Crime and Immigration: Evidence from Large Immigrant Waves

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Abstract

This paper examines the relationship between immigration and crime in a setting where large migration flows offer an opportunity to carefully appraise whether the populist view that immigrants cause crime is borne out by rigorous evidence. We consider possible crime effects from two large waves of immigration that recently occurred in the UK. The first of these was the late 1990s/early 2000s wave of asylum seekers, and the second the large inflow of workers from EU accession countries that took place from 2004. We show that the first wave led to a small rise in property crime, whilst the second wave had a small negative impact. There was no observable effect on violent crime for either wave. Nor were arrest rates different to natives. Evidence from victimization data also suggests that the changes in crime rates during the immigrant waves cannot be ascribed to crimes *against* immigrants. We interpret these findings as consistent with the simple economics of crime model where the differing relative labour market position of these migrant groups suggests they have different net returns to criminal activity. Thus, overall, our findings suggest that focusing on the limited labour market opportunities of asylum seekers could have beneficial effects on crime rates.

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I. INTRODUCTION

Many media and social commentators posit there to be a direct connection between immigration and crime. However, this is a key question on which there is only a very sparse academic literature (for notable exceptions, see the US papers by Butcher and Piehl, 1998, 2005 and the Italian paper by Bianchi, Buonanno and Pinotti, 2008).[1] This contrasts starkly with the by now very large literature on the labour market effects of immigration (see, *inter alia*, Borjas, 1999, or Card, 2005).

In this paper, we study possible crime effects from two recent large flows of immigrants that entered the UK economy. These large flows offer an opportunity for careful appraisal as to whether the populist view that immigrants cause crime is borne out by rigorous evidence. We are able to exploit the fact that the two flows were very different in nature[2], in particular in their incentive to engage in criminal activities.

The first immigrant flow we consider is the late 1990s/early 2000s wave of asylum seekers (what we refer to as the "asylum wave"). The second is the large inflow of workers from EU accession countries (the "A8 wave") that occurred from 2004 onwards. As we will demonstrate, connections of these two flows to the labour market are very different. As labour market opportunities on offer are a key determinant of crime in the standard economic model of crime (*a la* Becker, 1968, or Ehrlich, 1973), we develop our empirical tests in this light. In particular, labour market opportunities available to the asylum wave are much worse than for both natives and the A8 wave,

[1] Indeed, in the UK – the context we study – there is no evidence at all. The only quantitative evidence of which we are aware is contained in the unpublished MSc dissertation by Pearse (2009).

[2] Heterogeneity in migration flows from refugees and economic migrants to the US is stressed in Cortes (2004), who demonstrates significant variation in labour market attachment and earnings, and assimilation, of these groups.

making the net returns to criminal activity likely to be different. We therefore hypothesise that crime effects are more likely in the case of the former.

Our evidence supports this way of analysing the crime-immigration relationship. For the asylum wave, we report evidence of a higher incidence of property crime induced by the immigration flow. The A8 wave sees the opposite effects. There is also no observable impact on violent crime for either wave. Evidence from victimization data suggests the changes in crime rates that occurred during the immigrant waves cannot be ascribed to crimes *against* immigrants, whilst data on incarceration corroborates the view that any immigrant induced rise in crime is associated only with the first wave. This leads us to an overall conclusion that focusing on the limited labour market opportunities of asylum seekers could have a beneficial crime reduction effect.[3]

The rest of the paper is structured as follows. Section II describes the two migration waves in more detail and presents some summary statistics on their characteristics relative to both natives and other immigrants. Section III presents our main results. We exploit local area-level data on crime rates and migrants to estimate panel models of the relationship between recorded crime and the immigration waves. Section IV gives evidence on immigrant-native differences in rates of incarceration that are consistent with the crime patterns reported in main results and presents findings from the victimization analysis. Section V offers an interpretation of the results, connecting them to the standard Becker/Ehrlich economics of crime model. Finally, Section VI concludes.

[3] See Mastrobuoni and Pinotti (2010) for evidence that granting legal status to migrants - by opening up better labour market opportunities for them - reduces their recidivism rate.

II. IMMIGRATION TO THE UK SINCE 1997 – A TALE OF TWO WAVES

We begin by describing the evolution of immigration in the UK over the last few decades, paying particular attention to the large flows since 1997. The later period has been notable for the vast inflow of migrants relative to previous experience. We show that two particular waves of immigration into the UK since this date have been major contributors to the overall rise. Interestingly, they have very different characteristics and motivations for migrations. This makes them a natural focal point for analysis, and for testing whether immigrant flows impact on crime.

The pattern of immigration over the recent past is shown in Figure 1. This plots the stock of immigrants each year over the period 1997-2009 together with the number of reported violent and property crimes. In 1981 the stock of immigrants was 3.2m and this had only risen to 4.1m by 1997. Since then, the stock has risen to 6.9m. In other words, fully three-quarters of the rise in the stock of immigrants over the last thirty years occurred since 1997 and this is the only period during which the change in migration overwhelmed the natural change in the population. We think this gives us a credible setting for empirically studying the crime-immigration relationship. To see how, we now turn to a closer examination of the immigration flows since 1997.

The first flow we concentrate on is the large rise in the number of asylum seekers. Asylum flows to industrialised countries rose in the 1990s and 2000s, with peaks in 1992 and 2001 (see Hatton, 2009). The first peak was associated with the fall of the Berlin Wall and civil war in the former Yugoslavia, and Germany was the principal destination country. The second peak, which we focus on in this paper (as flows to the UK were

much larger), was associated with wars and country breakdowns such as in Iraq, Afghanistan, and Somalia.

While the increased flow of asylum seekers occurred in many industrialized countries, the numbers seeking asylum in the UK were very large relative both to previous application trends and to other forms of immigration. The UK was the second-highest recipient in the world of asylum seekers over this period, receiving almost twice as many as the United States. Figure 2 plots the number of applications for asylum in each year from 1993 to 2008. The sharp increase after 1997 is clear, as is the subsequent deceleration after 2002. The average number of new applications for asylum in the five years prior to 1997 was 31,000. In the five years after 1997, this rose to 71,000. At their peak, asylum seekers accounted for over 20% of all non-British migrants entering the UK.[4]

Most of the migrants associated with the first flow are ultimately denied leave to remain in the UK. On average during this period, around 70% of asylum seekers had their claim rejected or withdrawn. In this paper, we focus on the stock of asylum seekers rather than the subsequent smaller stock of successful asylum applicants. We do so for three reasons. First, as most asylum applicants are eventually denied it would make little sense to focus only on the subset of successful applicants. Second, as a practical matter we have data on the geographical location of asylum seekers only while their claim is being assessed or appealed. Third, the identification strategy we use relies on the dispersal policy adopted for asylum seekers. Successful applicants are no longer subject to these

[4] A detailed discussion of the causes of the rise and fall of asylum flows is provided by Hatton (2009).

restrictions. It is a subject for future research to examine the performance of successful asylum seekers in the labour market and their impact on crime.[5]

The second flow we consider is rather different. This big inflow occurred because of the opening up of the UK labour market to citizens of eight countries that joined the European Union in 2004. These accession countries (the so-called A8) were Poland, Hungary, Czech Republic, Slovakia, Slovenia, Latvia, Lithuania and Estonia. At the time of accession, current EU members were allowed to decide whether to allow immediate access to their labour markets or to maintain barriers to the free movement of labour. The UK, along with Ireland and Sweden, chose to open up the labour market. The impact on the labour market has been comprehensively analysed by Blanchflower and Shadforth (2009). Our focus is simply on the size of the subsequent immigrant flow. Figure 2 shows the number of Worker Registration Scheme applications from A8 migrants for each year since 2004[6]. Clearly, the flows associated with this immigrant wave dominate the inflows of migrants over the period, accounting for almost 50% of such inflows at their peak.

The characteristics of the two immigrant waves are very different (a feature we return to in Section V when considering the interpretation of the results we report and

[5] Edin, Fredriksson and Aslund (2003) examine the economic success of refugee immigrants in Sweden, where a dispersal policy similar to that used in the UK was operated. Their data does not identify refugee immigrants separately from other immigrants so their identification relies on country of origin and year of arrival. Such an empirical strategy for the UK would be ineffective. Suppose we take all identified countries of origin that contributed asylum seekers between 1997 and 2003. Over the period 412,000 asylum applications were made from these countries (95% of the total). We know that the ultimate acceptance rate was around 30%, implying around 125,000 applicants would be allowed to remain permanently in the UK. If we assume that all these successful applicants remained in the UK, we can compare this figure to the size of the immigrant population in 2008 for these countries of origin who arrived as adults between 1997 and 2003. The Annual Population Survey gives an estimate of 634,000. So using country of origin and year of arrival to try and identify asylum immigrants would falsely identify in around 80% of cases. Even if we restrict the sample to only the largest 5 countries of origin, the error rate would still be around 50%. This simply highlights the fact that the vast of majority of foreign migrants to the UK do not arrive as asylum seekers, even from countries that generate many asylum applicants.

[6] Workers coming to the UK from A8 countries were required to register on the WRS. More details are provided in the Data Appendix.

their theoretical underpinning). To provide some illustration of the characteristics of the two waves, Tables 1A and 1B report some summary statistics from cross-section surveys for the two waves and for all other immigrants and for natives. Few micro datasets in the UK explicitly identify asylum seekers. For Table 1A we use the 2004 New Deal for Communities Evaluation Survey, which asks all respondents whether they entered the UK as refugees. The sample for this survey covers disadvantaged areas around the UK so the data tends to show higher unemployment rates and lower wages than would be true for the whole country, but we are comparing asylum seekers with natives and non-asylum immigrants within the same areas. The data for the A8 wave comes from the nationally representative Labour Force Survey.

A number of observations can be made regarding the characteristics of the two waves. First, immigrants in both waves were younger and more likely to be male than natives. Second, individuals in the A8 wave were much more likely to be single and have no dependent children compared to natives, other immigrants and the asylum wave. This is consistent with the general impression that the A8 wave was dominated by young people coming to take up employment rather than for family relocation. Further support for this is shown by the participation rates for this wave, which are higher than for natives. In contrast, the asylum wave has low participation rates and unemployment rates that are twice as high as for natives.[7] It is clear that the first wave has experienced very poor employment outcomes, while the second wave has the opposite experience. Wages

[7] Poor labour market performance relative to natives is a feature of asylum seekers who were relocated to other countries. For example, Edin at al's (2003) analysis of refugee immigrants in Sweden shows them to have significantly lower employment rates as compared to Swedish born individuals.

tend to be low for both waves, though some of the wage disadvantage for the A8 wave can be explained by the lower average age of this group.[8]

Two broad conclusions follow from the discussion in this section. First, the rate of immigration into the UK was relatively smooth in the decades prior to 1997. Since then, the flows have been much more rapid. They have been dominated first by the flow of asylum seekers, then by the flow of A8 workers. Second, the characteristics and outcomes, particularly in the labour market, of these two waves are starkly different. These differences will be crucial in examining whether there are links between immigration and crime.

III. LONGITUDINAL MODELS OF CRIME AND IMMIGRATION

In this section, we estimate panel data models of the relationship between immigrant shares and recorded crime. We start by looking at the total immigrant share, but conclude that such regressions have severe data problems that hinder our ability to draw reliable inference. Consequently we spend most of this section analyzing the two immigrant waves described above.

Our basic estimating equation takes the form:

$$\Delta(\text{Crime/Pop})_{it} = \beta_1\Delta(\text{Migrants/Pop})_{it} + \beta_2\Delta\ln(\text{Pop})_{it} + \beta_3\Delta X_{it} + T_t + \varepsilon_{it} \qquad (1)$$

where Crime is the number of notified offences, Pop is the resident adult population, Migrants is either the number of total immigrants, or the asylum seekers or the number of A8 immigrants, X denotes possible local area control variables such as the percentage of the population claiming welfare benefits and the share of young adults in the population

[8] Half of the wage difference between A8 migrants and natives is explained by age, education and sex in a standard wage regression. The low levels of wages for A8 migrants observed in the LFS are consistent with the self-reported wage rates in WRS registrations. In 2008, 93% reported earning an hourly wage below £8.

and *T* are a set of time dummies. Standard errors are clustered at the local authority level in all reported tables.

(a) Total immigrant share

We have data for 170 local areas covering all of England and Wales, which are consistently identified throughout our sample period (2002-2008). Estimates of the total foreign-born population are based on the LFS (until 2003 included) and on the Annual Population Survey (after 2003): the immigrant share is computed as the ratio between the total number of foreign-born individuals and the adult population. Annual crime rates are split into two broad categories: Violent offences and Property offences (the sum of Burglary, Robbery, Theft of a Motor Vehicle and Theft from a Motor Vehicle). Full details of all data and sources are provided in the Data Appendix.

The first three columns of Table 2 reports OLS estimates of equation (1) for the total immigrant share. We report estimates for total, violent and property crime. All regressions include a full set of year dummies and dummies for police force area. According to these estimates, there does not seem to be any relation between immigrant share in the area and crime rates: regression coefficients on the immigrant share are tiny and not significantly different from zero.

There are two obvious explanations for these results, other than that this is the true relationship. One potential explanation arises from the potential endogeneity of the immigrant share. If settlement location is a choice variable we might expect such choice to bias our estimates. For example, if immigrants choose to locate in areas experiencing low crime growth, this would bias down estimates of the causal effect of immigrants on crime. Such an effect might work directly - immigrants find out where low crime areas

are - or indirectly - immigrants move to areas with good employment prospects that also produce lower crime rates. The recent literature on the impact of immigration on receiving countries has generally addressed this identification issue by either devising suitable instruments (Card, 2001; Lemos and Portes, 2008) or by exploiting some natural experiment where immigrants where forcibly allocated to areas they had not chosen (Edin et al., 2003; Gould et al. , 2004; Glitz, 2006; Damm, 2009). In this paper, we adopt both strategies. We will employ an instrumental variable strategy for the total foreign-born share and for the A8 wave, while we will exploit a dispersal policy for the asylum seekers wave.

Following Altonji and Card (1991), "spatial correlation" analysis of migrant impact on different host country outcomes have often made use of a "supply-push component" instrument.[9] As detailed in the Data Appendix, the instrument is based on the persistence of location choices of immigrants in host countries: the initial distribution of migrants (by country of origin) across different areas and the current national inflows are used to obtain an (arguably) exogenous predicted migrant share (which is then used to instrument the actual one).

We report our IV estimates for total, violent and property crime in columns 4-6 of Table 2. Once we address the endogeneity of the immigrant share variable the picture looks quite different. All coefficients are now negative, implying that a larger presence of immigrants actually leads to a reduction in local crime rates. Still, none of the coefficients are significantly different from zero and in various alternative specifications we found that both the coefficients and standard errors were fragile. The strength of the instrument

[9] See, among others, Card (2001), Ottaviano and Peri (2006), Bianchi et al (2008), Dustmann et al. (2008), Cortes (2008) and Gonzalez & Ortega (2010).

is also substantially affected by the choice of additional control variables, with an F-statistic that drops from almost 16 down to 4 when other controls are added.[10]

The second concern regarding these models is arguably even more problematic than endogenous location choice. There is likely to be very substantial measurement error in our estimates of the local foreign-born stock. As pointed out by Aydemir and Borjas (2011), the sampling error in estimates of the immigrant population in local areas obtained from national surveys can be substantial, leading to an attenuation bias that makes it extremely hard to find any impact of the immigrant stock on the outcome under scrutiny. This problem is particularly exacerbated when dealing with fine geographical disaggregation as in the analysis in this section.[11]

To see the potential effect of this attenuation bias, we conducted the following simple Monte Carlo simulation. We set the immigrant shares in 2000 equal to their sample observation in each locality. We then set β_1 = -1 in equation (1) (with all other effects set to zero and no residuals) and used the actual crime rates each year to generate simulated immigrant shares for each location/year cell. This ensures that the simulated immigrant shares are of the same order of magnitude in each cell compared to the measured shares and that we know the exact value (with no standard error) of β_1 in the population. We then generate a population dataset for each year that has an immigrant indicator for each individual that when aggregated matches the simulated locality immigrant share. We draw 100 random samples from this population assuming a 0.25% sampling rate that is constant in each location/year cell. This is approximately the

[10] Similarly, Pugatch and Yang (2010) use the Card instrument in the US context and show that it is not robust to the inclusion of state-specific time trends. Full first-stage results are available upon request.

[11] In 2008 for example, the average number of immigrants in a local authority cell is 163 and 40% of the cells have less than 100 immigrant observations.

sampling rate of the Annual Population Survey from which our data comes. We then estimate equation (1) over the period 2002-2008. If there were no attenuation bias, the average estimate would of course be -1. In fact we find that the average value of β_1 is -0.1. In other words, there is little likelihood of obtaining correct inference on the crime-immigration link in this data due to the small sampling rate and large number of locations.

In light of the problems discussed, we conclude that reliable inference is likely to prove illusive if we focus on the total immigrant stock. For the remainder of this section we therefore turn to our principal empirical analysis that focuses on the two immigrant waves described in Section II. This allows us to work with measures of the local immigrant shares that are much less affected by sampling error and where we are able to effectively employ a range of alternative and more powerful instruments.

(b) The Two Immigrant Waves

For the immigrant waves, the data we have are administrative data measured at the Local Authority (LA) level across England and Wales. We now have 371 LA's which can be consistently identified over our sample period, with an average adult population of roughly 120,000. As before, annual crime rates are split into two broad categories (Violent and Property offences). Full details of all data and sources are provided in the Data Appendix.

For both waves, we can measure the number of immigrants using administrative data that covers the entire population of interest rather than rely on sample surveys. For the asylum wave, we have annual data on the stock of asylum applicants in each LA from

2001. The data begins in 2001 as this is the first year that a national dispersal policy for asylum applicants was implemented and data at the local authority level was collected. The flow of immigrants associated with the A8 accession is measured using administrative data from the Worker Registration Scheme (WRS). A8 migrants registered on the WRS when they first arrived in the UK. The WRS only measures the inflow of workers and so is not the stock of A8 workers at any point in time. However, we cumulate the data over time to approximate the stock[12]. The data is available at the LA level from May 2004 on an annual basis. Figures 3A and 3B show the distribution of the two immigrant waves across England and Wales. The asylum wave migrants are very unevenly distributed because of the dispersal policy that operated (which we discuss in more detail below) and a large number of local authorities had no exposure. In contrast the A8 wave is more evenly distributed, though with pockets of larger concentrations.

Table 3 reports the first set of results of estimating equation (1) for both waves.[13] Column 1 shows a positive relationship between asylum seekers and total crime, though the estimated coefficient on the asylum seekers variable is not significant. However, the picture alters when we discriminate between violent and property crime. For violent crime, we find a negative but insignificant impact for asylum seekers whilst we find a

[12] There is a natural concern that differential rates of out-migration across local authorities by A8 immigrants would result in the cumulated inflow measure having a poor relationship to the true stock. To examine this we have compared the flows from the WRS data with the change in the stock estimates from the Annual Population Survey. To achieve reasonable sample sizes of A8 citizens we estimate APS stocks at the level of Police Force Area (42 areas) and aggregate the WRS data to the same level. We then regress the WRS flows on the change in APS stocks over the period 2004-2008 with time dummies included. The coefficient on the APS stocks is 0.97 with a t-stat of 10 and an R2 of 0.77, suggesting a fairly tight correspondence between the WRS flows and the stock changes.

[13] We have also estimated the model in log differences and using within-group fixed effects rather than first-differences. Our conclusions are robust to these alternative specifications. In addition, the coefficients on the immigrant share variables are almost identical if we estimate separate models for each immigrant wave.

borderline significant positive relationship for property crime[14]. The addition of controls does not alter the results substantially. We consistently find that the violent crime rate is rising when the share of young people in the adult population is rising and that property crime rate is rising in areas with an increasing share of welfare benefit recipients. These effects are very much in line with our theoretical priors. Interestingly, the coefficient on the asylum seeker variable is insignificantly different from that on the benefit claimant variable.[15] Given that the majority of asylum seekers are also in receipt of benefits (but not included in the benefit claimant data), this suggests that the two groups may have broadly similar effects on crime. As the estimates given in Table 3 show, the A8 results are very different. In this case, there is a significant negative relationship between immigrants and total crime, driven by property crime. The stark difference in property crime results between the two waves is consistent with the theoretical discussion in Section V. Asylum seekers were more likely to engage in economic crime, as their outside options were very limited whereas the A8 migrants came with the explicit intention of gaining employment and had unrestricted access to the UK labour market. The impact on violent crime is broadly zero and, at the margin, the asylum wave appears somewhat less associated with violence than the A8 wave.

We now turn to the fact that so far we have treated the migrant location of the two waves as exogenous. As discussed above, this will bias our estimates of the coefficient of interest. To address this we require plausibly exogenous variation in immigrant location.

[14] If we estimated the effect of male and female asylum seekers separately (which we can do from 2002 for the asylum wave), we find that the coefficient on the male asylum seeker stock is 2.10 (t = 5.1) and on the female stock -1.30 (t = 1.6).

[15] The p-value of the test statistic is 0.433.

To make progress, we exploit a dispersal policy for the asylum seekers wave, while we will employ an instrumental variable strategy for the A8 wave.

Those asylum seekers requiring accommodation are allocated to a location by the National Asylum Support Service (NASS). More than 70% of applicants required such accommodation assistance. The NASS sought local authorities that were willing to provide accommodation, possibly because they had spare social housing, and also used private-sector accommodation. For these asylum seekers, location is orthogonal to their own choice and the policy appears very similar to that adopted by Sweden and analysed by Edin et al (2003). The evidence shows that the sample of local authorities that received asylum seekers under the dispersal policy were more deprived than average. We have 148 local authorities that had some asylum seekers provided with accommodation by NASS at some point since 2001 and 223 with no dispersal allocations.[16] Table 4 provides some summary statistics on the differences between the two groups as at 2001. For our purposes, the level of crime in a local authority is not relevant since we estimate first-difference models. Therefore, the simple fact that asylum seekers were disproportionately sent to deprived areas with higher crime rates does not mechanically produce a positive relationship between changes in asylum stocks and changes in crime rates. Of more concern would be if we found that the growth rate in crime before the dispersal policy began was different between those areas that were designated by NASS and those that were not. As the final rows of Table 4 show there is no evidence to suggest that this is the case.

[16] We also experimented with defining an asylum dispersal area as any local authority that accommodated more than 5 asylum applicants under the dispersal program at any point between 2001 and 2008 to remove very small allocations. This would result in 31 local authorities being redefined as non-dispersal areas. Our results are robust if we adopt this alternative definition.

We can therefore directly exploit this exogenous variation in location by instrumenting the total number of asylum seekers in each local area by the number in dispersal accommodation in each local area. Columns 1 and 2 of Table 5 report the IV results.[17] The violent crime effect remains insignificant, though the coefficient switches from negative to close to zero. The impact on the property crime regression is much stronger. The coefficient on the asylum stock variable more than doubles and is strongly significant. This suggests that endogenous location choice is an important issue for this wave of immigrants and biases the estimated crime effect. If we also include dummies to capture trends in property crime at the police force area level, the property effect is somewhat attenuated but remains significantly positive.[18]

Analysing the results of the IV regressions separately for male and female asylum seekers (available upon request) provides further confirmation that selective choice of dispersal locations by the authorities does not mechanically lead to our findings. If it were the case that the authorities had chosen by accident or design dispersal locations that were about to experience a relative increase in crime, we should see the coefficient of the female asylum stock also being positive. There is no evidence to suggest that male and female asylum seekers were systematically sent to very different dispersal locations with

[17] Appendix Table A2 reports the IV first-stage regressions. We have also explored restricting the IV analysis to dispersal areas only, since the instrument is always zero for the other areas. Our results are robust to this alternative sample.

[18] We have also explored the robustness of our results when we explicitly control for the pre-treatment differences between asylum dispersal and non-dispersal areas. We estimate propensity score models to predict whether a local authority is a dispersal area based on 2001 local area characteristics. These characteristics include information on the housing stock, economic activity, welfare benefits, education and population. We then re-estimate our models either on the subset of local authorities for which there is common support in the propensity score or on matched local authorities. Over various specifications of the propensity score model we find that the coefficient on the asylum wave remains the same sign and order of magnitude as in the IV regressions of Table 5, though significance in the property crime regression at the 5% level depends on the exact set of variables included in the propensity score model. In addition, a significantly positive effect is almost always obtained if we focus on male asylum seekers only.

the cross-section correlation between numbers of male and female migrants at each location being 0.84, and females account for around 45% of the total stock. However, we find no significant effect from the female asylum stock on crime in any specification.

For the A8 wave we are not able to as precisely control for endogenous location choice as with the asylum wave as A8 migrants could choose to work anywhere in the UK. We follow the standard approach in the immigration literature and use the 'supply-push' instrument discussed above. This makes use of the distribution of each A8 nationality in each local authority in 2001 (using the full 100% census sample) and the national flow of A8 migrants by nationality.

Columns 4-6 of Table 5 show the IV results for the A8 wave. The effect on violent crime remains close to zero and insignificant. When we look at property crime, the coefficient becomes substantially more negative and significant. This remains the case even when we control for police force trends in property crime. So in sharp contrast to the asylum wave, the A8 wave if anything tended to generate falls in property crime. The first-stage regression shows that the instrument is positively correlated with changes in the A8 stock, with an F-statistic of 13.[19]

Our conclusions from this analysis are straightforward. There appears to be a moderately positive effect from the asylum wave on property crime. In contrast the evidence points to a negative effect from the A8 wave, though of only a third to one half the size. The effect on violent crime is indistinguishable from zero for both waves.

[19] It should be noted that if we simply split the local authorities into two equal groups based on the proportion of A8 migrants in the local population and examine the change in property crime rates over the period, we find that rates declined by 1.0 points (from 2.8 to1.8) in the low-A8 group and 1.4 points (from 3.6 to 2.2) in the high-A8 group. The A8 shares of the population in the two groups in 2008 were 0.7% and 2.5% respectively. On most other metrics the two groups had similar pre-wave characteristics so it would be hard to believe that A8 migrants generated a rise in property crime rates.

It is natural to ask about the size of the property crime effects we find for the asylum and A8 wave. To give a sense of the magnitude on crime rates, consider the estimated coefficient from columns 2 and 5 of Table 5. These give values of 0.93 and -0.32 on the migrant/population variable in the property crime regressions. Given the definitions of the variables, this implies that raising the percentage share of the local population who are asylum seekers (A8 migrants) by *x%* increases (reduces) the property crime rate by 0.93*x*% (0.32*x*%). The size of the asylum population in the average local authority was of course very low over our sample period. Across all England and Wales it averaged 0.1% of the local adult population, so the average property crime rate might be 0.09% higher as a result – only around 3% of the average property crime rate of around 2.7%. Of course, some authorities had appreciably more asylum seekers located in the area, though shares larger than 1% of the local population were extremely rare. For the A8 migrants, the average share was 0.6%, so the average property crime rate might be 0.18% lower as a result – around 6% of the average property crime rate.

IV. ARRESTS, INCARCERATION AND VICTIMIZATION

In this section we provide a range of supporting evidence to the conclusion reached in the previous section regarding the crime-effects of the two immigrant waves. We begin with some specially collected data on arrests by nationality that sheds some light on the likelihood that A8 immigrants interact with the police. We then turn to some national evidence on incarceration that is consistent with the conclusion that any rise in crime occurred as a result of the first wave rather than the second. Finally we present evidence

on immigrant victimization to ensure that any crime-effects are not a result of increased crime *against* immigrants. There appears to be no evidence for such a conclusion.

(a) Arrests

Data on arrests by nationality are not collected or published in the UK. However we can provide a little more evidence on the A8 wave by comparing arrest rates by nationality that were specially collected by us from every police force in the country (see Data Appendix for more details). This data is only available from 2004 at the level of police force area and for a sub-sample of police forces. In Table 6, we pool the data for all years and police forces and estimate the relationship between the share of A8 arrests in total arrests and the share of A8 citizens in the local population. A coefficient of one would be consistent with no differential effect of A8 citizens on local arrest rates. However we would caution that this is not a strong test since any estimate is consistent with some pattern of differential arrest propensities across natives and A8 citizens irrespective of criminal activity. The results are however consistent with neutrality. In column 1 we estimate a slightly larger coefficient than one but in column 3 we restrict the sample to data points that are consistently reported and the coefficient is insignificantly different from one.[20] Similar results are obtained when we focus on the smaller sample that isolates property crimes.

[20] To identify the clean sample we make use of information provided from the relevant Police Force. For example, a number of forces report that some of the data, particularly in the first two years of our sample, was only collected on an ad hoc basis and that many arrest records have no nationality recorded. Such data points are excluded from the clean sample.

(b) Incarceration

An alternative approach is to focus on incarceration, rather than reported crime. The main advantage of this approach is that we have data on the nationality of prisoners so that we can more directly link the immigration flows from particular countries to incarceration rates. Unfortunately, such data is only available at the national level, so we will be identifying the link between the asylum and A8 waves and imprisonment by comparing the evolution of incarceration rates for the set of countries providing the flows to the incarceration rates of natives and of citizens of countries not involved in the two waves we focus on. In consequence, this analysis is susceptible to the criticism that we identify the asylum wave effect using nationality even though the majority of such nationals were unlikely to be asylum seekers. To mitigate this we focus only on the five largest asylum seeker nationalities but recognise that this analysis can at best only be considered supportive of the previous results. The A8 results are less prone to this criticism as the wave from 2004 dominates the stock of A8 citizens in the UK.

We can graphically illustrate the results for our two immigrant waves of interest. We generate an asylum and an A8 incarceration rate by weighting each nationalities incarceration rate each year by the share of that nationality in the flow associated with the two immigrant waves. These flow shares are average estimates for the period 1997-2002 for the asylum wave[21] and 2004-2007 for the A8 wave. We then examine the trend in these incarceration rates before and after the waves occur relative to both the native incarceration rate and the incarceration rate of all immigrants from countries not included in the asylum or A8 wave. As we have data from 1993 to 2008, we are able in both cases

[21] For the asylum wave we focus only on the largest 5 countries in terms of flow. For the period 1997-2002, these are in order of contribution Serbia & Montenegro, Somalia, Iraq, Afghanistan, and Sri Lanka. They represent 40% of applications over the period.

to examine pre-wave trends to ensure that our results are not driven by differential trends that existed before the large flows occurred. Figure 4A and 4B show the trends for the two immigrant waves. It is clear that the incarceration rates for the Asylum wave rose rapidly as the size of the group expanded in the late 1990s and early 2000s, both in absolute terms and relative to the incarceration rates of both foreigners from non-Asylum countries and British citizens. The rise began to tail off toward the end of the sample period. In contrast, the trend in incarceration rates for the A8 nationals almost exactly mirrored the trend for British citizens from 2004, suggesting no obvious impact of this wave on prison populations.

More formally, we can estimate the following model of incarceration:

$$\text{IncarcerationRate}_{it} = I_i + T_t + \theta \text{WaveDummy}_{it} + \mu_{it} \quad (2)$$

In (2), the Wave Dummy variable takes the value 1 for the immigrant wave observations for all years from the start of the relevant immigration wave (1997 for the Asylum Wave and 2004 for the A8 wave) and is zero for the earlier years and for the comparison group. We also control for the group fixed effect and time effects. A positive coefficient θ would indicate a relative rise in incarceration rates following the immigrant wave. Results are given in Table 7. Consistent with the evidence from the charts, we find a significant jump in the incarceration rates of the asylum wave nationalities after 1997, with rates 0.19 percentage points higher than the non-Asylum immigrant control group. This is in addition to an average 0.16 percentage point higher incarceration rate. The estimated effect for the A8 group are insignificantly different from zero when compared to the British control group and are negative compared to the non-A8 immigrant control group. We conclude that there is strong evidence that the asylum wave led to a rise in

incarceration rates for nationals of countries that were disproportionately represented in the asylum wave, relative to both natives and other immigrants, whereas the A8 wave had no discernible effect on the prison population. To the extent that there are more people in prison from A8 countries, this is simply a result of the massive rise in the size of those populations in the UK rather than evidence of increased incarceration rates.[22]

(c) Victimization

We are also able to consider whether there is any evidence of higher crime victimization for the two immigrant waves. We use data from both the British Crime Surveys from 2004 to 2008 and the New Deal for Communities Surveys from 2002 and 2004. The former is used for official victimization statistics and is a large representative sample of the UK population. The identification of the immigrant waves is by country-of-birth and year of arrival in the UK. This is unproblematic for the A8 wave but the measurement of the asylum wave has the problems of mis-identification discussed in Section II. To address this issue, the second data set is used which can explicitly identify asylum applicants from other non-British immigrants. Fortunately, the data contain similar questions on victimization as those used in the British Crime Survey. Neither data set is sufficiently large to enable analysis to be conducted at the local authority level.

Table 8 shows the percent of individuals reporting that they have been a victim of crime in the twelve months up to the survey date. Victimization rates are reported for UK born natives, the asylum wave, the five largest asylum countries, the A8 wave and other

[22] The number of prisoners from A8 countries rose from 145 in 2003 to 906 in 2008. This still represents only about 1% of the prison population. It should also be noted that the A8 prison population in years prior to the A8 wave were very small which explains the volatility in incarceration rates for this group in the early years of the sample as shown in Figure 4B.

non-UK born individuals. Reassuringly, the data from both sources provide a similar picture, with both asylum and A8 waves having lower crime victimization rates than natives.

Table 9 shows statistical models of the probability of being victimized that condition on additional survey variables. For the British Crime Survey, the key finding of the previous Table remains intact, namely that crime victimization is significantly lower for the two migrant waves we consider. For the New Deal Survey, we find that lower victimization rates for asylum seekers in the raw data are eliminated when controls are added such that rates appear to be essentially the same as those for natives.[23]

In summary, the results seem to suggest that differential changes in crime rates during the immigrant waves cannot be ascribed to crimes against immigrants. There is little empirical work on the factors affecting rates of crime and victimization against immigrants. For example, Krueger and Pischke (1997) find little evidence that crimes against immigrants in Germany can be explained either by economic variables or by the relative number of immigrants within a locality. They do however find substantial differences between West and East Germany in the rate of crimes against foreigners.

V. INTERPRETATION AND DISCUSSION

The reported results very much highlight the importance for crime participation of the different labour market prospects of the two migration waves we study. A natural interpretation of these is in terms of the 'orthodox' economic model of crime participation that was first introduced by Becker (1968) and further developed by Ehrlich

[23] It should be noted that we have fewer control variables available in the second data set.

(1973) and others (see Freeman's, 1999, review). In this model, individuals rationally choose between crime and legal labour market work depending on the potential returns each offers. The 'returns' from crime are calculated relative to the probability of getting caught and the expected sanction if caught and compared to labour market earnings from employment. If the former outweighs the latter then an individual will engage in crime.

Formally, individuals choose between criminal and legal activity by comparing the expected utility from each. If U(W) is the utility from working at a legal wage W, $U(W_C)$ the utility from a successful (i.e. not caught) crime where p is the probability of being caught and S the monetary-equivalent sanction if caught[24] then an individual decides to engage in criminal activity if

$$(1\text{-}p)U(W_c) - pU(S) > U(W) \qquad (3)$$

The usefulness of this framework for interpreting our results comes from the key prediction is that relative labour market opportunities matter (there is good evidence from elsewhere supporting this – see, *inter alia*, Gould et al, 2002, and Machin and Meghir, 2004). People without a job (where W = 0) are more likely to participate in crime. So are those where the formal wage W is low relative to W_C.

It is evident from the discussion in Section II (about Tables 1A and 1B) that these crime-predicting features (low employment rates, high unemployment rates, and low wages) are more marked for the asylum wave. Thus, it follows that, to the extent that the model is relevant, this is the group most likely to be connected to higher crime. The

[24] One might wonder about the severity of sanctions on migrants. In general, migrants receive the same penalties as natives. However after a sentence has been served, migrants are liable to deportation from the UK. Section 32 of the 2007 UK Borders Act requires the Secretary of State to issue a deportation order against any foreign national convicted of a criminal offence and imprisoned for at least 12 months. However Section 33 makes clear that such an order cannot be given if doing so would violate UK obligations under the UN Refugee Convention or the European Convention on Human Rights. In other words, if an asylum seeker was eventually determined to be a legitimate claimant they would also be protected from deportation if they were sent to prison.

difference between the legal labour market opportunities of asylum seekers and both natives and the A8 wave are actually more extreme that suggested by Table 1. Asylum seekers are forbidden from working during the first six (extended to twelve in 2002) months of their claim being initiated. After this point, they can apply for permission to work until their case is decided. Evidence from the Refugee Council (2005) suggests that only about 10% of asylum seekers had been waiting less than six months for their asylum decision, whilst a third had been waiting over two years. Hence, the stock of asylum seekers is made up of a combination of those with no permission to work and claiming assistance from the state and those who are entitled to work because of the delays in reaching a final decision on their asylum claim. In addition, the level of benefits that are paid to asylum seekers is very low relative to other welfare benefits. For example, the weekly subsistence payment made to single adult asylum seekers in 2009 was £35.52 compared to £65.45 for those receiving unemployment benefit.[25]

What about the findings for different sorts of crimes? People usually associate the Becker-Ehrlich model with property crimes and so the prediction of increased crime for the asylum wave due to less favourable labour market opportunities should be more strongly connected to this kind of crime. Intuitively, violent crime seems less sensible to consider in this way, especially in the context of immigration waves. Whilst a small literature (e.g. Grogger, 2000) does extend the Becker-Ehrlich model to violent crime

[25] Clearly, differences in policy treatment once in the destination country may not be the whole story. Criminal behaviour between the two waves may also differ because the selection process that led these immigrants to the United Kingdom is not necessarily similar. Due to the endogeneity of the migration decision (Borjas, 1997), the two groups may substantially differ in their unobservables (i.e. the "quality" of migrants) and, therefore, in their potential returns in both legal and criminal labour markets. We do not speculate on the nature of these selection processes. Throughout the paper, one needs to bear in mind that a differential criminal behaviour between members of the two waves may have been observed even if they had been subject to an identical policy regime.

through violence being complementary to drug crimes in the US, this seems less appropriate to the context we study where economic differences are likely to be central to the crime-work decision. This is indeed what our results show, with there being no violent crime effects and the property crime effects for the asylum wave being associated with low labour force participation rates, high unemployment and low wage levels.

VI. CONCLUSIONS

There is much popular commentary on the supposed links between immigration, but a notable paucity of credible empirical evidence about the relationship. This paper has sought to fill some of this gap with an analysis on the response of crime rates to two very different immigration waves that hit the UK over the last decade. Our view is that the scale of these waves, their timing and their very different characteristics make them very suitable for the empirical analysis of crime and immigration.

We report results from an array of different data sources and empirical methods that we argue are in line with key predictions from the canonical Becker/Ehrlich model of crime participation. For property crime, we find that crime rates are significantly higher in areas in which asylum seekers are located, but conversely the effect is negative for the A8 wave. This conclusion is robust when we attempt to control for the endogeneity of location choice and for crime trends within the Police Force Area. In contrast, for both waves we can find no significant relationship between immigrants and violent crime. The same picture emerges when we explore the time-series evolution of incarceration rates, which suggest a rise in the rate of incarceration of foreigners from asylum seeker countries as the asylum wave arrived in the UK, but no such rise for A8 foreigners as that

wave arrived. Finally, we show that the results are hard to explain on the basis that the rise in crime may be a result of crime *against* immigrants. Interestingly we find that victimization rates are in fact lower against the two waves than for natives in general.

Though we find consistently positive effects from the asylum wave on property crime, the average size of the effect is not substantial. However, some areas received substantial inflows of asylum seekers and were likely therefore to have experienced more significant property crime rises. From a policy perspective, this suggests that more attention should perhaps have been focused on the potential localized crime risks involved in the concentrated dispersal policy adopted by the authorities but that national crime rates were unlikely to have been strongly influenced by the arrival of the asylum wave.

Our results also suggest that focusing on improving the limited labour market opportunities of asylum seekers has scope to generate crime reductions, in addition to generating potential cost savings in terms of benefits. Since we are (rightly) obliged to consider all applications for asylum, it makes sense to allow applicants to seek work whilst their applications are being considered particularly given the long duration that final decisions on such applications can take. In addition job-training and language courses are likely to be particularly beneficial for such migrants. Such an approach can potentially significantly tilt the relative labour market opportunities of migrants relative to illegal activities. The disadvantage of such an approach is the risk that it signals to potential migrants that asylum application could be used as a method of seeking work in the UK rather than as a route for those fleeing persecution.

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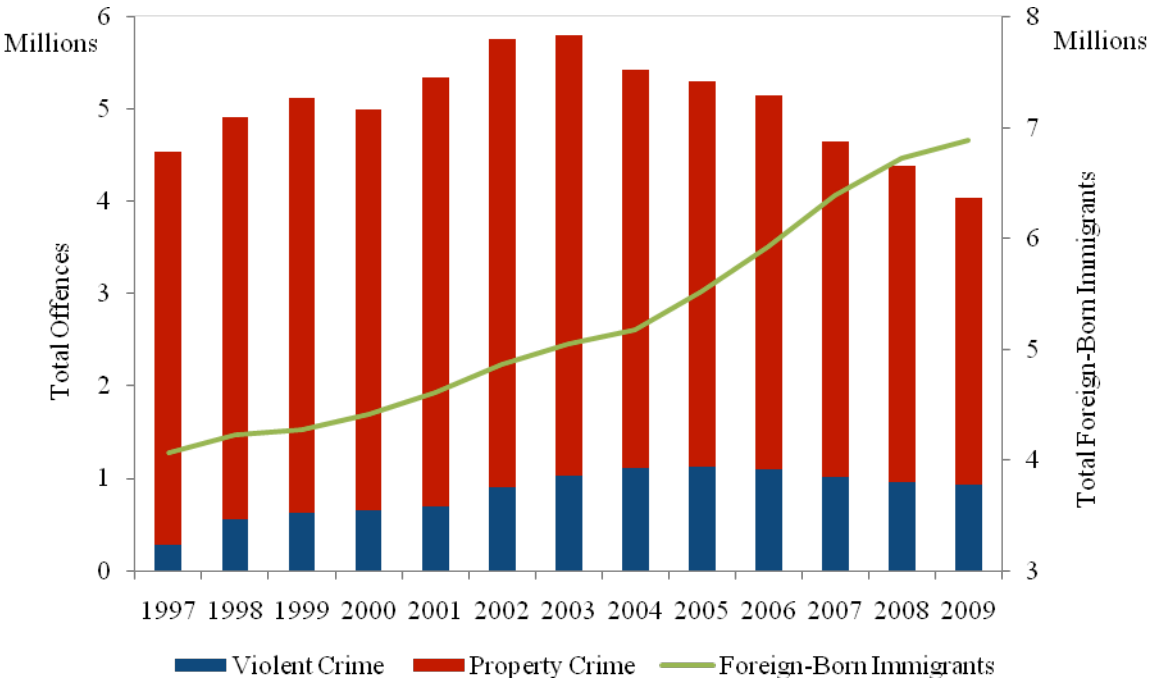

FIGURE 1: IMMIGRATION STOCK AND CRIME TRENDS, ENGLAND AND WALES, 1997-2009

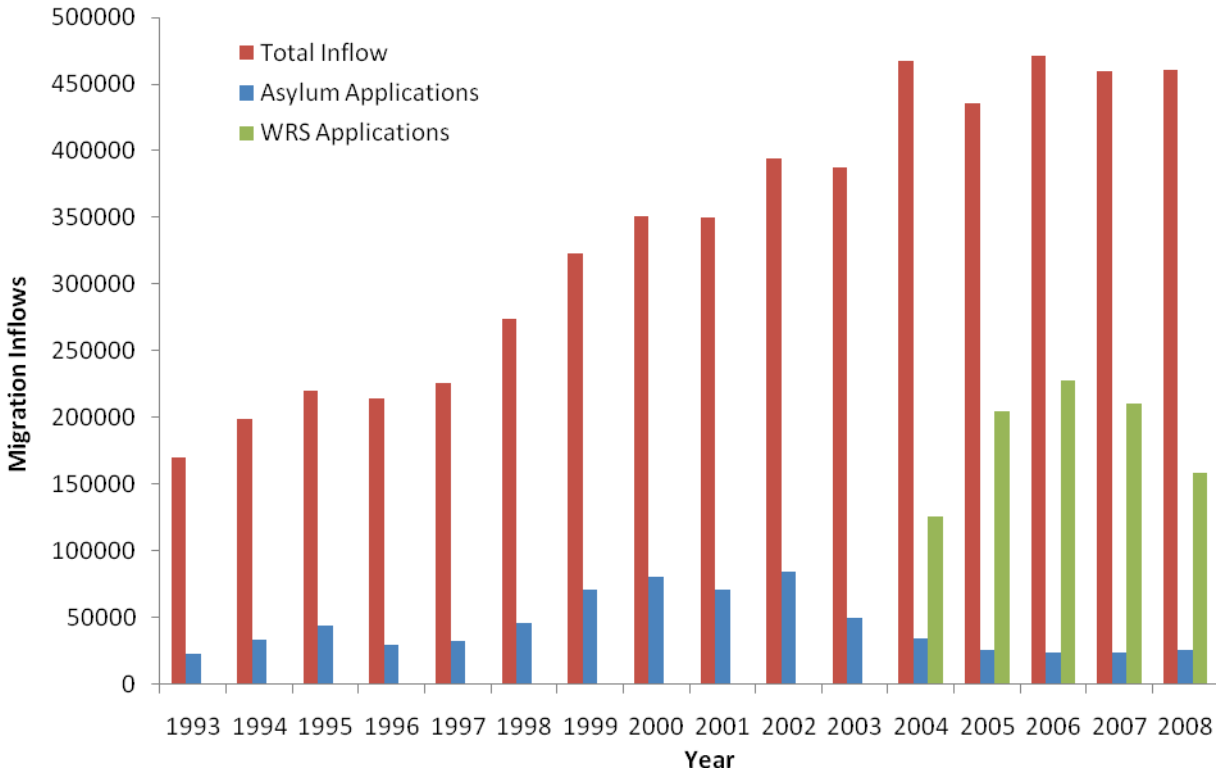

FIGURE 2: ASYLUM APPLICATIONS AND WRS REGISTRATIONS, 1993-2008

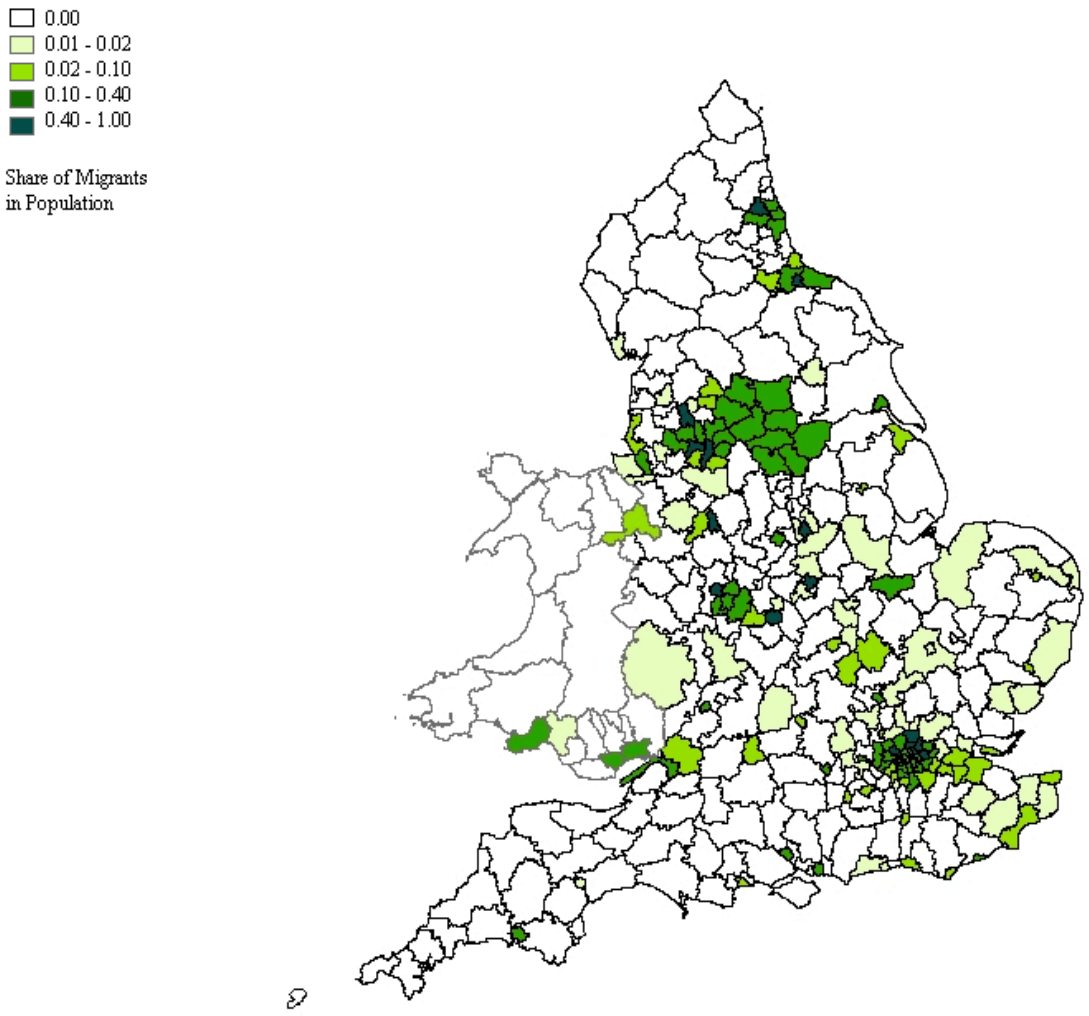

FIGURE 3A: DISTRIBUTION OF ASYLUM MIGRANTS ACROSS ENGLAND AND WALES

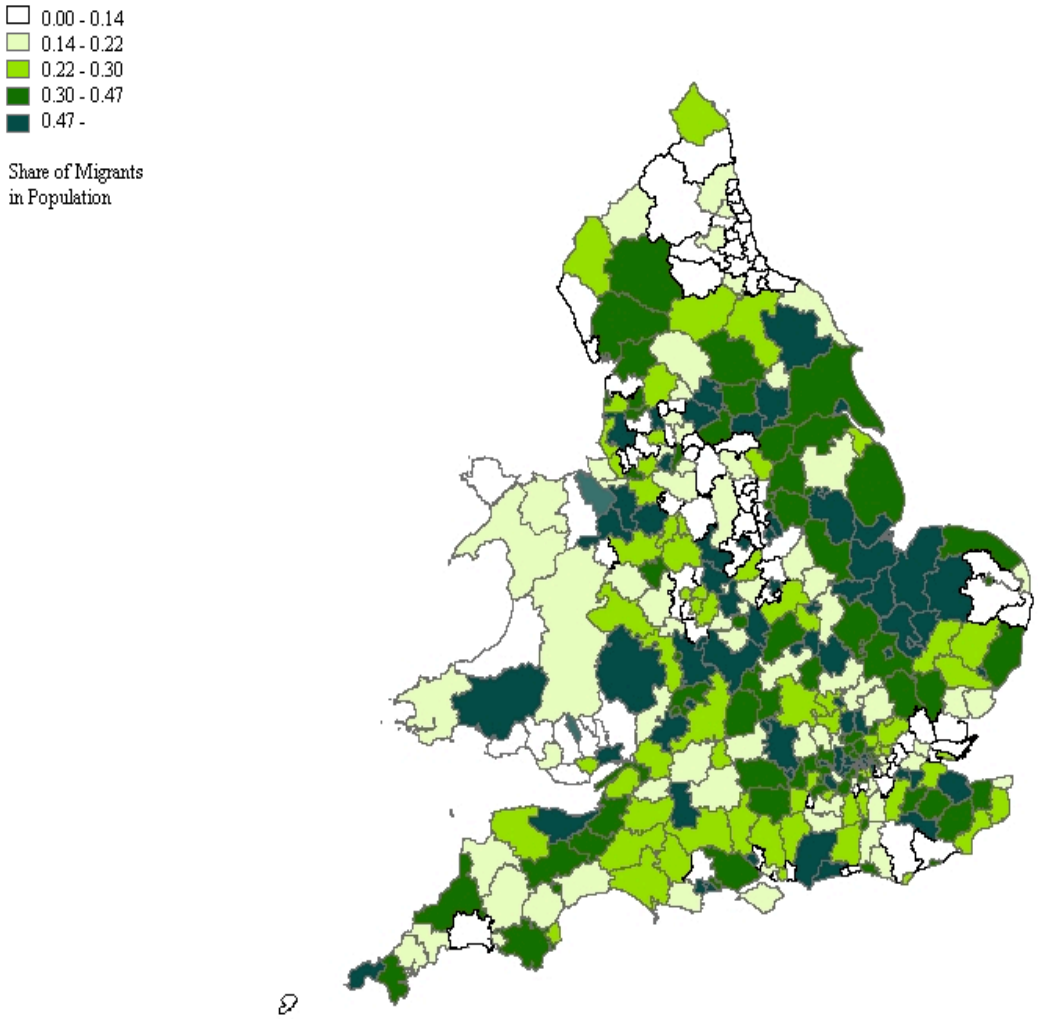

FIGURE 3B: DISTRIBUTION OF A8 MIGRANTS ACROSS ENGLAND AND WALES

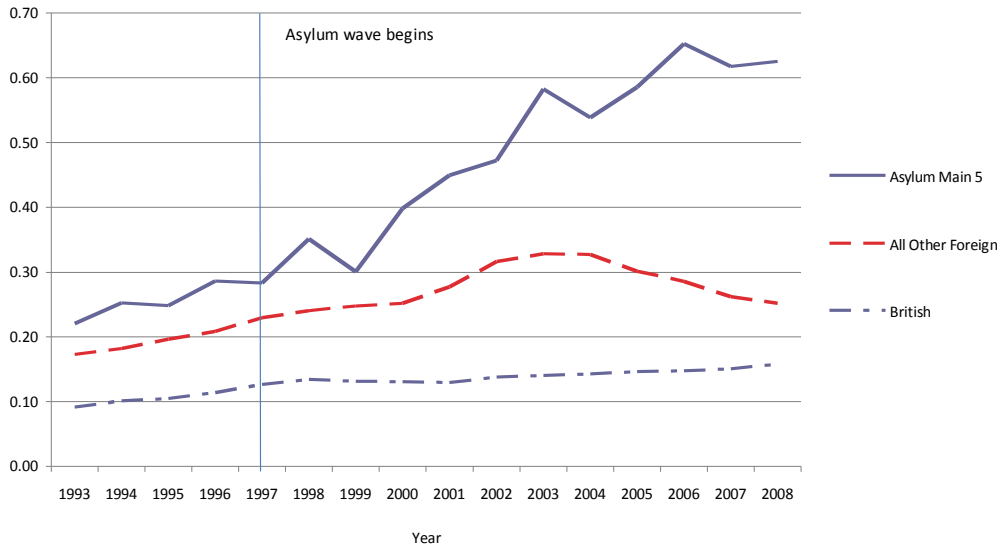

FIGURE 4A: INCARCERATION RATES FOR ASYLUM WAVE, 1993-2008

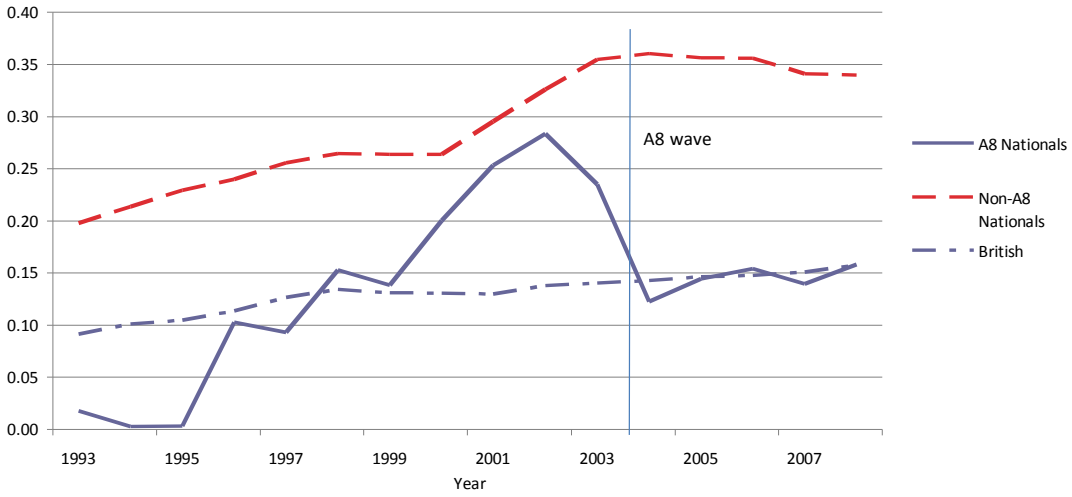

FIGURE 4B: INCARCERATION RATES FOR A8 WAVE, 1993-2008

TABLE 1A: SUMMARY STATISTICS FOR ASYLUM WAVE

	British	Immigrant Non-Asylum	Immigrant Asylum
% Male	49.6	53.9	60.4
Age	40.9	37.7	35.2
% with Children	40.4	43.5	52.7
% Single Person	21.9	15.9	18.4
% No Qual	38.4	32.2	51.7
% Degree	3.6	6.5	4.1
% Poor English	-	9.8	32.3
Participation Rate	60.4	62.3	48.6
Unemployment Rate	14.7	17.7	32.7
Annual Mean Wage	16267	15543	12672
Annual Median Wage	14300	13000	10400
Sample Size	8063	3385	514

Notes: Data are tabulated from the 2004 Household Survey Data of the National Evaluation of the New Deal for Communities Programme. British are all those who identify themselves as British and Asylum are those who entered the UK as refugees. Sample are all Heads of Household aged 18-65 and all results are weighted to reflect the population in the selected areas.

TABLE 1B: SUMMARY STATISTICS FOR A8 WAVE

	British	Immigrant Non-A8 Wave	Immigrant A8 Wave
% Male	49.6	49.3	54.6
Age	41.3	38.0	28.7
% White	93.1	65.0	93.7
% Married	52.3	53.2	35.7
% No Children	59.7	59.3	70.5
% Degree	15.3	16.1	7.2
Years of School	12.5	13.8	14.8
Participation Rate	77.6	71.9	89.0
Unemployment Rate	4.9	7.1	6.3
Mean Weekly Wage	423	432	268
Median Weekly Wage	350	242	346
Sample Size	398113	42551	2045

Notes: Data are tabulated from the Labour Force Survey, Spring Quarters 2004-2009. British are all British citizens, A8 wave are all observations where country of birth is one of the A8 countries and year of arrival in the UK was 2004 or later, and non-A8 wave are all other non-British. Sample are all aged 18-65 and results are weighted using population weights.

TABLE 2: PANEL REGRESSIONS FOR FULL IMMIGRANT SAMPLE

	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
	All Crime	Violent	Property	All Crime	Violent	Property
Δ(Immig/Pop)	0.005	0.003	0.002	-0.288	-0.113	-0.174
	(0.010)	(0.005)	(0.009)	(0.155)	(0.076)	(0.124)
Δln(Pop)	-0.058	-0.047*	-0.011	-0.101	-0.064*	-0.037
	(0.035)	(0.019)	(0.031)	(0.065)	(0.029)	(0.047)
Δ(Benefit Rate)	0.203*	-0.114*	0.317*	0.358*	-0.053	0.410*
	(0.090)	(0.055)	(0.071)	(0.176)	(0.081)	(0.125)
Δ(Young Share)	0.165	0.208*	-0.042	-0.024	0.132	-0.156
	(0.116)	(0.053)	(0.105)	(0.204)	(0.096)	(0.156)
Time Dummies	x	x	x	x	x	x
Sample Size	1020	1020	1020	1020	1020	1020
R2	0.149	0.345	0.339	0.037	0.273	0.163

Notes: Regressions are run over the period 2002-2008. The dependent variable is Δ(Number of Crimes Recorded/Adult Population). All regressions are weighted by adult population. Columns (1)-(3) are OLS while Columns (4)-(6) are IV using predicted immigrant stocks from prior immigrant distribution as an instrument. The F-stat on the first-stage IV is 4.08 (p=0.045). Standard errors in parentheses are clustered at the local authority level and * indicates significance at the 5% level.

TABLE 3: PANEL REGRESSIONS FOR IMMIGRANT WAVES

	(1) All Crime	(2) All Crime	(3) Violent	(4) Violent	(5) Property	(6) Property
Δ(Asylum/Pop)	0.227	0.158	-0.149	-0.201	0.375	0.359
	(0.300)	(0.297)	(0.135)	(0.138)	(0.239)	(0.228)
Δ(A8/Pop)	-0.061*	-0.072*	-0.023	-0.009	-0.038	-0.063*
	(0.031)	(0.029)	(0.015)	(0.138)	(0.027)	(0.026)
Δln(Pop)		-0.009		-0.007		-0.002
		(0.023)		(0.010)		(0.019)
Δ(Benefit Rate)		0.300*		0.012		0.278*
		(0.055)		(0.033)		(0.045)
Δ(Young Share)		0.109		0.144*		-0.036
		(0.088)		(0.034)		(0.082)
Time Dummies	x	x	x	x	x	x
Sample Size	2592	2592	2592	2592	2592	2592
p(Asylum=A8)	0.341	0.440	0.353	0.165	0.090	0.067
R2	0.215	0.230	0.340	0.349	0.172	0.195

Notes: Regressions are run over the period 2002-2008. The dependent variable is Δ(Number of Crimes Recorded/Adult Population). All regressions are weighted by adult population. Standard errors in parentheses are clustered at the local authority level and * indicates significance at the 5% level.

TABLE 4: SUMMARY STATISTICS FOR DISPERSAL AND NON-DISPERSAL AREAS, 2001

	All Areas	Dispersal Areas	Non-Dispersal Areas	t-test of means
Unemployment Rate	3.6	3.9	2.6	9.9
Benefit Claimant Rate	11.0	12.6	8.7	7.9
Youth Share	15.0	16.3	13.3	11.3
Vacant Housing Rate	3.2	3.4	3.0	1.8
Social Housing Rate	19.2	22.6	14.6	9.0
Immigrant Share	9.1	12.2	4.8	8.7
% with No Qualifications	29.1	30.0	27.9	2.4
Total Crime Rate	5.2	6.7	3.2	14.4
Violent Crime Rate	1.5	1.9	1.1	9.6
Property Crime Rate	3.6	4.8	2.1	14.5
Prior Δ Total Crime Rate	-0.02	-0.01	-0.02	0.8
Prior Δ Violent Crime Rate	0.13	0.12	0.14	1.3
Prior Δ Property Crime Rate	-0.14	-0.13	-0.16	0.1
Count	371	148	223	

Notes: The change in crime rates is the two-year change between 1999 and 2001. All figures are weighted by adult population in the local authority. Dispersal areas as defined as those that accommodated any asylum seekers under the dispersal program between 2001 and 2008.

TABLE 5: IV PANEL REGRESSIONS FOR IMMIGRANT WAVES

	(1) Violent	(2) Property	(3) Property	(4) Violent	(5) Property	(6) Property
Δ(Asylum/Pop)	0.013	0.931**	0.676*			
	(0.243)	(0.360)	(0.341)			
Δ(A8/Pop)				0.007	-0.323**	-0.293**
				(0.085)	(0.122)	(0.090)
Δln(Pop)	-0.010	-0.011	-0.019	-0.022	0.022	-0.003
	(0.010)	(0.019)	(0.022)	(0.014)	(0.019)	(0.018)
Δ(BenefitRate)	0.009	0.270**	0.248**	0.023	0.392**	0.330**
	(0.032)	(0.043)	(0.051)	(0.039)	(0.055)	(0.056)
Δ(YoungShare)	0.140**	-0.042	-0.001	0.093	-0.158	-0.104
	(0.034)	(0.081)	(0.073)	(0.049)	(0.087)	(0.076)
Time Dummies	x	x	x	x	x	x
PFA Dummies			x			x
Sample Size	2597	2597	2597	1850	1850	1850
R2	0.347	0.187	0.263	0.185	0.217	0.307

Notes: Regressions are run over the period 2002-2008 for the asylum wave and 2004-2008 for the A8 wave. The dependent variable is Δ(Number of Crimes Recorded/Adult Population). All regressions are weighted by adult population. Standard errors in parentheses are clustered at the local authority level. The instrumental variables are the number of asylum seekers in dispersal accommodation for the asylum wave and the supply-push instruments for the A8 wave. The F-stat on the first stage IV in the asylum regression is 975 (p=0.000) and 13.1 (p=0.000) in the A8 regressions with LA-clustering.
** and * indicate significance at the 1% and 5% level respectively.

TABLE 6: ARREST RATES BY NATIONALITY, A8 WAVE

	(1)	(2)	(3)	(4)
A8 Share in Population	1.250* (0.090)	1.040* (0.151)	1.148* (0.089)	1.026* (0.156)
All Crimes	x		x	
Property Crimes		x		x
Clean Sample			x	x
Sample Size	90	57	71	50
R2	0.681	0.451	0.705	0.465

Notes: Regressions are run over the period 2004-2008.The dependent variable is the share in total arrests of A8 citizens. Standard errors in parentheses.

TABLE 7: DIFFERENCE-IN-DIFFERENCE ESTIMATES OF INCARCERATION RATES

	Asylum Wave		A8 Wave	
	Comparison Group		*Comparison Group*	
	Non-Asylum Foreign Nationals	British	Non-A8 Foreign Nationals	British
Wave Dummy	0.194*	0.187*	-0.078*	-0.018
	(0.081)	(0.096)	(0.029)	(0.040)
Group Dummy	0.156*	0.286*	-0.129*	0.013
	(0.029)	(0.034)	(0.016)	(0.022)
R2	0.649	0.716	0.865	0.227

Notes: Regressions are run over the period 1993-2008. Wave Dummy equals 1 for the asylum/A8 group after the relevant wave begins and 0 before. Group Dummy equals 1 for the asylum/A8 group and zero for the comparison group. All regressions include the full set of time dummies. Standard errors in parentheses.

TABLE 8: VICTIMIZATION DESCRIPTIVE STATISTICS

A: British Crime Survey, 2004-2008

	UK	Asylum Wave	Asylum Wave Largest 5	A8 Wave	Other Non-UK	Sample Size
Crime Victim in Last Year (%)	31.6	22.4	23.7	27.1	29.7	141378

B: New Deal Evaluation, 2002-2004

	UK	Asylum	Non-Asylum	Sample Size
Crime Victim in Last Year (%)	35.4	31.0	29.6	23725

Notes: Panel A from pooled British Crime Survey data (2004-5 to 2007-8 waves). The Asylum Wave percentages are weighted to reflect asylum shares as with earlier Tables. The Largest 5 Asylum Wave countries are: Afghanistan, Iraq, Serbia and Montenegro, Somalia and Sri Lanka. Panel B from pooled National Evaluation of the New Deal for Communities data (2002 and 2004 waves).

TABLE 9: VICTIMIZATION EQUATIONS, PR(CRIME VICTIM IN LAST YEAR)

	British Crime Survey, 2004-2008			New Deal Evaluation, 2002-2004		
Asylum				-0.142*	0.047	0.032
				(0.044)	(0.054)	(0.054)
Asylum Wave	-0.056*	-0.073*	-0.076*			
Largest 5	(0.024)	(0.024)	(0.024)			
A8	-0.074*	-0.152*	-0.155*			
	(0.019)	(0.019)	(0.019)			
Other	-0.005	-0.020*	-0.021*	-0.178*	-0.005	-0.016
	(0.006)	(0.006)	(0.006)	(0.019)	(0.031)	(0.031)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes
Police Force Area	No	No	Yes	No	No	Yes
Sample size	141378	141164	141164	23725	23725	23725

Notes: Standard errors in parentheses. Control variables for the BCS regressions are: age, gender, student, education (9 categories), urban/rural (8 categories), housing tenure (8 categories), number of children (10 categories), household income (15 categories), marital status (5 categories), years at accommodation (5 categories), ethnicity (5 categories), nationality within UK (5 categories). Years run from 2004 to 2008 and there are 42 police force areas. Control variables for the New Deal regressions are: age, gender, education (6 categories), region (9 categories), household income (9 categories), housing tenure (3 categories), years at accommodation (6 categories), household size (5 categories), household composition (4 categories), ethnicity (3 categories), employment status (3 categories), and English language ability.

Data Appendix

A. Crime Data

Our primary source of data on crime comes from notified offences recorded by the 43 police forces across the country. Since 1999, this data can be disaggregated within police force areas down to the Local Authority level – police forces are structured such that a number of local authorities lie uniquely within a single police force area. Notified offences are split into two categories: Violent offences and Property offences (the sum of Burglary, Robbery, Theft of a Motor Vehicle and Theft from a Motor Vehicle). To convert these into crime rates we divide by the resident population aged over 15 years old.

The reporting of crime by police forces was changed in April 2002 with the introduction of the National Crime Recording Standard (NCRS). The Standard aimed to ensure greater consistency of recording between police forces and to make the reporting more victim-centred. As a result of this change, there was an artificial boost to crimes reported by the police for financial year 2002/3. The effect was largest for violent crime as police now recorded violent crime according to whether the victim reported violence rather than whether the police judged it a violent offence. The effects on property crime rates were much smaller. Research suggests that the effects of the change were realised in 2002/3 with little evidence of any continuing impact (Simons, Legg and Hosking, 2003). Results for the A8 wave are therefore unaffected by this change. For the asylum wave, much of the effect will be captured by the year dummy for 2002/3 but there is evidence of variation in the effect of the reporting change across police force areas. We have

therefore re-run all the asylum regressions beginning in 2003/4 rather than 2002/3 to avoid the change in definition and our results are robust to this shorter sample period.

B. Arrest Rates

Data on arrests are reported annually by each police force but are broken down only by sex, age and type of offence. Data on the nationality of arrested individuals is neither published nor collected in the UK. To obtain such data, we made applications to every police force in England and Wales under the 2000 Freedom of Information Act requesting data on the number of arrests made each year since 2004 by nationality and type of crime. Of the 42 police forces contacted, 27 provided at least some data. Those providing no data are police forces that do not collect nationality information at the time of arrest. There is no legal requirement for the police to ask for this information. Some forces only started systematically collecting this information in the last two years of the sample. We find no evidence that those forces which do not collect nationality data differ significantly in observables from those that do. By 2008, we have data covering 67% of total arrests in England and Wales.

C. Immigrant Data

C1. Total foreign-born immigrants

Estimates of the total foreign-born population are provided by ONS and are based on the Labour Force Survey (until 2003, included) and on the Annual Population Survey (after 2003). Estimates based on the quarterly LFS have been averaged to produce an annual figure for each year. Data are consistently provided throughout our sample period (2002-2008) for 136 Local Authorities and 34 counties.

Supply-Push Component instrument

The instrument (Altonji & Card, 1991; Card, 2001) provides a predicted measure (SP_{it}) of the change in the stock of foreign-born immigrants residing in period t in each region i of the host country analyzed. It is calculated as the summation for all country of origins of the product of the national-level inflow of immigrants (Δimm_{ct}) from country c in period t, times the share of immigrants $(\overline{sh}_{ciT})$ from country c residing in area i in a predetermined period T, with $T<t$: $SP_{it} = \sum_{c \in C} \overline{sh}_{ciT} * \Delta imm_{ct}$.

This predicted measure is then used as an instrument for the endogenous change in the immigrant stock in each region i. The exogeneity of the instrument comes from the exogeneity of its two components with respect to local area shocks: immigrants shares are predetermined, while current inflows are computed at the national level.

In the empirical application of this paper, we have computed the immigrant shares $(\overline{sh}_{ciT})$ for ten macro-areas of origin and for each Local Authority using census data in year 1991. Current national-level inflows of immigrants from each area have been estimated as the change in the stock of foreign-born population (by area of origin) using LFS data. In order to instrument the foreign born share in each LA we have normalized the supply-push component measure by the adult population in the area in year 2000 (to avoid potential endogeneity of current population).

C2. Asylum Applicants

The data on asylum seekers comes from the Home Office publication *Asylum Statistics*. Data at the local authority level is available because of the administrative rules by which asylum seekers are housed and subsidised while their application is being considered.

Asylum seekers are forbidden from seeking employment in the UK and must either rely on their own resources or request assistance from the government. Following the passage of the 1999 Immigration and Asylum Act, this assistance has been administered by the National Asylum Support Service (NASS). The assistance takes two forms. For those who have accommodation (presumably with friends/family), NASS provides subsistence payments for food etc. For those without accommodation, NASS provides housing. NASS operated a dispersal policy that sought to locate asylum seekers across the country in a large number of locations and explicitly excluded London. The asylum seeker had no choice as to the destination to which he is sent and would often have no ties of any type to the area sent.[26] We have no data on the location of asylum seekers who do not receive any support from NASS. However, on average around 80 percent of asylum seekers do request assistance. The data is available annually from 2001.

C3. A8 Migrants

The flow of immigrants associated with the A8 accession is measured using administrative data from the Worker Registration Scheme (WRS). While A8 workers were allowed access to the UK labour market from May 2004, such workers were required to register on the WRS. Thus, A8 migrants registered on the WRS when they first arrived in the UK and had a job. The WRS only measures the inflow of workers and so is not the stock of A8 workers at any point in time. However, we cumulate the data over time to approximate the stock. Furthermore, the data does not capture the self-employed or other A8 individuals who came to the UK over the period for reasons other

[26] The 1999 Act required that in providing accommodation to asylum seekers the Secretary of State must have regard to the "desirability, in general, of providing accommodation in areas in which there is a ready supply of accommodation". Furthermore, the Act explicitly states that regard may not be given to "any preference that the supported person or his dependents (if any) may have as to the locality in which the accommodation is to be provided" (s97).

than employment. The data is available at the local authority level from May 2004 on an annual basis. Note that prior to 2004 A8 citizens were a small fraction of immigrants in the UK. The 1991 census shows that only 2.8% of the stock of adult immigrants was born in the A8 countries (95,437) and that the share had fallen to 2.2% by the 2001 census (99, 527). It must therefore be the case that annual changes in the stock of A8 migrants prior to May 2004 will have been very small at the individual LA level. To get a sense of the relative size of the flow after accession, note that 125,880 A8 individuals registered in the eight months from May-December 2004 i.e. more than the entire stock in 2001.

D. Incarceration Rates

Data on incarceration comes from the Home Office/Ministry of Justice publication *Prison Statistics*. From 1993, we have annual data on the nationality of every person held in prison in England and Wales. In addition we have data on type of offence an individual is convicted for, broken down by whether the individual is British or Foreign. To make use of these data we need to convert the raw numbers into incarceration rates. To do this we need the denominator i.e. the number of adults of each nationality resident in England and Wales each year. This requires some work. To begin with we have data on country of birth for those aged over 15 from the decennial census for 1991 and 2001. We smoothly interpolate between the two census years to produce annual totals. However the census does not ask about nationality. To convert the country of birth figures into nationality figures we use the Labour Force Survey. This survey has consistently asked both country of birth and nationality since 1992. We pool all Spring surveys over the period 1992-2007 and estimate the factor relating country of birth to nationality for each country of birth, restricted to residents aged 15 and over. We then use this factor to adjust the census

data to produce estimates of population for each year from 1991 to 2001. From 2004, the Office of National Statistics has produced estimates of population by nationality that we use directly. Finally for the years 2002 and 2003 we interpolate between 2001 and 2004.

The prison data includes all those held in prison establishments and police cells at the end of June in the relevant year. This includes a proportion of individuals who are being held on remand (either still facing trial or convicted but awaiting sentence). This proportion has declined over the sample period from 24% in 1993 to 16% in 2008. The remand rate for foreign nationals has declined from 22% to 21% and from 24% to 15% for British nationals suggesting that eligibility for bail has become tougher for foreign nationals. There is no data available on remand rates for individual foreign nationalities, though remand rates are higher for white foreigners than for all other ethnic groups. Note that the analyses based on incarceration rates by offence type (Figures 4A and 4B) include only convicted and sentenced prisoners. Within the stock of prisoners, 13% have a sentence less than 12 months, 36% have a sentence of more than 4 years and 17% have an indeterminate sentence (e.g. a life sentence).

TABLE A1: DATA SOURCES

	Source of Data	Years
Notified Offences	Home Office, *Crime Statistics*	1999-2008
Arrests	Individual Police Force Data	2004-2008
Asylum Applicants	Home Office, *Asylum Statistics*	2001-2008
A8 Migrant Inflow	UK Border Agency, *A8 Accession Reports*	2004-2008
Prison Population	Home Office, *Prison Statistics*	1993-2008

Note: Notified Offences years are financial years commencing in April of each calendar year. Arrests data are either financial year data or calendar year depending on the police force. Asylum Applicants and Prison Population are stocks at end-March and end-June respectively. A8 Migrant Inflow are total registrations on the WRS during the course of the calendar year.

TABLE A2: IV FIRST STAGE REGRESSIONS

	Asylum Regression	A8 Regression
Δ(Dispersed Asylum/Pop)	1.022**	
	(0.033)	
A8 Card Supply-Push		0.164**
		(0.045)
Δ*ln*(Pop)	0.008*	0.098**
	(0.004)	(0.029)
Δ(Benefit Rate)	-0.004	0.260**
	(0.005)	(0.076)
Δ(YoungShare)	0.018**	-0.179**
	(0.004)	(0.063)
Sample Size	2597	1850
R2	0.610	0.131
IV F Statistic	975	13.1

Notes: First-stage IV regressions run over the period 2001-2008 (for asylum regression) and 2004-2008 (for A8 regression). Regressions also include time dummies. All regressions are weighted by adult population. Standard errors in parentheses are clustered at the local authority level.
** and * indicate significance at the 1% and 5% level respectively.