

# **Policy-driven evidence: evaluating the UK government's approach to immigration policy making**

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## **Abstract**

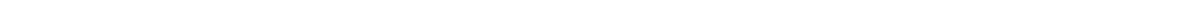
This critique conducts a technical analysis of a UK Home Office report which was a key justification for passing the Immigration Act 2014. The law seeks to reduce non-EU immigration to the UK. The report is based on a 2012 report by the Migration Advisory Committee which used firmly established methods in the field of immigration studies. Despite this, it is concluded that the Home Office report not only excludes several important aspects of analysis, the entrepreneurialism of migrants and student immigration, but also has severe statistical problems. The report's choice of operationalisations, lack of information regarding confidence intervals, and lack of sufficient model testing and repetition all combine to make it a weak piece of research and substantially undermine its suitability to inform policy. In the final analysis, this critique posits that the Home Office report reflects the Conservative government's utilisation of 'policy driven evidence'.

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## **Keywords**

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## **Introduction**

### *Background and context*

The success of the campaign for a British exit from the European Union on the 23<sup>rd</sup> of June 2016 shocked the European establishment as well as many political commentators, academics, and the Remain voting segment of the British public. While Brexit was unprecedented, it reflects a rise in right wing parties and sentiment across Western democracies and was not entirely unforeseen (Dinas et al., 2016; Stockemer and Barisione, 2016). Donald Trump subsequently achieved an even more dramatic political coup in 2016 and Geert Wilders and Marine Le Pen were in serious contention in the 2017 Dutch and French elections respectively (Stockemer and Barisione, 2016). The fulcrum around which the right pivots is immigration and there was a surge of anti-immigrant feeling and racist attacks leading up to, and in the wake of, the Brexit vote. The most prominent of these incidents was the murder of the MP Jo Cox before the 2016 referendum, which, while not directed against an immigrant, was perpetrated by an extreme right wing attacker who disagreed with Cox's strong support of the EU and immigration. A more direct attack was the killing of Polish national Arkadiusz Jóźwik in Harlow also in 2016. Both of these murders were blamed, at least in part, on the rhetoric surrounding immigration which was laid bare during and after the referendum campaign (The Guardian, 2016). A House of Commons committee went as far as blaming government Ministers for contributing to the increased violence and bigotry by misrepresenting immigration numbers in 2014 (BBC News, 2014a). Clearly the sensitivity of immigration in the UK cannot be understated.

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Immigration is a divisive issue post-Brexit, but immigration policy has been a perennial issue in the UK. The country has experienced an increasing rate of net migration over the past fifty years; specific numbers vary depending on measurement but it is clear that the foreign born population of the UK has ascended over time which has, arguably, impacted on the economy and, some have argued, caused social tension in some areas of the UK where immigration is concentrated (Layton-Henry, 1985). In the past twenty years, in particular, there has been a sharp increase in net migration to the UK, and across the wider western world (Alfano et al., 2016). In the UK the foreign born population has grown from 8% in 2000 to around 13% in 2015 (Alfano et al., 2016). The possible negative economic effects of this increase have been brought into focus by the 2008 financial crisis which has led some mainstream politicians, a variety of tabloids, and many members of the public to call for a change in UK immigration policy.

The UK Conservative party, which has formed the government of the UK between 2010 and time of writing (July 2017), is the most anti-immigration of the major UK parties. They champion 'British values' as well as economic factors in their rejection of mass immigration (BBC News, 2014a; Sheldon, 1990). In 2013 the Conservative led coalition government produced a policy entitled 'Securing borders and reducing immigration' which, with slight modification, became the 'Immigration Bill' and was passed into law as the 'Immigration Act 2014'. The Bill was introduced by the current Prime Minister of the UK (as of July 2017) Theresa May as the then Home Secretary. The policy, bill, and subsequent Act of Parliament were justified based on the report and analysis: 'Impacts of migration on UK native employment: An analytical review of the evidence' (hereafter the 'Home Office report') (Devlin et al., 2014). This was produced

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jointly by the Home Office and Department of Business and Innovation in 2013 but not published until 2014. Its methodology was an extension of a study carried out by the Migration Advisory Committee (hereafter ‘MAC’) in 2012 entitled ‘Analysis of the Impacts of Migration’ (Metcalf, 2012). The Home Office report concludes that, in times of economic depression, non-EU migrants displace native workers in the economy (Devlin et al., 2014). The report does not make recommendations for the provisions found in the Act itself but instead it was used to highlight the alleged negatives of immigration and justify the need for the Act and it passing into law.

### ***The Act***

The legislation itself is broken down into 4 main components; removal, appeals, access to services, and miscellaneous. The provisions in the removal section aim to make it easier for people without leave to remain to be deported and include not having to give notice of deportation and allowing family members to be removed without individual rulings. The Act does not define what constitutes ‘family members’ and this omission was criticised by the Delegated Powers and Regulatory Reform Committee, but no changes were made (Grant, 2014). The Act overhauls the appeals process in an attempt to make it harder to bring appeals. Generally immigrants are not permitted to appeal against decisions about their immigration status unless they seek asylum or a claim a breach of human rights. If the person can be removed to a safe country, appeals that are permitted generally happen after deportation. The access to services part of the Act was the most controversial, affecting housing and the NHS. Those without leave to remain are banned from entering into tenancy agreements and landlords are legally responsible for checking the immigration status of those they are renting to. The homeless charity Shelter Scotland argued that these changes would increase racial discrimination from landlords and put

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vulnerable people at risk of homelessness (Shelter Scotland, 2016). The provisions in the Act related to the NHS make it harder for immigrants to access health services by introducing an ‘Immigration Health Surcharge’ to be paid during the visa or immigration application process. The test of who constitutes an ‘ordinary resident’ (who do not pay for the NHS) was also altered to encapsulate anyone without indefinite leave to remain – this includes international students and those with temporary leave who may work, and pay tax, in the UK but will still have to pay the charge to access services on the NHS (UK Government, 2014). The final main part of the act covers various areas and attempts to make it more difficult for those without leave to remain to live in the UK. This includes; banks having the responsibility to check immigration status and refusing accounts to non-residents, those without leave to remain being banned from being issued a driving licence, and closer Home Office scrutiny of marriage which can be used to infer nationality (UK Government, 2014). The intention of these provisions is clearly to make the UK a less appealing destination for immigration and to make it easier for the government to remove people from the UK. More than that however, many provisions of the Act are clearly an attempt to make it impossible for those without leave to remain to live in the UK by limiting access to services and housing.

The provisions found in the Act are insidious and they have the potential to be even more damaging to people’s lives if, in the future, they are combined with legislation which changes who is allowed to come to or stay in the UK. The Immigration Act 2014 effectively lays the groundwork for a sharp shift to the right in immigration policy making. At the time of writing (July 2017) the UK is recovering from a General Election in which the Conservatives lost their majority but managed to assemble a minority government with Theresa May, who introduced the original Bill, remaining Prime

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Minister. Although the Conservative's power in parliament has been weakened, and Mrs May's premiership may yet prove untenable, they remain the largest party in parliament and, with support from the Democratic Unionist Party (DUP) of Northern Ireland, maintain a working majority. Although the Immigration Act 2014 does not currently affect EU migrants, the British exit from the EU threatens to create a perfect storm for immigration policy making where a Conservative government, supported by the DUP, will have the power to legislate on both EU and non-EU migration. In these circumstances it would not be surprising to see the provisions of the Immigration Act 2014 being extended to cover all migrants, particularly in the rush to fill the legislative lacuna in the wake of Brexit with no time to write and pass new legislation. This is speculative, but with EU citizens likely to lose the protections currently afforded to them, it is plausible, David Cameron even alluded to such a direction when he was Prime Minister (Conservative Party, 2014). Therefore, while the Act is not directly affected by Brexit, its relevance has only grown in the years since it passed and, particularly with the increase in violence and racism, a critical analysis of the evidence upon which it is built is more pertinent now than ever.

The coalition government (2010-2015), Conservative majority government (2015-2017), and Conservative minority government (2017 onwards), withheld a second report, penned by the Civil Service in 2014, which could potentially undermine the Immigration Act by revising down the negative impact of immigrants on the economy and casting doubt over the findings of the first analysis (BBC News, 2014b). This revised study was deemed politically unpalatable at a time when the government was missing immigration targets (BBC News, 2015) and has still not been published at time of writing, possibly due to the atmosphere post-Brexit and the continued pressure of immigration targets

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(BBC New, 2016). Even without this withheld report, however, the Home Office report, and MAC analysis it is based on, are not beyond reproach and exhibit several issues which undermine their conclusions and suitability to inform legislation (Devlin et al., 2014; Metcalf, 2012). A thorough critique of the Home Office report is therefore pertinent at a time when immigration is coming to dominate a post-Brexit British political dialogue.

### *Critique*

This evaluation will examine the validity of the Immigration Act by examining the Home Office report used to justify it. It will take a three-part approach: firstly assessing the responses to the report from other sources, then reviewing other similar quantitative studies of immigration. Finally, the mainstay of the critique will involve a technical review of the data and methodology used by the report itself. This final section will be sub-divided into operationalisations, model results, and model testing. Ideally the models presented in the Home Office report and the MAC analysis would be reconstructed which would allow detailed diagnosis of any issues present. However, sufficient information on specification is not available in either of the reports or any other supplementary materials. The Home Office was contacted in an attempt to solicit these specifications for this critique, but they were not forthcoming.

Throughout the analysis, this critique will seek to understand whether the report constitutes evidence driven policy; or '*policy driven evidence*' (Consterdine, 2013). Consterdine (2013) suggests that '*policy driven evidence*' reflects an unscrupulous approach to policy making where the conclusions are preconceived on the basis of partisan political beliefs and then the evidence is sourced or fabricated via unethical or

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selective research methods (Consterdine, 2013). Consterdine (2013) argued that the Conservative led coalition government, which existed from 2010 to 2015, and produced the Home Office report, was guilty of '*policy driven evidence*'. The critique will conclude with an estimation of the validity of this assertion.

## **Contemporaneous Responses**

'Impacts of migration on UK native employment: An analytical review of the evidence' was published in March 2014 and drew immediate criticism (Devlin et al., 2014). The Centre for Entrepreneurs and the company DueDil released a joint report detailing the positive contribution immigrants have made to the UK economy. Their publication, 'Migrant Entrepreneurs: Building Our Businesses Creating Our Jobs', does not reference the immigration report directly, as it was written concurrently. However a press release issued by The Centre for Entrepreneurs outlined their opposition to the Home Office report based on the evidence from their study (Smith and Rock, 2014). The study investigated the entrepreneurial contributions of various strata of UK society and found immigrants to be nearly twice as likely to start businesses as native UK citizens. The report claims that immigrant businesses are responsible for 14% of all jobs in the UK economy and while migrants are not usually as skilled or educated as native workers, they are more ambitious and achieve business success despite barriers such as lack of skills and accessing finance (Johnson and Kimmelman, 2014). The study also commissioned an opinion poll which found that despite their contributions, the majority of people do not have a positive view of immigrants in the economy (Johnson and Kimmelman, 2014). It concludes that public opinion does not reflect the reality of immigration and its impact on the economy (Johnson and Kimmelman, 2014). The Centre for Entrepreneurs report clearly demonstrates that the Home Office report is lacking a major dimension of

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analysis. Its design presumes that all immigrants are workers seeking an already existing job. It classifies migrants by age and education but does not allow for the entrepreneurial dimension of immigration to be measured. The Centre for Entrepreneurs report claims that almost 20% of migrants start businesses, which points to a major omission in the Home Office report (Smith and Rock, 2014).

A second press release issued in the wake of the report outlined the position of Universities UK, an organisation representing virtually all higher education institutions in the UK. Universities UK suggest that the restrictions introduced by the Immigration Act could harm foreign studentship in the UK and damage its position as one of the world's fastest growing destinations for higher study (Universities UK, 2014). The press release draws on a report published by The Department for Business, Innovation & Skills which estimates that overseas students currently contribute over £10 billion to the UK economy each year (HM Government, 2013). It concludes that the Immigration Act has the potential to damage not only the UK economy but also institutions which are dependent on foreign student's tuition fees. The government affirmed its support for growing the UK as a destination for foreign students 2013 (HM Government Press Office, 2013) but neither the Home Office report underpinning the Immigration Act, nor the Act itself, make adjustment for, or reference to, the 300,000 non-EU foreign nationals studying at UK institutions (Devlin et al., 2014; UKCISA Statistics, 2014). Indeed, the design of the Home Office report and MAC analysis do not account for education and classify people in education as 'employed' (Devlin et al., 2014; Metcalf, 2012). While there is competition for spaces at UK universities it is clearly distinct from competition in the labour market and classing 300,000 students erroneously as competing in the labour market could have a major effect on the accuracy of the report's findings. It could even

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lead to systematic bias and over estimation of results, particularly as many foreign students do not stay in the UK after they complete their education and so do not go on to compete in the job market. This suggests another flaw in the Home Office report and it is an issue which was highlighted in the media by the deportation of A-level student Yashika Bageerathi in the same year the report was published (BBC News, 2014c) and more recently by a scandal involving the wrongful deportation of 48,000 overseas students by the then UK Home Secretary, Theresa May (currently Prime Minister as of May 2017)(The Independent, 2016).

## **Previous Studies**

Having discussed direct responses to the Home Office report, this section will examine other studies which have attempted to determine the impact of immigration on the UK job market and economy more widely. The studies will not be discussed in detail as they generally fail to find reliable results and this section aims to highlight the challenges faced by research of this type. The Home Office report shares many methodological similarities with this body of evidence and this was the area of knowledge to which it was trying to contribute (Devlin et al., 2014). Examining this body of work will reveal the perennial issues which are faced by researchers in this area.

Immigration, and particularly its impact on the economy, is a branch of research plagued by methodological and data quality issues. It generally relies on secondary analysis of large scale social surveys, of which there are many, but each comes with its own drawbacks. Generally those detailed enough to provide relevant insights are too small to be statistically significant and those large enough to be statistically significant suffer from a lack of detail. Previous research projects have used a variety of

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methodologies to try and overcome these issues in the data, with varying degrees of success.

Generally these studies use the Labour Force Survey, General Household Survey or the Worker Registration Scheme, although some use more niche sources of data. The majority of studies in this area (including the Home Office report) focus on spatial analysis in which data is divided down by geographical regions and compared to account for the very different labour markets across the UK (Devlin et al., 2014). This is opposed to the skill-cell approach which breaks the data down by educational level or some other measure of skill stratification which accounts for different levels of the economy. This alternative method is used by a small minority of studies. Using these methods, several studies have returned results with moderate effects of immigrants on native employment but which are insignificant (Dustman et al., 2003; Dustmann et al., 2005; Lemos and Portes, 2008; Lucchino et al., 2012). Alternatively some studies have been statistically significant but have found tiny effects hardly worthy of note (Metcalf, 2012; Nickell and Saleheen, 2008; Reed and Latorre, 2009). The problems faced by these studies are very similar to those which the Home Office report sought to overcome and are detailed below in the specific discussion of the report (Devlin et al., 2014). To date, vanishingly few immigration studies of the UK have found both noteworthy and significant results for the general impact of immigration on employment and an expected body of post-Brexit research has yet to make it to print. The existing evidence is inconclusive and cannot, in good faith, be used to support either side of the immigration debate. Immigrants may have an effect on native employment, positive or negative, but there isn't reliable evidence of either, despite a raft of studies.

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While these studies are not as timely as the Home Office report, their continued difficulties stem from a perennial problem in the underlying data which the Home Office report is also subject to (Devlin et al., 2014). These issues set the stage for a review of the report itself which suffers from a range of serious flaws.

## **Operationalisation**

The main finding of the report, which was used to justify the Immigration Act 2014, is a negative link between non-EU immigrants and native employment, indicating migrants replacing UK citizens in the job market (Devlin et al., 2014). The technical aspects of this finding will be assessed below but first is it prudent to examine issues of operationalisation which determines how data is coded, which variables are used, and how models are designed. These issues underpin any statistical results and relate to problems experienced by other scholars in the field as detailed previously. The Home Office report acknowledges the difficulties faced by other studies in its literature review, but suggests that it can succeed where other investigations have failed by using the most up to date (at the time) waves of Labour Force Survey data (Devlin et al., 2014). It asserts that since the effects of the economic downturn have only been apparent since 2008, a relatively small increase to the overall number of cases in the data could make the difference between statistical significance and insignificance because of when the data was collected (Devlin et al., 2014). The authors hope that having a good volume of data from after the financial crisis, when the economy was depressed, will make the effects of migration on native employment more marked and easier to test statically; they posit this as the reason that the MAC analysis and their report are valid against a backdrop of statistically insignificant previous studies. Before discussing whether or not this is the case, a review of the design of the study is relevant.

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The report uses a similar design to previous studies, particularly the MAC analysis which it is an extension of. It draws upon the Labour Force Survey, breaks the data down into regions (the spatial approach) and uses the respondent's country of birth to determine immigration status. It then carries out a multiple regression with native employment as the dependent variable and a variety of immigration, age and qualification categories as independent variables.

The use of country of birth as a proxy for immigration status is not ideal and leads to inaccuracies as it cannot distinguish between migrants who have citizenship, those who do not, and UK natives born abroad. This choice of operationalisation is driven by a lack of good data for 'nationality' which suffers from ambiguity in most data sources. The Home Office report acknowledges this shortcoming and attempts to justify its design by providing an alternative model where nationality is used in place of country of birth which reduces the statistical significance of the model considerably (Devlin et al., 2014). It also points out that the use of country of birth is a common concession in the extant body of research. While this is true, justifying a poor operationalisation does nothing to reduce its impact on the results.

A second issue with the operationalisations used by the report is the use of 'native employment'. As previously stated this measure spuriously includes higher education students and, additionally, using such a simplistic abstraction of the UK labour market could lead to an inaccurate estimation of the effects of immigration. A report into poverty by the Joseph Rowntree Foundation in 2014 brought this issue into sharp focus when it concluded that there are more impoverished underemployed people in the labour market

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than there are impoverished unemployed people outside of it (MacInnes et al., 2014). This has been driven by an increase in part-time work, zero-hours contracts, and wage compression, and blamed, at least in part, on the focus on simple employment rate (MacInnes et al., 2014). The implications of this mis-operationalisation for the findings of the Home Office report are not discernible, but it at least suggests that whatever the ultimate findings of the report they will not fully or accurately capture the poverty which employment is being used as a proxy measure for (Devlin et al., 2014). In other words the report makes the assumption that a lower native employment rate alone is implicitly bad but it provides no evidence or further work to substantiate this.

A third issue with operationalisation was highlighted by Dustmann, a veteran analyst in this area. In 2014 he and Frattini chose to look at tax and welfare contributions by migrants rather than wage and employment impacts (Dustmann and Frattini, 2014). They achieved highly significant results with moderate magnitudes, and performed enough robustness checks to conclude that, since 2000, immigrants have made a net contribution to the UK's budget. While this is not directly related to the scope of the Home Office report, it does suggest a further factor which was not considered or accounted for in the Home Office report which simply looks at employment (Devlin et al., 2014).

Finally, another paper by Dustmann and several colleagues published in 2016 advocates that employment and wage impacts should be modelled together to obtain accurate results because wages impact on employment and vice versa (Dustmann et al., 2016). The Home Office report eschews estimating wages, citing complexity (Devlin et al., 2014).

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In general the report's operationalisations are not robust and expose the findings to several sources of inaccuracy and mismeasurement. However, they are consistent with previous studies and generally reflect, with a few specific exceptions, issues with the available sources of data. The impacts these choices of operationalisation have on the ultimate findings of the report are hard to disentangle from each other, but the conclusion of the report should at least acknowledge this weakness more explicitly.

## **Model results**

### *Confidence intervals*

The report's main finding is a moderate negative association between non-EU migrants and native employment meaning the model estimates that non-EU migrants have a negative effect on native employment (Devlin et al., 2014: 54). The coefficient for this estimate is -0.230 (Devlin et al., 2014). This gives the strength and direction of the association; the minus indicates a negative effect and 0.23 is a moderate magnitude (the scale extends from 0, meaning no effect, to 1 meaning completely correlated). Neither EU migrants nor any breakdown of migrants by age or education returns a coefficient above 0.1 which suggests very small effects (Devlin et al., 2014). The entire conclusion and recommendation of the report is based on the single moderate finding for non-EU migrants, but without more information it is unwise to conclude that this result is consequential. The most important piece of omitted information is the confidence interval for the main coefficient. Confidence intervals are the range which the model estimates contains the true value of the coefficient – usually calculated to 95% confidence – this reflects uncertainty (Berry, 1993). Confidence intervals can range from tight to wide depending on numerous factors – chiefly the sample size and how spread out the data is. The coefficient reported is in the middle of the intervals but the true value can lie

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anywhere in the confidence range and there is a small chance that it lies outwith this range. The report also omits the standard error which can be used to easily calculate the confidence interval and which is often included in place of the intervals to save space; however, the original MAC analysis includes an identical model and does report the standard errors for this coefficient as 0.058. Applying this to a coefficient of -0.230, results in a 95% confidence interval of -0.11632 to -0.34368 – this is the plausible range of the effect size. Consequently there is a greater range of values possible for this coefficient than the report implies; the lower end (-0.12) would be a small effect of little note. Furthermore there are several issues with confidence testing which are not acknowledged by the report and could undermine the reported coefficient further. Firstly, confidence intervals, and consequently the coefficient calculated from their median, are not a statement of how likely it is that the true value lies within the reported range but rather how often the range falls upon the true value in the long run (Magnusson, 2014). Put simply they are a statement of the accuracy of the model algorithm over time and not an individual result (Morey et al., 2016). Secondly, the average of a sample has no relation to its spread and consequently the tightness of a confidence interval is not related to how likely it is to include the true value and is not a measure of accuracy in that regard (Morey et al., 2016). These issues are both highly technical but to summarise, there is no way to test beyond doubt that a single model or result is accurate and meaningful. The way around this issue is replication of results using different samples, algorithms, data, or methods (Morey et al., 2016). The report acknowledges this itself and argues that a ‘triangulation’ approach is best practice but there is no explanation as to why this was not attempted. The model presented still has some value alone but it is not nearly robust enough to support the final conclusion the report comes to, which is that non-EU migrants displace native people in the economy.

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A more minor issue concerns why confidence information was not presented in the Home Office report itself (Devlin et al., 2014). Confidence intervals are calculated in all major statistical software packages when a regression is carried out and the original MAC report included standard errors. Including at least one of these statistics is standard practice. Why this was not done could simply be for presentation reasons but the same results table peculiarly includes both numerical P-values (discussed below) and redundant asterisks for indicating the P-value, suggesting space for presentation was not an issue. Additionally the P-values are presented below each coefficient in parenthesis which is a common way to display standard errors, while P-values are usually displayed in a separate column on the same row. While ascribing this as an attempt to deceive may be unsubstantiated, the layout is unorthodox and may constitute an attempt to obfuscate critical information about the model in order to shroud its deficiencies.

### ***Significance***

Statistical significance (previously referred to as P-values) is a measure of the chances that an observed pattern may be randomly occurring (Berry, 1993). It is directly related to confidence intervals discussed above; significance increases the further the confidence intervals are from including zero (zero meaning there is no effect so being further from it means the finding is more likely to be valid). In practice, significance indicates how valid a result is – if it is insignificant there is a good chance it occurred simply by chance. The conventional significance threshold is below 0.05. This means that there is a 5% chance of the result just being due to chance; 5 heads in a row on a coin flip would be below a 0.05 significance level, and therefore significant, and we might conclude that there is something going on (such as the coin being weighted). This is the same logic followed

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when reading regression output; for a result to be valid its P-value has to be below the 0.05 threshold and, therefore, significant.

In the main model from the Home Office report the key result, the negative effect immigrants have on native employment, is significant to a reasonable degree with a P-value of 0.003 (0.3% chance of randomness or about 8 heads flipped in a row on a fair coin) (Devlin et al., 2014). There are several other variables which are significant but they are largely treated as controls and do not feed into the conclusions (they are there to improve the robustness of the main result). The Home Office report provides an updated model based on the main model from the MAC analysis in which the main independent variable is even more significant, though the observed coefficient is slightly smaller (Devlin et al., 2014). This model is not useful however given that no standard error is presented and its credibility is therefore difficult to assess.

Therefore the main finding of the study, that non-EU migrants negatively impact native employment, is the only relevant finding and, while it is significant, there are other issues which undermine it. The study provides a version of the main regression model excluding London from the analysis (Devlin et al., 2014: 54). Though not explicitly discussed, this is an attempt to test the robustness of the results when the specification of the model is altered arbitrarily. This change renders the main finding statistically insignificant (at a 5% threshold) which emphasises the fragility of the model. There is also no information in the Home Office report about pre-estimation data preparation or post-estimation testing (Devlin et al., 2014). The MAC report, alternatively, details testing undertaken for the removal of outliers and log transformations (Metcalf, 2012). The result of removing outliers and the log transformation (which is an arbitrary change

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similar to removing London) is the model becoming insignificant which further suggests that it is fragile to changes in specification. The report acknowledges these shortcomings but continues to present a strong conclusion based on one result from one category of one model which looks increasingly fragile. Given that all results in statistical analysis have an associated degree of uncertainty, even the strongest and most clear-cut results, it is important not only to prove that results are resistant to specification change, but also to carry out analyses repeatedly to provide evidence that a single result was not simply due to random chance. This is good practice in statistical research, especially when variables are of dubious quality, and is recommended most forcefully by Lambert (Lambert and Bihagen, 2014; Lambert, 2015) among others in various fields and contexts (Andersen, 2008; Berk, 2004; Gelman and Hill, 2006; Treiman, 2009). The report not paying heed to these long standing standards of quantitative research suggests that the authors may have been ‘*significance chasing*’, a practice where model specifications are varied until significant results are obtained and then the specification is defended post-hoc (Ware and Munafò, 2015). This is bad practice and would suggest ‘*policy driven evidence*’ if confirmed.

Being fragile and in an already weak position from which to inform policy, the design of the study has two other major flaws concerning model testing which both have the potential to undermine the entire research design – endogeneity and heteroscedasticity.

## **Model testing**

### ***Endogeneity***

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Endogeneity refers to a situation where a variable or effect which is not in the model has an effect on both the dependent (the key variable being looked at, in this case native employment) and one or more of the independent variables (the variables which predict the dependent) (Berry, 1993). This often arises where several variables react to each other, for example an increase in price will affect both supply and demand which also affect each other. If one of these variables was missing it would have a negative effect on the accuracy of the model.

Endogeneity is a potentially problematic issue for quantitative analysis which should be examined with model testing. The MAC analysis does test for endogeneity bias, among other tests, in its appendix. The testing carried out by the MAC report suggested potential endogeneity bias (Metcalf, 2012: 167). Endogeneity, in this context, relates to the propensity of migrants to move to areas of the country with more available jobs; they do not spread evenly or at random. This is an un-modelled effect which has the potential to undermine the main finding of the model; in effect the model is missing a variable (the attractiveness of different areas to migrants). This omission has the potential to bias the standard errors, and thus, the significance figure reported which the Home Office report places a lot of weight on (Devlin et al., 2014). The MAC analysis reports this issue; the Home Office report, mentions that it was problematic for the MAC analysis but does not re-test for it, adjust for it, or refer to it again in its own conclusion (Devlin et al., 2014; Metcalf, 2012).

### ***Heteroscedasticity***

Heteroscedasticity refers to a situation where the error term of a model is not normally distributed, which is a key assumption of regression modelling (Andersen, 2008; Berry,

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1993; Kaufman, 2013). This occurs most commonly when the accuracy of a variable changes across its range. This is very common with predictions of the future; predicting the rate of inflation in the UK next week will be quite accurate while predicting it in a year will be less so. Another example is predicting the weight of people based on their height; children exhibit relatively little variation but as they age the data spreads out. If this spread is uncontrolled for in a regression it will bias the standard errors, which affects the significance (Berry, 1993; Kaufman, 2013). Heteroscedasticity is a complex issue and more information can be found in Kaufman (2013).

All linear regressions should test for heteroscedasticity and adjust where appropriate but the Home Office report does not make any reference to testing or adjustment made for this potential issue (Devlin et al., 2014). It would not be unusual for the data to be heteroscedastic; the majority of real life data sources have heteroscedastic qualities but good research needs to test, acknowledge and adjust where appropriate (Andersen, 2008). Techniques to help quell the effects of heteroscedasticity include robust regressions and robust standard errors. The Home Office report not only fails to make either of these adjustments but ignores the issue completely (Devlin et al., 2014).

The effects of heteroscedasticity on a model's outcomes are usually small but quelling them generally involves removing outliers or widening confidence intervals (Andersen, 2008). As already discussed above, either of these issues is likely render the Home Office model insignificant and in combination with the other issues discussed above heteroscedasticity could be a major problem. If the researchers wished to find a particular result then heteroscedasticity is problematic. Heteroscedasticity testing and adjustment are complex statistical techniques and it is common for researchers, even in

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academia, to ignore the issue. Kaufman, a social statistician, found that three quarters of the regressions used in the American Sociological Review make no reference to, and are potentially undermined by, heteroscedasticity (2013). It could therefore be suggested that the lack of heteroscedasticity testing in the Home Office report is an attempt to obfuscate the model's deficiencies or retain the single significant result, but it might be fairer to ascribe its omission to ignorance.

Nevertheless the Home Office report is undermined not only by its design and limitations in the data, leading to low coefficients and statistical insignificance, but also by its issues with confidence intervals, endogeneity, and heteroscedasticity which further undermines its already weak findings (Devlin et al., 2014).

## **Conclusion**

A novice quantitative researcher could pick up the Home Office report and find it reasonably convincing; its primary model returns a significant and noteworthy result for the key independent variable (Devlin et al., 2014). However, when a more critical eye is brought to bear, it is clear that the report is on shaky methodological ground. The models in the report use poorly operationalised dependent and independent variables; they do not have adequate information to properly interpret them; and they are likely undermined by a combination of underlying issues which have largely not been tested for and have certainly not been adjusted for. Most of the flaws are small on their own, but combined they add up to severe issues which seriously undermine the findings of the report. These problems are not unique to the Home Office analysts; they are common to all quantitative researchers, who deal with them with a wide variety of competence. What is unique to this report is the peculiar way in which results are presented, as if to conceal flaws, and

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the disconnect between the statistical results and the final assertion that non-EU migration displaces native workers (Devlin et al., 2014).

The previous reports into immigration, detailed earlier in this critique, all suffered from almost identical issues but none of them claimed to have found concrete influential results. The Home Office report not only claims that it has reached a robust conclusion, but went on to become the justification for a law which could affect millions of people in subsequent years and decades (Devlin et al., 2014). To put this in another context, one significant result, from one particular specification of a model was used to justify a controversial Act of Parliament.

Although it is not verifiable, there is a high possibility of political bias in the Home Office report. Consterdine (2013) referred to the British institutions of immigration policy making as using '*policy driven evidence*'. The report comes in the wake of over 20 years of evidence based immigration research which has generally failed to find significant or meaningful results (in the UK at least) and the authors of this research claim to have found results robust enough to defend an Act of Parliament. Whether this research was deliberately conducted in an unethical fashion or simply carried out badly isn't a question that can be definitively answered, but the way it was conducted suggests '*significance hunting*' and the disconnection between the findings and the strength of the final conclusion suggest external bias. Evidence supporting this conclusion can be found in the Home Office report itself when the authors conclude in the light of poor results that:

“...in advising on government policy, government analysts have to make a judgement.” (Devlin et al., 2014: 52)

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The conclusion of this critique, therefore, is unsurprising: ‘Impacts of migration on UK native employment: An analytical review of the evidence’ is a deeply flawed report which should not have been used to inform government policy (Devlin et al., 2014).

There is no robust evidence backing the Immigration Act 2014. Whether one thinks a change in immigration policy is prudent remains, largely, a question of value based bias; the empirical evidence is simply not robust enough to support a conclusion on either side of the debate, as demonstrated by the failure of multiple previous studies. It is in this vacuum of evidence that hateful and racist rhetoric flourish and it would appear that the Conservative led coalition may have commissioned this report to distance themselves from that rhetoric and to lend a veneer of credibility to a policy they wished to pass on partisan grounds. Given that some sections of the media cast anti-immigration politics as racist and bigoted this desire for credibility is unsurprising (Consterdine, 2013), but if the government wished to provide an evidence based endorsement for its policy, it needed to look no further than descriptive survey statistics. The survey carried out by DueDil for example found that twice as many people support a reduction in immigration than support an increase (Johnson and Kimmelman, 2014: 6).

The previous leader of the Conservative party, David Cameron, made a speech in the wake of his government missing its immigration targets in 2014 in which he detailed plans to curb benefits for EU migrants which parallels and extends the provisions of the Immigration Act 2014 (which only applies to non-EU migrants) (Conservative Party, 2014). This is clearly suggestive of continued partisan policy making on matters of immigration and indicates that, with the UK separation from the EU imminent, poorly justified legislation may soon come to affect all immigrants to the UK and millions of

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people's lives. The evidence to support these policies is nearly non-existent and there is a strong suggestion that they are partisan, tactical, and political.

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