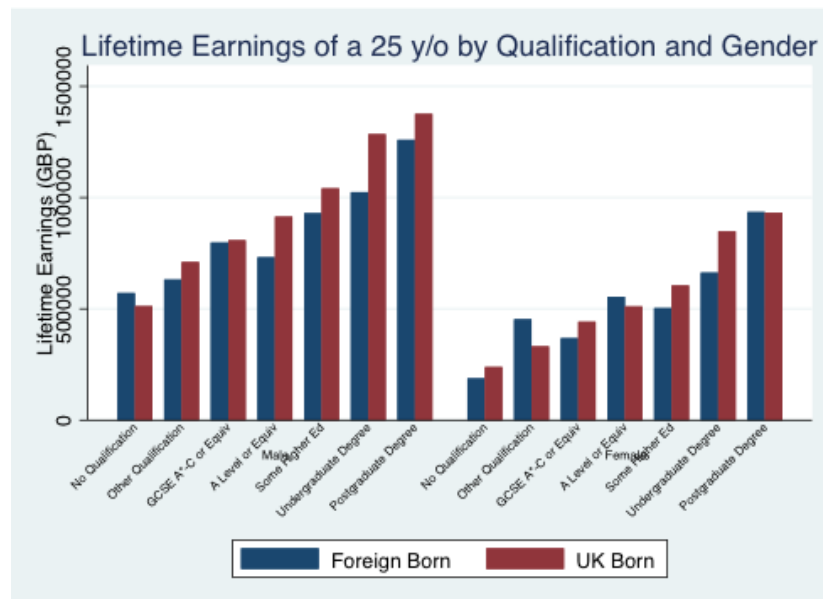
<sup>9</sup>This link has a good discussion of key issues and provides links to further, more detailed papers on methodology.

<sup>10</sup>The ONS method works by assuming that someone of age  $a$ , gender  $j$ , and qualification  $q$  will have the same lifetime earnings next year as someone who currently is of age  $a + 1$ , gender  $j$ , and qualification  $q$ . However, it also allows for some probability that the person will transition to a higher qualification level. I used a crude approximation, that simply says that someone transitions to qualification  $q + 1$  with probability  $p(a) = \max(\frac{24-a}{16}, 0)$  and keeps the same qualification with probability  $1 - p(a)$ . This means that 16 year olds have a 50% chance of transition, and the transition probability eventually becomes zero at age 24. The ONS statistics also allow for risk of mortality to differ by age-gender-qualification - I simply assume a 0.1% mortality rate at each level (which is completely arbitrary).



**Figure 12:** Value of nominal employed human capital in the UK over time, using the lifetime-income method. The 'ignoring immigration' line estimates lifetime-income at the age-gender-qualification level; the 'including immigration' line estimates lifetime-income at the age-gender-qualification-foreign level. These estimates use a number of arbitrary approximations and assumptions. From QLFS Jul-Sept 2010, 2012, 2014, 2016, 2018.

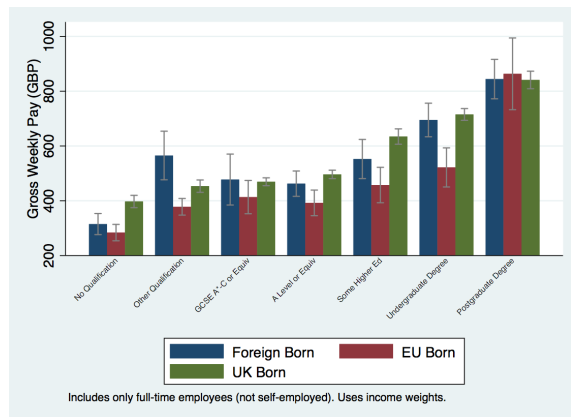
A convenient by-product of this exercise is that I can also then calculate expected (discounted) lifetime earnings for different types of people. Figure 13 shows this. The figure looks at the different lifetime earnings profile of a 25 year old<sup>11</sup>, by qualification level and gender. As before, there does seem to be a gap: for both men and women, it looks like a UK-born person with an undergraduate degree has expected lifetime earnings between one quarter and one third higher than an equivalent non-UK-born person. I suspect that this would be even higher if I focused only on UK versus EU. The other striking thing about this graph is the difference between genders.



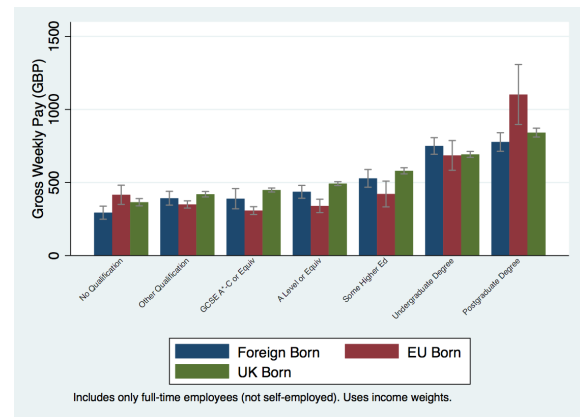
**Figure 13:** Discounted expected (nominal) lifetime earnings of a 25 year old, separately by whether born in the UK and by gender. Subject to many assumptions. From QLFS Jul-Sept 2018.

<sup>11</sup>I chose a 25 year old in order to minimise the impact of assumptions about probability of transitioning to higher qualification level as I imagine that most qualifications are relatively fixed by age 25.

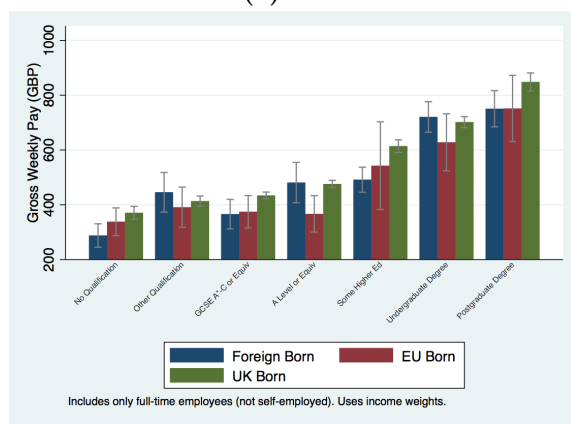
## A Additional Figures and Tables



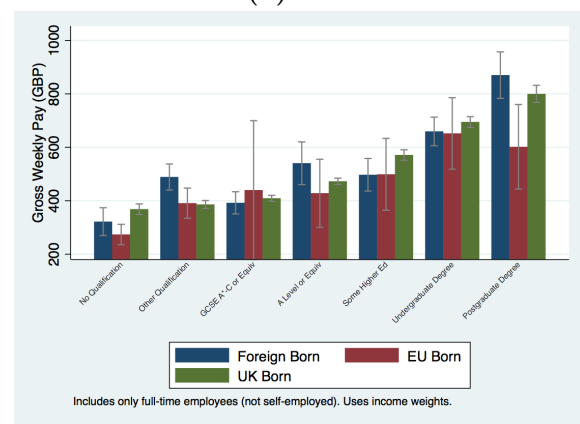
(a) 2016



(b) 2014

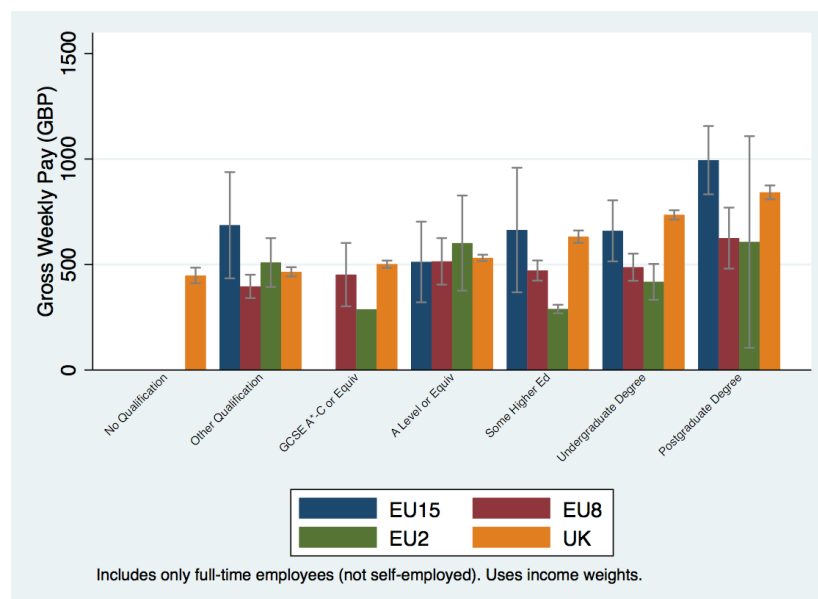


(c) 2012



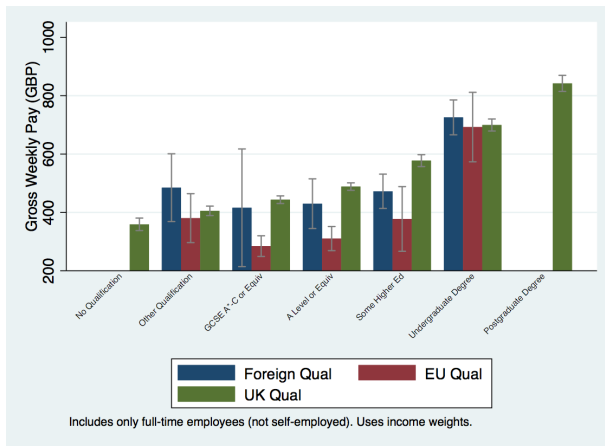
(d) 2010

**Figure 14:** Average weekly earnings by place of birth, separately by highest qualification. From QLFS Jul-Sept for earlier years.

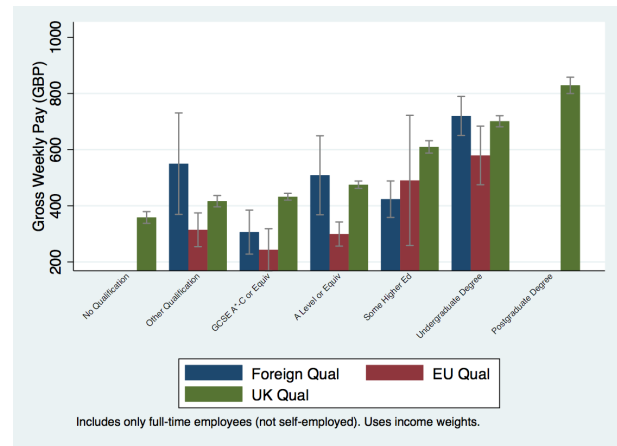


**Figure 15:** Average weekly earnings by country of highest qualification, separately by highest qualification, with a detailed breakdown within the EU. Region categories are not exhaustive. EU15 are the 15 members prior to 2004. EU8 are 8 of the 10 countries that joined in 2004. EU2 are Romania and Bulgaria. From QLFS Jul-Sept for 2018.



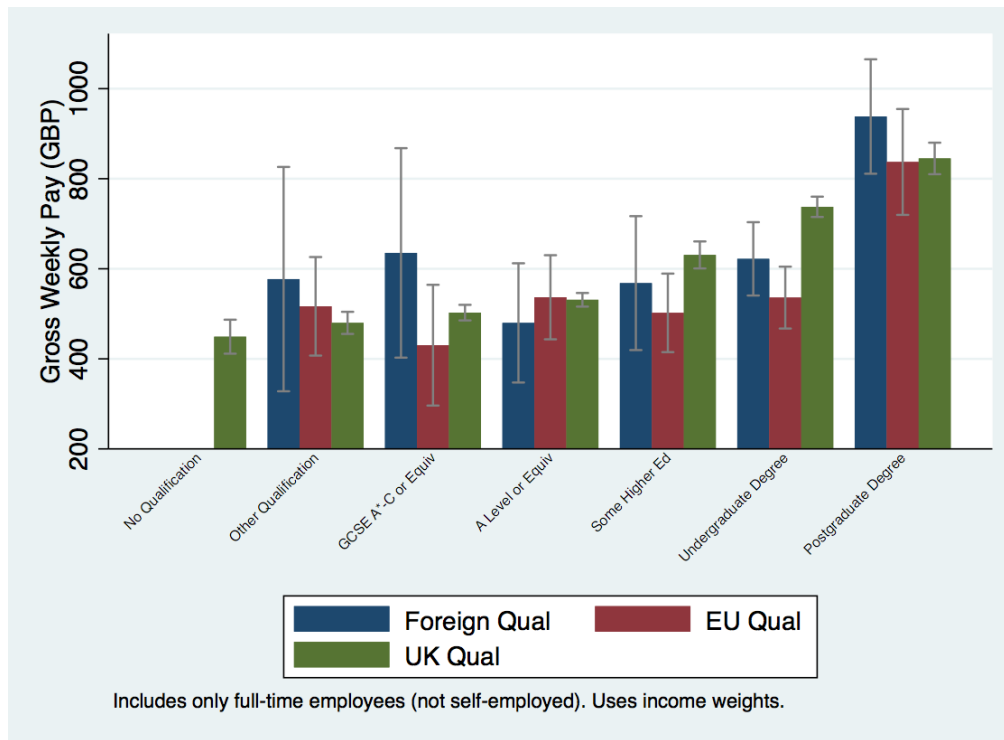


(a) 2014

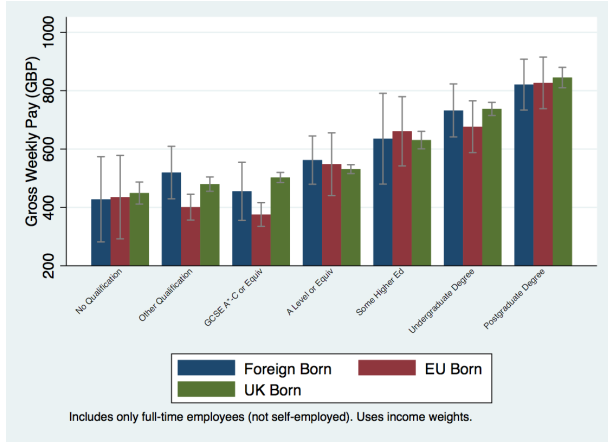


(b) 2012

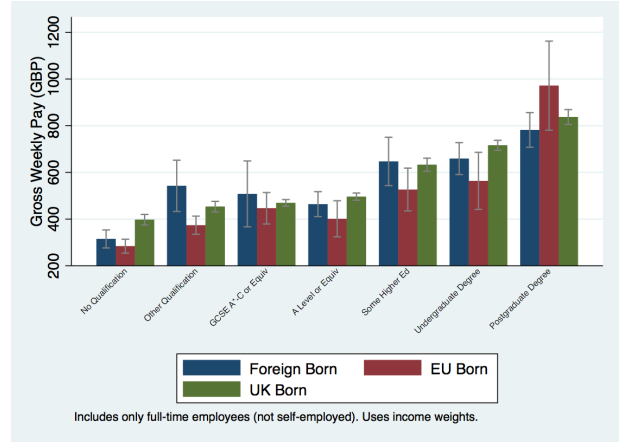
**Figure 16:** Average weekly earnings by place where highest qualification was awarded, separately by highest qualification. From QLFS Jul-Sept for earlier years.



**Figure 17:** Average weekly earnings by place where highest qualification was awarded, separately by highest qualification. Includes only people whose highest qualification is from the region in which they were born (i.e., excludes EU-born people whose highest degree is from the UK). Due to data limitations, this is only defined to the extent that a non-UK-born person did not receive their degree in the UK (rather than requiring that they received their degree in their country of birth). As such, someone born in India but whose highest degree is from France will count as Foreign (if their highest degree was instead from the UK, they are excluded). From QLFS Jul-Sept 2018.



(a) 2018



(b) 2016

**Figure 18:** Average weekly earnings by place of birth, separately by highest qualification. Includes only those whose highest degree is from the UK. From QLFS Jul-Sept 2018 and 2016.

**Table 5:** Qualifications Interacted with UK Born (EU8 or EU2 only)

	Gross Weekly Pay		Gross Hourly Pay	
	(1)	(2)	(3)	(4)
UK Born	-15.12 (33.19)	-51.25** (25.62)	-0.0552 (0.868)	-1.083* (0.612)
Highest Qualification	45.84*** (9.778)	23.01*** (5.576)	1.259*** (0.272)	0.614*** (0.138)
UK Born * Highest Qual	29.04*** (10.35)	44.83*** (6.749)	0.769*** (0.285)	1.217*** (0.169)
Observations	5930	5247	5905	5229
Adjusted $R^2$	0.111	0.083	0.131	0.098
Mean Dep Var	608.38	579.55	15.29	14.51
Full-time employees only	Y	Y	Y	Y
Excludes Postgrads	N	Y	N	Y

Robust standard errors in parentheses. Uses income weights.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$