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The Economics of Super-Diversity: Findings from British Cities, 2001-2006

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Abstract
British cities have a surprisingly long history of cultural diversity. Recently they have become significantly more multicultural, with ‘super-diversity’ emerging in many urban neighbourhoods. Public interest in these changes is high, but there has been little research assessing their impacts. This paper makes two contributions to the field. First, it assembles new data on UK urban areas 2001-6, using an innovative cultural-ethno-linguistic (CEL) measure of cultural diversity alongside more traditional measures. Second, it tests links between diversity, wages and employment rates at the urban level. As suggested by theory and international evidence, I find some positive associations between super-diversity and UK urban economic performance.

JEL Classification: JI, J15, J61, O18, R11, R23
Keywords: cities, demography, migration, culture, cultural diversity, super-diversity, urban economies, growth

1. Introduction

This paper explores the economics of cultural diversity in British cities, focusing on the years 2001-2006 and the emergence of so-called 'super-diversity' in some urban areas. It looks at the distribution of diversity[1] across urban areas in the UK, using new and innovative measures based on cultural-ethnic-linguistic (CEL) name classification and scoring. It also presents results from cross-sectional analysis of these diversity measures on urban wages and employment.

The UK and many other Western societies have a long, sometimes hidden history of cultural diversity and multiculturalism (Sassen 2004, Sandu 2004). Over the past few decades, these societies have become dramatically more diverse, a process driven both by shifts in international migration and by natural change (Putnam 2007). Vertovec (2007, 2006) argues that the resulting spread of new communities, languages, religious practices and people flows across the UK represents a shift from traditional patterns towards a new 'super-diversity'. The effects of bigger, more mixed societies are now of major public and policy interest (Fanshawe and Sriskandarajah 2010, Caldwell 2009, Aspinall 2009, Simpson and Finney 2009, Wolf 2008). However, debates have tended to focus on the short-term impacts of migrants on labour markets, public services and community cohesion (Card et al 2009, Somerville and Sumption 2009, House of Lords Economic Affairs Committee 2008). There has been little research on the broader economics of super-diversity.

In order to understand the economics of cultural diversity in the UK, it is important to look at cities and urban economies. There is a simple reason for this: put crudely, cities are 'where the diversity is'. Despite more dispersed patterns of migration in recent years, in spatial terms cultural diversity remains an urban phenomenon (Champion 2006).

There is good evidence that economic diversity in cities helps support long-term economic growth (Jacobs 1970, Duranton and Puga 2001, Glaeser 2008, MIER 2009). Furthermore, there is now some suggestive evidence that *cultural* diversity may also be an economic asset at the urban level. At firm level a diverse workforce may make better

[1] For the purposes of this paper I use 'cultural diversity', 'ethnic diversity' and 'diversity' as interchangeable terms. Section 3 of this paper discusses these concepts in more detail.

decisions and be stronger at ideas generation (Page 2007); at individual level 'ethnic entrepreneurs' can exploit diasporas to help knowledge spillovers and open up international markets (Saxenian and Sabel 2008, Kerr 2008). Given the spatial distribution of diversity, these channels are likely to be stronger in urban areas. Urban-level features may also support positive effects of diversity: a more diverse urban population may drive the development of new goods and services (Leadbeater 2008), and a diverse urban environment may help attract a 'creative class' of skilled, liberally-minded employees (Florida 2002).

There is now some international evidence behind these ideas (see Section 4 of this paper). However, many of these propositions have yet to be full tested in a UK context. Given its continued public and policy salience, it is critical to better understand the economics of growing cultural diversity.

The paper makes two main contributions to this growing literature. First, it assembles new data on UK urban economies using ONOMAP, a new and fine-grained system of cultural-ethnic-linguistic (CEL) name classification, alongside other more 'traditional' measures. This produces a very rich set of descriptive statistics, comparing patterns of urban cultural diversity and recent changes. Second, the paper tests linkages between cultural diversity measures and urban wages and employment rates, using a simple growth model and cross-sectional analysis. The results suggest some positive links between diversity and urban economic performance – particularly measures of urban super-diversity. There is a zero or negative association between some diversity measures and employment rates, some of which may be explained by long term structural changes to urban labour markets.

The paper is structured as follows. Section two provides key trends and policy context. Section three looks at the concept of 'cultural diversity' in more detail, and introduces the CEL methodology. Section four reviews theory and evidence on the economics of cultural diversity, particularly in relation to urban areas. The rest of the paper moves into the primary research. Section five outlines the approach, datasets and sample. Section six gives the results of the descriptive analysis, and section seven the regression results. Section eight concludes.

2. The multicultural city in history

Multicultural society and 'the multicultural city' are usually seen as new phenomena. In fact, their roots often go back for centuries (Sandu 2004). Britain and many other European societies share a long history of people movement and demographic change. Migrations typically resulted in new minority communities assimilating, to different degrees, into the cultural mainstream: 'even when [new groups] kept their differences, they were members of the community: part of the complex, highly heterogeneous 'we' of any developed society' (Sassen 2004). Vertovec (2007) chronicles complaints across Medieval Britain that 'foreigners were practising their own customs'. By 1867 the *Times* was arguing that 'there is hardly such a thing as a pure Englishman on this island … our national denomination, to be strictly correct, would be a composite of a dozen national titles' (Sandu 2004).

This 'complex we' is usually highly urbanised: cities are the primary sites of cultural diversity (Amin 2002). Again, many urban communities have surprisingly deep roots. In his history of the city, Peter Ackroyd writes that 'by the tenth century [London] was populated by Cmyric Brythons and Belgae, by remnants of the Gaulish legions, by East Saxons and Mercians, by Danes, Norwegians and Swedes, by Franks and Jutes and Angles, all mingled and mingling together to form a distinct tribe of 'Londoners'' (Ackroyd 2000, quoted in Vertovec 2006).

Since the 1970s, Indo- and Chinese-American entrepreneurs have played an important role in the growth of Silicon Valley (Saxenian 2006). But the Bay Area has had large communities from both countries since the 19th century: Indian migrants started arriving from the 1850s onwards, many becoming prominent figures in the Santa Clara valley during its first, agricultural phase (Randolph and Erich 2009). Back in the UK, Chinese communities in London, Liverpool and Manchester were well established by the end of the 19th century. Liverpool's Chinatown grew up in the 1860s on the back of a regular steamer service to Chinese ports: by the 1930s, there were around 20,000 ethnic Chinese living in the city.

The main changes over the past few decades are factors of scale and speed. As the global population grows, so does the scale of global mobility (Landry and Wood 2008.) The US, historically a 'country of immigrants' (and the descendents of slaves) has also

experienced large upturns in net migration from South American countries, South and South East Asia (Putnam 2007).

The UK has experienced particularly striking changes. In a recent overview Vertovec (2007, 2006) argues that since the early 1990s, there has been a transformative 'diversification of diversity' leading to the emergence of 'super-diversity'. Vertovec's terminology captures a number of linked changes. At the most basic level, the UK has moved from a net exporter of people to a net importer. At the same time, the range of country of birth groups in Britain has substantially expanded (Kyambi 2005). As new communities form, the number of languages spoken and religions practised has also grown. In 2003, the first year data was collected, 10.4% of primary schoolchildren and 8.8% of secondary schoolchildren had a first language other than English. By 2009, these had risen to 15.2% and 11.1% respectively (DCSF 2009).

International migration is a key driver of growing cultural diversity in the UK, but not the only one. By mid-2007, net births had overtaken immigration as a source of population growth (Office of National Statistics 2008). This includes a rising share of births to mothers born outside the UK, and reflects the tendency of new migrants to put down roots in host countries, even when economic conditions turn down (CLG 2009b). More broadly, Fanshawe and Sriskandarajah (2010) suggest British identities are both multiple and increasingly fluid.

The UK's cultural diversity is a largely urban phenomenon. England's migrant and minority ethnic populations are largely concentrated in and around London, the conurbations and other cities. In 2001 the capital contained 48.2% of England's non-white population (Champion 2006). Schoolchildren in London speak at least 300 different languages at home (Gordon et al 2007), and figures for other large cities will be comparable. As new communities settle, they tend to de-concentrate across urban space, moving from inner urban areas into suburban neighbourhoods (Simpson and Finney 2009). Vertovec emphasises that changes in spatial patterning also inform super-diversity – while urban cores represent the largest stocks and inflows minority communities, many suburban and rural areas have seen rapid relative change (Vertovec 2007). At the same time better, cheaper technology and transport facilitates transnational lifestyles and strengthens diasporas (ibid).

2.1 Policy context

Worries about diversity and migration are nothing new. Fearing unrest, in the year 883 King Alfred banished the Danes from London, restricting them to land east of the river Lea (Keith 2005). Elizabeth I issued a proclamation in 1610 ordering the expulsion of 'negars and Blackamoores' from the capital (Sandu 2004). Sassen points out that all the major European countries have centuries-long histories of anti-immigrant sentiment (Sassen 2004). In the America of the late 19th and early 20th century, urban communities like New York, Chicago, San Francisco and New Orleans were often riven with inter-ethnic conflict as established groups – self-described 'Americans' – battled with newer arrivals (Sante 1998).

Cultural and ethnic conflicts are often hard to disentangle from other fears about class, poverty and access to resources, as the 2001 disturbances in many northern English towns illustrates (Cantle 2001). But this has not prevented widespread public and policy concerns about the social and economic effects of larger, more diverse communities in the UK (Caldwell 2009, Finney and Simpson 2009, Goodhart 2004). Around 80% of Britons say that the UK has good relations between different types of people (Landry and Wood 2008). Nevertheless, since 2003, 'race and immigration' has been one of the top three issues in MORI's monthly omnibus surveys of public opinion (Somerville 2007).

The emergence of Muslim communities in many European cities has provoked particularly strong reactions. Cultural conservatives such as Caldwell (2009) raise the prospect of a future 'Eurabia' dominated by Islamic culture and laws; progressives argue that as new communities become established, religion and cultural customs typically evolve or are left aside (Kuper 2009, Landry and Wood 2008). In the UK there are periodic concerns about 'white flight' from urban areas – in 2005 Trevor Phillips, head of the Equality and Human Rights Commission, suggested that Britain was 'sleepwalking into segregation', although the evidence suggests very little spatial segregation in British cities (Finney and Simpson 2009).

Reflecting these debates, British policy frameworks have evolved in the past 40 years – from a broadly multiculturalist approach towards a greater focus on community cohesion (CLG 2009a, Landry and Wood 2008). Migration policy has become increasingly orientated towards meeting economic goals, attracting skilled workers and capping the supply of others

(Somerville 2007). At the same time, however, 'diversity' has become a value in its own right, particularly in classrooms and workplaces (Aspinall 2009).

3. Understanding cultural diversity: measures and bases

This paper seeks to answer two questions. First, how culturally diverse are British cities? Second, what are the links between urban cultural diversity and economic performance? To answer these satisfactorily, I need to settle a third, prior question: how best to conceptualise quantify, 'cultural diversity'? This section reviews the literature and issues, introducing the CEL system used in the rest of the paper.

3.1 What is 'cultural diversity'?

Defining cultural diversity is extremely challenging. Fundamentally, we are trying to classify human distinctiveness, something that tends to resist being pinned down Landry and Wood (2008). Culture and ethnicity are 'context-driven social and psychological concepts', and so are fundamentally difficult to identify and estimate (Aspinall 2009). There are two basic steps in attempting to define cultural diversity. The first is to establish a working definition of 'cultural identity'; the second is to use this to classify the diversity of identities.

3.2 Cultural identity

At the conceptual level there are three problems for researchers. First, cultural identity is multi-dimensional and multi-level: components of identity are commonly assumed to comprise kinship, religion, language, shared territory, nationality and appearance (Bulmer 1996). As Casey and Dustmann (2009) point out, 'because 'identity' is not a uniquely defined concept, its correct measurement in empirical analysis is unclear'.

Second, identity has important elements of self-definition – it is our 'sense of self'. There is general agreement that 'membership of a … [cultural] group is something that is subjectively meaningful to the person concerned' (Office of National Statistics 2003). However, many people (such as the children of immigrants) may not feel they belong

uniquely to a single group. Casey and Dustmann (2009) find strong evidence of parental influence on identity in a study of German migrants; they also find that while fathers tend to 'transmit' German identity to children, mothers transmit 'home' identity, particularly to daughters. This suggests limits to the self-definition of identity, and that identities may evolve beyond childhood.

Third, both individuals' sense of identity *and* categories of ethnic and cultural classification tend to change over time. The UK has shifted from crude groupings such as 'coloureds' in the 1960s towards increasingly sophisticated categories today. More importantly, individual identities are also fluid, with certain aspects becoming more or less salient as groups assimilate. Manning and Roy (2007) find that age, years of residence and years of education have a positive association with the strength of British identity. Evolving aspects of identity within communities help shape that community's view of itself. Discussing the evolution of cultural identity within French Muslim communities, sociologist Olivier Roy uses the concept of *'formatage'* – a dynamic process in which aspects of 'traditional' cultural or religious behaviour, typically those of first generation migrants, are reshaped by subsequent generations to reflect new socio-cultural milieux (Roy, in Kuper 2009).

3.3 Cultural classification

Almost all attempts to classify and measure identity will be imperfect. At the extreme, if we believe that individual identity is essentially self-ascribed, it becomes very difficult to ascribe behaviour to identity – especially aspects of identity that are malleable, such as nationality or religion (Casey and Dustmann 2009). Most researchers therefore look for objective proxies for cultural identity (Mateos et al 2009). Researchers are getting to grips with many of the conceptual challenges (Aspinall 2009). However, existing datasets tend to be relatively crude, particularly those relying on a single 'tick-box' approach (Fanshawe and Sriskandarajah 2010).

There are two major practical criteria for diversity proxies (Aspinall 2009). The first is the need for high 'granularity', to distinguish different groups at a high level of detail. The second is the 'validity / utility tradeoff': we need to balance granularity with the need to link smaller groups into larger ones.

These are not simply theoretical concerns: multi-dimensional, multi-level classifications seem to help explain economic and social outcomes. A recent major study found that at cross-country level, high-level ethno-linguistic cleavages are good predictors of civil conflict and redistributive tendencies; finer-grained, sub-national distinctions matter more for economic growth and the provision of public goods (Desmet el al 2009).

The two most common proxies for diversity are country of birth and ethnicity (the main UK classifications are set out in Appendices 2 and 3). For UK-focused analysis, neither is entirely robust. Country of birth data is available at high levels of detail, but provides limited granularity: in the 2001 Census only half the ethnic minority population was born outside the UK (Mateos et al 2007). ONS ethnicity classifications, which divide the population into 16 groups, hide substantial variation within groups and bear little relation to actual norms or socio-economic outcomes (Fanshawe and Sriskandarajah 2010, Mateos et al 2009). Ethnicity classes also focus on 'visible minorities', ignoring the recent growth of 'white other' communities.

3.4 The CEL approach

Against this backdrop, cultural-ethnic-linguistic (CEL) name classification is a promising way forward (see Mateos 2007 for a review of recent research). CEL approaches have a number of advantages. First, CEL classifications are both objective and multidimensional, reflecting religion, geography, language and kinship. Second, they are available at different levels of aggregation, reflecting the higher-level connections between specific groups. Third, CEL methodologies use probability scoring to reflect the dynamic nature of cultural identity.

Mateos and colleagues (2007) have developed ONOMAP, a CEL-based taxonomy of names for the UK. They examine forename and surname characteristics using names from UK Electoral Register. These are then grouped together, combining information on geographical area, religion, language and language family associated with forename / surname combinations. This gives 185 basic CEL categories, which can be aggregated at different levels of detail (larger 'sub-groups', and even larger 'groups'). Crucially, rather than assign each combination to a specific CEL group, the researchers apply probability scores to each forename / surname combination. This helps deal with the large numbers of names with multiple cultural origins; the historically fuzzy boundaries of many states (e.g. Germany and

the Netherlands), and the alteration/adoption of names traditional to the British Isles. More detail is given in Appendix 1.

ONOMAP thus allows us to break down both the historical dynamics of established UK communities – with separate groupings for 'English', 'Welsh', 'Scottish' and 'Celtic' – and provides fine-grained detail on more recent communities, such as Afrikaans and Black South African migrants. It also allows us to usefully disaggregate complex groups, such as the British 'Muslim community', into a number of distinct geographical, ethnic and linguistic sets. [2]

4. The economics of cultural diversity: reviewing the evidence

4.1 Cultural diversity and cities: approaches

The literature on diversity and urban places is large and itself diverse. It includes historical analysis, such as the history of 'creative cities' (Hall 1998) or the role of migrants in developing the 19th century Atlantic Economic (Crafts and Venables 2001); ethnic group studies, covering the prospects and progress of (for example) Jewish, Italian and Caribbean communities in the US and UK (Sandu 2004, Sante 1998); the post-colonial literature, exploring diasporas, the development of cultural identity and the changing nature of 'home' (Urry 2000, Gilroy 1992); urban sociology, exploring related ideas of the post-colonial, cosmopolitan, transnational or 'mongrel' city (Keith 2005, Sandercock 2003, Smith 2001); a number of studies looking at social capital and community cohesion (Putnam 2007, Alesina and La Ferrara 2004); cross-country studies examining the role of ethnic fractionalisation in economic and social development (Collier and Hoeffler 1998); and a wide-ranging economic literature covering organisational performance, labour markets and human capital, entrepreneurship, innovation, productivity and the cost of living (e.g. Bellini et al 2008, Wadhwa et al 2007, Card 2007, Saxenian 2006, Ottaviano and Peri 2006 and 2005, Saiz 2003, Lazear 1998, Borjas 1994).

[2] One significant drawback of ONOMAP is that it is unable to distinguish American, Canadian, Australian and New Zealand CEL types on the basis of name alone, since many of these names will also be common to British and European populations. In this paper, names common to many countries are placed in the 'INTERNATIONAL' subgroup.

Within the economic strand there are two major preoccupations. First, there is an extensive literature on migration-related labour supply shocks, and their impacts at local and national level (see Dustmann et al 2008 for a recent review). In practice, although British migrants' human capital is similar to British-born workers, recent migrants have tended to cluster in 'hard to fill' jobs at the margins on the labour market (Manacorda et al 2006). Although initial impacts on natives may be minimal, long term effects may be more substantial (Nathan 2009).

Second, in the development studies field a number of country-level studies have looked at the role of 'ethno-linguistic fractionalisation' in affecting long term economic development, particularly in some African countries. Ranis (2009) reviews the literature, suggesting that the low population density of some countries in sub-Saharan Africa makes it even harder to generate trust relationships across ethno-linguistic groups – conversely, smaller, more highly populated Asian countries have been better able to foster the necessary social capital. Specifically, fractionalisation reduces trust and increases transactions costs (Collier 1998).

In order to understand the economics of cultural diversity at urban level, it is important to look beyond both of these debates. To do this I develop a simple theoretical framework, using perspectives from growth theory and new economic geography. I then populate the framework with evidence from the UK and elsewhere.

4.2 Cities and long-term growth

Classical models of economic growth predict the long run convergence of countries and regions. By contrast, endogenous growth theories highlight the importance of human capital and knowledge in advancing the technological frontier. Subsequent productivity gains drive long term growth rates (Romer 1990). National and regional differences in knowledge creation and diffusion thus help explain spatial disparities.

In these accounts of long term growth, cities play a number of important and well-established roles. Agglomeration economies help raise firms' and workers' productivity. Duranton and Puga (2003) summarise these as 'matching', 'sharing' and 'learning' effects. In particular, cities facilitate knowledge spillovers and ideas flow, by supporting face to face

interactions and other 'learning' economies. Jacobs (1970) suggests cities offer dynamic productivity gains to firms by enabling innovation. Recent structural shifts in national economies – in particular, an increased share of employment in services and 'knowledge-intensive' activity – have helped sort employers and skilled workers across urban areas (Overman and Rice 2008). Productivity gains driven by agglomeration help raise nominal wages and (often) employment rates; conversely, urban crowding in growing cities raises costs and eats into real wages (Combes et al 2005).

4.3 Diversity and growth

New growth theories also suggest various roles for cultural diversity. First, diversity may influence knowledge creation at the firm level. Berliant and Fujita (2009) model a system of knowledge creation, in which worker heterogeneity accelerates ideas generation via production complementarities. Specifically, 'cognitively diverse' teams leverage a wider pool of perspectives: cultural diversity is a good proxy for cognitive diversity (Page 2007).[3]

Second, diverse firms may have better access to new ideas and markets, by leveraging international networks and diasporas. Specifically, diasporas reduce information and communication costs (Rodríguez-Pose and Storper 2006).

Third, migrants themselves act as mobile carriers of knowledge. Migration decisions reflect both expected returns and the taste for risk-taking. So migrants may be highly entrepreneurial, and more likely to look for and develop new ideas (Wadhwa et al 2007). Ethnic entrepreneurs can also act as 'reputational intermediaries', forging partnerships and helping markets access (Saxenian and Sabel 2008).

Against this, there are three potentially negative effects of diversity on growth. First, in the short term cultural diversity may trigger higher communication and transactions costs (Collier 1998). Second, diverse groups may be less likely to trust each other, so that decision-

[3] Page's Diversity Prediction Theorem suggests that given a group of predictive models, the greater the diversity of modellers, the smaller the chances of error. This also implies that in some circumstances, the diversity of the problem-solving group is more important than individual talent. Cultural diversity (analogous to Page's 'identity diversity') is related to cognitive diversity, since different backgrounds and experiences are likely to generate different views and ideas. Various empirical studies confirm this.

making and knowledge-sharing may be sub-optimal (Alesina and La Ferrara 2004). Third, cultural diversity may create excess preference diversity, with conflicting desires and choices within teams (Page 2007). In empirical studies, the net benefits of team-level diversity appear to outweigh costs.

4.4 Cities, diversity and growth

There are three reasons why the *urban* economics of cultural diversity may be particularly important. First, cultural diversity is highly urbanised. Second, many of the diversity-growth channels are most prevalent in 'knowledge-intensive' firms and other institutions such as universities, which tend to have a predominantly urban footprint (Page 2007).

Third, diversity-growth effects may amplify, and be amplified by agglomeration effects (Berliant and Fujita 2009). For example, if social diversity contributes to economic diversity, it may help foster knowledge spillovers across sectors (Jacobs 1970). Specifically, large and diverse urban populations are more likely to demand a greater variety of goods and services, particularly in non-traded sectors. This will be driven both by the presence of new communities, and in some cases by shifting preferences in the majority population (Gordon et al 2007).

Taken together, diversity-growth effects in urban areas should lead to higher wages and employment rates in more culturally diverse cities. Set against this, social and political impacts of higher diversity may have a negative impact on economic outcomes. More diverse urban environments may exhibit lower levels of social capital and trust (Alesina and La Ferrara 2004). If this leads to under-provision of public goods, this may limit productivity gains from agglomeration. At the limit, political / social unrest may affect firms' and workers' location decisions.

4.5 Cities, diversity and growth: evidence base

There is some suggestive evidence linking urban diversity and economic growth. Page (2007) reviews the evidence on diverse firms, concluding that there is a small but significant 'diversity advantage' in problem-solving situations – short term costs are outweighed by longer term benefits. Some studies report reduced employee co-operation in the short run,

and stress the importance of management setting common organisation-wide goals (Williams and O'Reilly 1998, quoted in Page). Firms based around team work and focused on 'knowledge-intensive' problem-solving are most likely to be benefit. Studies also suggest a strong overlap between cognitive and cultural diversity.

US city-level evidence suggests that long term, increases in cultural diversity are linked to both productivity and price gains in American cities, so that real welfare effects are close to neutral (Ottaviano and Peri 2006, Sparber 2006, Saiz 2003). UK panel studies of urban areas suggest similar productivity-driven wage gains, alongside employment losses for lower-skilled workers (Nathan 2009).

There is some evidence the co-location of migrant inventors makes a difference to levels of urban innovation (Hunt 2008, Peri 2007, Saxenian 2006). Several studies also find that migrant networks also facilitate international links and reduce trade costs (Peri and Requena 2009, Saxenian and Sabel 2008). Saxenian (2006) provides detailed evidence on the roles of migrant and ethnic diasporas in the Silicon Valley area (Saxenian 2006) Similarly, Kerr's analysis of international patent citations suggests that ethnic research communities in the US, who tend to be heavily urbanised, play a critical role in generating and exporting new ideas (Kerr 2008). At the other end of the economy, immigration is positively associated with an increased range of restaurants in California (Mazzolari and Neumark 2009). However, overall levels of 'ethnic entrepreneurship' seem to vary greatly by group, country and community class structures (Gordon et al 2007, Nakhaise et al 2009).

Some studies imply social and political costs to rising urban diversity. Putnam (2007) finds some evidence of reductions in bonding social capital in more diverse US urban neighbourhoods. A recent study of EU countries by Card and colleagues (2009) found that concerns about immigration focused on perceived threats to amenities and public goods. However, both Putnam and Card (2007) suggest that the long term benefits of cultural diversity outweigh any short term costs.

4.6 Diversity and a Creative Class?

An alternative view is suggested by Richard Florida (2002). In this model, urban economies are increasingly dominated by a 'Creative Class' of skilled workers with strong preferences

for cultural diversity. Open and tolerant cities attract the Creative Class, improving their human capital mix and attracting new investment. This implies that diverse cities might have stronger economic performance primarily because of the Creative Class, with cultural diversity contributing nothing directly. In practice, the Creative Class performs poorly in both US (Glaeser 2005) and UK contexts (Nathan 2008a). Significantly, there is little UK evidence that a single 'Creative Class' exists – skilled workers have a range of location preferences covering city centres, suburbs and rural locations.

5. Data and sample

There is little UK evidence on the issues just discussed. To help fill the gap, I build a pooled cross-section of 79 UK urban areas for the years 2001-6. The aim is to look at patterns of cultural diversity in the context of major changes during the 1990s, and to reflect the emergence of 'super-diversity' in the years following 2001.

5.1 Data sources

My main datasets are the UK Electoral Register and the UK Labour Force Survey (LFS). Electoral data provides the main raw input for ONOMAP and is kindly provided by Pablo Mateos at CASA, UCL. The version of ONOMAP I am using has been designed for analysis at the urban level, and therefore provides information for 67 CEL 'subgroups'. CEL types with very small UK urban populations are aggregated into the larger subgroup units.[4] In a few cases, geographically disparate groups have been aggregated: full details are provided in Appendix 1.

CEL classification systems require large databases of names (Mateos 2007). Raw data for ONOMAP is drawn from Electoral Registers between 2001 and 2006, with additional data provided by Experian's 'Consumer Dynamics' database (Mateos et al 2007). The structure of the names data puts some limits on its use. First, since 2001 UK residents have been able to opt out of the publicly available version of the Register. The raw data highlights

[4] The complete ONOMAP taxonomy includes 185 CEL types and 68 subgroups. See Mateos et al 2007 for details.

deregisters, but does not identify which are genuine opt-outs and which are simply moves from one constituency to another. As a result, a number of records in the raw data may be duplicates. The ONOMAP team have performed extensive de-duplication of 2001-6 data, minimising this risk. Second, the Register is only provided as a continuous database – so that it is not possible to take yearly snapshots from the cleaned aggregate data. Therefore CEL information is pooled together for 2001 through 2006 inclusive.

CEL data is supplemented by demographic, social and economic information from the Labour Force Survey and ONS mid-year population estimates. The LFS is the best single source of information on demographic/cultural characteristics and economic outcomes at urban level. I restrict observations to the LFS working age population (16-64 for men, 16-59 for women), and for simplicity drop observations from Northern Ireland.

The relatively small size of the LFS raises the risk of measurement error when used below regional level (Dustmann et al 2005). I am using the survey at sub-regional level, which best corresponds to a local spatial economy. To safeguard the sample against error I use LFS microdata[5] to construct a panel of Travel to Work Areas (2001 TTWAs), using a postcode share weighting system to aggregate local authority-level averages.[6] TTWAs have the additional benefits of being designed to represent largely self-contained local labour markets, and are regarded as good proxies for a spatial economy.

[5] From the ONS Virtual Microdata Lab (VML). The quarterly LFS samples around 60,000 households. Each quarter consists of five overlapping 'waves', with an 80% overlap within that quarter. As per ONS recommendations, to ensure a sample of unique individuals I keep only observations from waves 1 and 5 in each quarter. I then pool the remaining data to produce calendar years. This approach gives me c.120,000 individual-level observations per year, approximately 517 per TTWA. This will be considerably higher for both total and migrant sample in the final panel, which is restricted to urban areas only.

[6] I aggregate individual-level data to local authority-level averages, and then aggregate these to TTWA-level using postcode shares. Local Authority District (LAD) boundaries are not congruent with TTWA boundaries, so straightforward aggregation is not possible. Using the November 2008 National Postcode Sector Database (NSPD), I calculate the number of postcodes in each 2001 TTWA and in each of its constituent LADs. I then calculate each LAD's 'postcode share' of the relevant TTWAs' total postcodes. For each TTWA, shares sum to one. Shares are then used to construct TTWA-level averages from the relevant LAD-level averages.

I restrict the analysis to 'primary urban' TTWAs where the sample sizes are biggest. As with ONOMAP data, I pool all years for the main regressions. The end result is a pooled cross-section of 79 observations covering the years 2001-6 inclusive.

5.2 Diversity variables

My main measure of cultural diversity is the ONOMAP CEL classification, which covers 67 urban-level subgroups. From this, I construct Fractionalisation Indices of cultural diversity. Fractionalisation Indices are derived from the Herfindahl Index of industrial concentration, and are widely used in the economics of diversity literature following a number of studies in the wider literature (e.g. Ottaviano and Peri 2006, Easterley and Levine 1997, Alesina and La Ferrara 2004). For group *i* in area *c* in year *t*, the group's score on the Index is given by:

$$FRAC_{ict} = 1 - \sum_i [SHARE_{ict}]^2 \qquad (1)$$

Where SHARE is *i*'s share of the total area population. The Index measures the probability that two individuals in an area come from different country of birth groups. The Index is helpful in that it reflects both the number of different groups in an area and their relative sizes. Specifically, it takes the value 0 when everyone is in the same country of birth group and 1 when each individual is in a different group; it takes the value 1-1/*c* when *c* groups are of equal size.[7]

I make two Fractionalisation Indices. The first Index looks at the distribution of all 67 name sub-groups, and is a measure of the size and distribution of the UK urban population. The second Index covers the 20% of names ascribed to groups not classified as English, Celtic[8], Welsh or Scottish geographical origin. It puts greater weight on recent migrant and minority communities, and thus acts as a rough 'Index of Urban Super-Diversity'. It is important to note that the intention here is not to make a judgement on the inherent

[7] If groups are of equal size, in theory the maximum value of the Index will be (1 – 1/67) = 0.985 (3dp). In practice the maximum Index is often 1 due to approximation in the aggregation process.

[8] 'Celtic' names are those common across Irish, Scottish and Welsh populations.

'Britishness' of names, but rather to use geography as a proxy for capturing some of the more recent patterns of population change.[9]

For comparison, I also construct Indices using country of birth and ethnicity data taken from the LFS. For the former I use the LFS variable CRYOX, which provides 103 consistent birth country categories, of which I use 101 (see Appendix 2).[10] For ethnicity I use the ETHCEN15 variable, which follows 2001 Census classifications and covers 15 high-level groups (see Appendix 3 for more details).

6. Descriptive analysis

I set out comprehensive descriptive statistics in Tables 1 – 8, covering the set of 79 urban TTWAs over the period 2001-6. Table 1 presents summary statistics. Tables 2– 4 break down the various diversity measures by area, focusing on the urban areas of greatest cultural diversity; tables 5-8 look at the largest groups.

6.1 Summary statistics

Table 1 presents summary statistics covering demographic characteristics, economic performance measures and information on population density, industrial and economic structure. My two economic performance variables are average hourly wages and average employment rates. These are largely similar across all workers, UK-born workers, migrants and minority ethnic groups. However, wages are slightly lower for minority ethnic groups compared to the urban working-age population as a whole. Economic activity and employment rates are also slightly lower than average for migrants and minority ethnic

[9] ONOMAP combines information on forenames and surnames, geographical area, religion, language and language family associated with forename / surname combinations. In this case, I am using one piece of information – geographical area associated with name types – to crudely divide the set of names. The matching process is not perfect. For example, the 'ENGLISH' subgroup also includes some names from the smaller 'BRITISH SOUTH AFRICAN' and 'MALTESE' type categories. Conversely, the 'NORTHERN IRISH' type cannot be included because my data is at subgroup level.

[10] I drop 102 (at sea / in the air) and 103 (stateless).

group, although if these groups are out of work, they are less likely to be long term unemployed.

Diversity measures throw up two striking points. First, as measured by CEL sub-groups, average levels of urban cultural diversity are considerably higher than using 'traditional' measures such as country of birth. Specifically, the mean of the CEL Fractionalisation Index is 0.416 with minimum 0.197, compared to other means of 0.28 (ONS ethnicity) and 0.143 (country of birth). This reflects the richer, multi-dimensional nature of diversity as recorded through ONOMAP.

Second, as a result the CEL measure helps to highlight urban super-diversity – with majority name subgroups removed, the average value of the Index is 0.826, with London scoring the maximum of 0.946. Within-group Indices of country of birth and ethnicity also have much higher means (0.898 and 0.749 respectively).

6.2 Urban cultural diversity by area

Table 2 ranks urban areas' cultural diversity by CEL name subgroup. The left hand columns give results for the full Index, the right hand columns scores for the super-diversity Index. Perhaps surprisingly, the full Index suggests that Scottish cities are more culturally diverse than London, with the biggest Welsh cities only fractionally behind the capital. Index scores are higher the larger the number of groups, and the more even their sizes. London has a very large number of distinct cultural communities, but with widely varying sizes (Kyambi 2005). By contrast, Scottish and Welsh cities will tend to have fewer groups of fairly even size, with large, historic populations of 'Celtic' and 'English' CEL origin alongside majority 'Scottish' and 'Welsh' groups. This is borne out in the right hand column, which shows ranking by areas once 'English', 'Scottish', 'Welsh' and 'Celtic' groups are removed. Without these name group populations, CEL-based rankings look closer to intuition, as well as more established diversity measures.

Tables 3 and 4 illustrate change over the sample period, using indicative measures of diversity based on country of birth and ethnicity. Reflecting national trends, migrant and minority diversity in urban areas has risen over the study period; the most diversity cities in 2001 have also all increased their migrant population share. There has been little change in

relative positions over time: measured by country of birth, the most diverse cities in Britain remain places like London, Bradford, Birmingham, Leicester, Slough, Luton and Bedford. There have been a few notable climbers however, such as Oxford, Cambridge and Manchester – all cities that have markedly increased their student populations in recent years.

6.3 Urban cultural diversity by group

Tables 5 and 6 give information on the major CEL name subgroups. As expected, 'English', 'Celtic', 'Scottish' and 'Welsh' country-origin subgroups make up over 88% of names in UK urban areas (table 5). Beyond this, ONOMAP data provides much finer disaggregation of groups than country of birth or ONS ethnicity-based rankings, and helps reflect the super-diversity now present in many urban areas (table 6). For example, ONOMAP also shows in some detail how South and South East Asian-origin communities break down across UK cities, as well as highlighting both established minorities (such as Ashkenazi and Sephardic Jewish communities) and newer arrivals (such as Polish, Afrikaans and Black South African groups).

Some of the CEL subgroups aggregate a number of smaller populations at the urban level – for example, 'SOUTH ASIAN' captures several groups including 'Asian Caribbean', Guyanese and Kenyan Asian communities, Tamils and Bhutanese. Equally, the 'AFRICAN' subgroup includes communities from Benin, Botswana, Ivory Coast, Liberia, Senegal and Zaire.

These tables also illustrate the complexity of constructions like the 'British Muslim community', which turns out to incorporate disparate groups from Pakistan, Kashmir, Somalia, Iran, the Balkans, Sudan, Malaysia and Central Asian Republics.

Tables 7 and 8 provide some illustrative dynamics, using country of birth and ethnicity measures from 2001 – 2006. Germany, India, Pakistan and Ireland consistently form the largest migrant communities among the urban working-age population (table 7). The 2001 figure also includes many 'new migrant communities' that developed in urban Britain over the 1990s – notably those from Zimbabwe, Poland, South Africa and Hong Kong. Many of these continued to grow during the 2000s, particularly Polish and Zimbabwean migrant

communities. The 2006 figure also illustrates the rapid growth of migrant communities from the former Soviet Union and Central / Eastern countries which acceded to the EU in 2004.

Table 8 provides similar information by ethnic group. The figures for 2001 and 2006 show rapid growth in 'other'-related categories, which have all either doubled or tripled their population share in urban areas. This illustrates the shortcomings of the present ethnicity classifications for capturing the true cultural diversity of British cities.

7. Regression analysis

Using the dataset, I test for linkages between patterns of cultural diversity and economic performance in UK cities. I set up a parsimonious model linking urban economic outcomes to diversity and a range of demographic, economic and spatial controls. I briefly discuss the estimation strategy, then highlight the main findings.

7.1 Estimation strategy

My estimation strategy is an example of the spatial correlations approach widely used in the migration and diversity literature (e.g. Dustmann et al 2005, Ottaviano and Peri 2006). The model exploits local variations in levels of cultural diversity and in the economic outcomes of interest. For TTWA *i*, the model is given by:

$$Y_i = bDIV_i + \boldsymbol{DEM}_i c + \boldsymbol{ECON}_i d + eSPAT_i + e \qquad (2)$$

Y is either the log of average hourly wages or the log of average employment rates, in each case for the working-age population. The variable of interest is *DIV*, which is a Fractionalisation Index of CEL subgroups (country of birth and ONS ethnic group Indices are included for comparison).

DEM represents a set of demographic controls (share of workers 24 and under, share of female workers). Both of these should be negatively correlated with wages. The youth

measure is likely to be negatively related to employment, although the share of female workers may be positively linked.

ECON is a set of economic structure controls (share of workers with degrees, share of workers in manufacturing sectors, share of jobless who are long term unemployed). The first of these should be positively related to wages, employment and prices. The second should be positively related to employment rates. The third should be negatively related to wages and employment (in particular).

SPAT is given by logged population density, measured as total population over surface area. This is a simple device for capturing agglomeration economies, and is likely to have a positive relationship with wages. I estimate in OLS on the pooled cross-section of 79 observations (76 for CEL models), using HAC standard errors. The descriptive analysis shows that London is the outlier in terms of both cultural diversity and economic performance: so I run models with and without the capital.

Data constraints force a number of compromises. As my dataset is cross-sectional, I am relying purely on spatial variation and am unable to fit year or area dummies. However, the model passes diagnostic tests for fit, collinearity and spatial autocorrelation, and by pooling so many years together I minimise the risk that a single year drives the results. More seriously, robust causality checks are unavailable: the sample structure means that I am unable to construct any of the usual instruments[11] for all my main variables of interest. This is problematic given the spatial correlations approach (Altonji and Card 2001, Borjas 1994).

7.2 Results

Regression results are set out in full in tables 9 – 12. Each table sets out estimates for wage or employment models, by each set of diversity measures (CEL, country of birth, ethnic groups). In each case specification (1) gives the sample bivariate correlation between *DIV* and the dependent variable of interest; specification (2) gives results for controls; specification (3) gives results for the full model; specification (4) fits the model without including London.

[11] For example, time lags, 'migrant gateway' or shift-share instruments. For further discussion on causality and instrument strategies see Nathan 2009 or Card 2007.

Across both dependent variables and measures of *DIV*, R^2 is consistently between 0.7 and 0.8. R^2 with controls only is around 0.6-0.7; controls are all of the magnitude and sign expected. While some of this is likely to be driven by collinearity (see above), the consistency of fit statistics suggests the model is picking up some genuine variation in the data.

Tables 9 and 10 give the main results of the analysis. For the fractionalisation index of all name subgroups, diversity is insignificant on wages (with coefficients close to zero). Conversely, there is a small negative link to employment rates: the coefficient of *DIV* is -0.131, significant at 1%, implying that a 10 percentage point rise in the Index is linked to a 1.31% fall in average urban employment rates. By contrast, the Index of super-diversity – excluding the 'English', 'Welsh', 'Scottish' and 'Celtic' origin subgroups – turns up strong positive associations with both wages and employment rates. The coefficients of *DIV* are 0.246 (wages) and 0.105 (employment), both significant at 5%.

In comparison, the Fractionalisation Indices of country of birth and ethnic group turn up strong positive associations with wages, but no significant association with employment rates (tables 11 and 12). As a cross check I regress Fractionalisation Indices of migrant and minority populations on wages and employment. Results are not shown here but are non-significant in each case.

I run three simple robustness checks. First, removing London from the sample changes the numbers slightly in a few cases. For CEL and ethnicity models, results are broadly the same. For country of birth models, coefficients of *DIV* are generally larger when London is left out. There seems to be a 'migrant effect' on employment rates in London: excluding the capital raises the coefficient of *DIV* from 0.088 to 0.150 (and is now significant at 5%).

Second, I remove the eight most common outliers[12]. Results are not shown here, but again make little difference to the overall pattern. Finally, I test for the influence of long term

[12] These are Barnsley, Burnley, Chelmsford, Exeter, Hartlepool, Hastings, London and Southend.

economic change by excluding 20 'de-industrialising' cities[13], taken from Turok and Edge (1999). All of these locations lost substantial employment during the 1980s and early 1990s, and many will have continued to do so into the 2000s. Removing so many locations reduces the sample to around 50 observations, and removes many of the most diverse urban areas, so results (not shown here) need cautious interpretation. Wage models are essentially unaffected; for employment, the CEL Index is unaffected, while the Index of super-diversity now has a much larger positive coefficient (0.276, significant at 1%). This is a puzzling result, which may be partly the result of sampling error. Further research with larger datasets is needed.

8. Discussion

The UK has become more culturally diverse over the last decade and a half. A wider range of diaspora groups, languages and religions, as well as a greater fluidity of identities, has contributed to a new sense of super-diversity. British cities are where most of this change is taking place: super-diversity is a largely urban phenomenon.

Public and policy interest in these issues is high, but there is surprisingly little research on the economic and social impacts of super-diversity. In part, this is because measuring and quantifying 'cultural diversity' beyond broad trends is extremely challenging. This paper makes two contributions to filling these gaps. First, it makes use of a rich and innovative set of diversity measures, and develops a new dataset of UK cities for the years 2001-6. Second, it tests links between cultural diversity, wages and employment, comparing results across a range of diversity proxies.

The analysis throws up a number of messages. First, when using appropriate measures such as ONOMAP, it turns out that urban Britain is more diverse than we might imagine. Descriptives for Scottish and Welsh cities, in particular, illustrate the long history of the multicultural city in the UK. Second, not only is cultural diversity highly urbanised, it is

[13] These are Birmingham, Clydeside (Glasgow and Lanarkshire TTWAs), West Yorkshire (Leeds and Bradford), Merseyside (Liverpool and Wirral), London, Manchester, South Yorkshire (Sheffield and Rotherham), Bristol, Cardiff, Coventry, Doncaster, Edinburgh, Hull, Leicester, Nottingham, Plymouth, Stoke-on-Trent, Sunderland and Wigan.

likely to remain so. Across a number of measures, UK urban areas increased their 'diversity share' between 2001-6, and more recent evidence suggests this will continue (CLG 2009b).

Third, the analysis sheds new light on the emergence of super-diversity, in contrast with the 'traditional patterns' of the 1950s-1980s. New country of birth and ethnic groups grew in the years from 2001; ONOMAP also helps us makes sense of the complex regional, religious and linguistic patterns of urban population mix.

Fourth, the regression analysis suggests some positive links between super-diversity and both wages and employment at the urban level. More broadly, diversity as measured by ONOMAP finds no link between diversity and urban wages (although alternate regressions using birth country and ethnicity groups do find a link). I also find some negative associations between *DIV* and employment rates. Robustness checks suggest these may be partly explained by factors not fully captured in this simple model, such as long-term de-industrialisation and institutional shifts in urban labour markets (see also Nathan 2009).

These results are drawn from a single, relatively small cross-section. I am unable to infer causality, and legitimate concerns could be raised about sample size. As such, my findings have to be taken as suggestive, and coefficients as upper bounds. However, they are in line with a growing body of international evidence suggesting some economic benefits of cultural diversity, particularly in urban areas.

There are a number of fruitful areas for further research. In particular, collecting UK panel data would allow more robust analysis and the potential for causality checks (using time lags, shift share or other instruments). Equally, international comparisons of urban areas using CEL approaches could turn up fascinating results.

Table 1. Summary statistics.

Variable	N	Mean	SD	Min.	Max.
Ave hourly wage	79	9.991	1.319	8.089	13.879
Ave hourly wage, UK-born	79	9.993	1.342	8.112	14.557
Ave hourly wage, non-UK born	79	10.292	1.615	6.52	14.318
Ave hourly wage, ethnic minorities	79	9.779	1.608	5.932	14.394
Ave employment rate	79	0.75	0.044	0.623	0.821
Ave employment rate, UK-born	79	0.757	0.043	0.626	0.825
Ave employment rate, non-UK born	79	0.683	0.091	0.312	0.81
Ave employment rate, ethnic minorities	79	0.64	0.085	0.458	0.793
% of unemployed who are long term unemployed	79	0.198	0.06	0.081	0.347
% of unemployed who are long term unemployed, UK-born	79	0.199	0.061	0.082	0.347
% of unemployed who are long term unemployed, non-UK born	79	0.173	0.138	0	0.667
% of unemployed who are long term unemployed, minorities	78	0.157	0.133	0	0.5
% aged 24 or less	79	0.165	0.014	0.132	0.198
% female	79	0.497	0.008	0.48	0.522
% male	79	0.503	0.008	0.478	0.52
% non-UK born	79	0.076	0.046	0.017	0.339
Fractionalisation Index of CEL name subgroups	76	0.416	0.131	0.197	0.744
Fractionalisation Index of CEL subgroups (excluding E/W/S/C)	76	0.826	0.1	0.368	0.946
Fractionalisation Index, country of birth	79	0.143	0.078	0.033	0.56
Fractionalisation Index of non-UK born populations	79	0.898	0.077	0.448	0.974
% ethnic minority	79	0.06	0.054	0.009	0.273
Fractionalisation Index, ethnicity	79	0.28	0.085	0.177	0.657
Fractionalisation Index of minority populations	79	0.749	0.108	0.404	0.877
% with NVQ4 (degrees / HE qualification)	79	0.242	0.053	0.146	0.373
% with NVQ2 or 3 (A-levels / good GCSEs)	79	0.474	0.031	0.349	0.531
% with NVQ1 (other / no qualifications)	79	0.284	0.048	0.197	0.402
% in senior, pro or associate pro occupations	79	0.394	0.057	0.261	0.532
% in admin and secretarial or skilled trades	79	0.245	0.016	0.208	0.292
% in personal services, sales, routine or manual	79	0.361	0.052	0.252	0.496
% employed in service sector	79	0.5	0.05	0.368	0.639
% employed in manufacturing	79	0.146	0.044	0.054	0.259
% employed in other sectors	79	0.354	0.029	0.281	0.482
population density	79	1245.296	807.77	294.335	5660.119
working age population	79	119667.5	72034.46	48131.98	422820

Source: ONS / LFS, ONOMAP

Notes: Onomap data (which gives frac_name and frac_wnames) is missing for three TTWAs: Colchester, Preston, Tunbridge Wells

Table 2. Urban areas with the 20 largest values of the CEL Fractionalisation Index, 2001-6

2001-6	
TTWA name	**frac_name**
Glasgow	0.744
Lanarkshire	0.724
Dundee	0.701
Edinburgh	0.698
Aberdeen	0.689
London	0.688
Swansea Bay	0.638
Cardiff	0.600
Blackburn	0.591
Birmingham	0.564
Wycombe & Slough	0.552
Bradford	0.551
Luton & Watford	0.543
Wolverhampton	0.527
Newport & Cwmbran	0.524
Liverpool	0.523
Leicester	0.522
Manchester	0.515
Coventry	0.511
Rochdale & Oldham	0.503
All urban TTWAs	*0.426*

2001-6	
TTWA name	**frac_wnames**
London	0.946
Southampton	0.941
Oxford	0.936
Reading & Bracknell	0.924
Nottingham	0.921
Guildford & Aldershot	0.920
Milton Keynes & Aylesbury	0.920
Peterborough	0.919
Wycombe & Slough	0.915
Cambridge	0.914
Walsall & Cannock	0.914
Southend & Brentwood	0.913
Bournemouth	0.910
Brighton	0.908
Poole	0.903
Hastings	0.901
Ipswich	0.899
Luton & Watford	0.897
Bedford	0.895
Northampton & Wellingborough	0.893
All urban TTWAs	*0.816*

Source: ONOMAP

Notes: right hand columns exclude ‘English’, ‘Welsh’, ‘Scottish’ and ‘Celtic’ CEL subgroups.

Notes: based on UK presence, some CEL subgroups aggregate a number of smaller, disparate CEL types. See Appendix Z for full description.

Table 3 / Urban TTWAs with the 20 highest values of the country of birth Fractionalisation Index, 2001-6.

2001		2006		2001-6	
TTWA name	**Fracm**	**TTWA name**	**fracm**	**TTWA name**	**fracm**
London	0.530	London	0.588	London	0.560
Bradford	0.279	Wycombe & Slough	0.345	Wycombe & Slough	0.308
Birmingham	0.276	Reading & Bracknell	0.326	Bradford	0.295
Wycombe & Slough	0.257	Luton & Watford	0.323	Birmingham	0.272
Leicester	0.255	Cambridge	0.322	Leicester	0.266
Brighton	0.250	Birmingham	0.309	Luton & Watford	0.265
Luton & Watford	0.244	Bradford	0.289	Reading & Bracknell	0.253
Reading & Bracknell	0.226	Leicester	0.282	Bedford	0.241
Bedford	0.226	Bedford	0.276	Cambridge	0.236
Cambridge	0.215	Oxford	0.252	Guildford & Aldershot	0.215
Guildford & Aldershot	0.211	Leeds	0.249	Brighton	0.213
Huddersfield	0.203	Coventry	0.239	Oxford	0.207
Oxford	0.186	Guildford & Aldershot	0.238	Wolverhampton	0.198
Wolverhampton	0.180	Peterborough	0.230	Milton Keynes & Aylesbury	0.196
Milton Keynes & Aylesbury	0.179	Wolverhampton	0.228	Leeds	0.195
Rochdale & Oldham	0.173	Stevenage	0.228	Coventry	0.195
Bournemouth	0.172	Bolton	0.218	Huddersfield	0.186
Colchester	0.166	Brighton	0.215	Manchester	0.180
Stevenage	0.161	Dudley & Sandwell	0.213	Bournemouth	0.178
Leeds	0.156	Manchester	0.212	Rochdale & Oldham	0.176
All urban TTWAs	*0.130*	*All urban TTWAs*	*0.167*	*All urban TTWAs*	*0.143*

Source: ONS / LFS
Notes: sample is working-age population

Table 4. Urban areas with the 20 largest values of the ethnic groups Fractionalisation Index, 2001-6

2001		2006		2001-6	
TTWA name	**frace_15**	**TTWA name**	**frace_15**	**TTWA name**	**frace_15**
London	0.579	London	0.648	London	0.657
Birmingham	0.394	Birmingham	0.482	Birmingham	0.496
Bradford	0.379	Bradford	0.404	Bradford	0.490
Leicester	0.299	Wycombe & Slough	0.402	Leicester	0.425
Luton & Watford	0.291	Luton & Watford	0.393	Bedford	0.404
Wycombe & Slough	0.286	Reading & Bracknell	0.369	Luton & Watford	0.402
Wolverhampton	0.280	Wolverhampton	0.362	Huddersfield	0.389
Huddersfield	0.274	Leicester	0.361	Bolton	0.361
Bedford	0.261	Bedford	0.359	Leeds	0.358
Rochdale & Oldham	0.225	Bolton	0.353	Glasgow	0.349
Bolton	0.211	Glasgow	0.350	Coventry	0.347
Leeds	0.205	Dudley & Sandwell	0.319	Dudley & Sandwell	0.345
Reading & Bracknell	0.203	Huddersfield	0.314	Manchester	0.340
Blackburn	0.202	Cambridge	0.312	Blackburn	0.333
Dudley & Sandwell	0.199	Leeds	0.310	Burnley, Nelson & Colne	0.321
Brighton	0.195	Coventry	0.299	Cambridge	0.321
Manchester	0.188	Nottingham	0.275	Milton Keynes & Aylesbury	0.317
Burnley, Nelson & Colne	0.186	Southend & Brentwood	0.274	Derby	0.312
Cambridge	0.186	Rochdale & Oldham	0.268	Gloucester	0.309
Coventry	0.181	Manchester	0.267	Oxford	0.305
All urban TTWAs	*0.133*	*All urban TTWAs*	*0.203*	*All urban TTWAs*	*0.28*

Source: ONS / LFS
Notes: sample is working-age population
Notes: variable is drawn from LFS variable ETHCEN15.

Table 5. 50 largest CEL name subgroups, urban TTWAs, 2001-6.

Onomap CEL subgroup	% of all groups, 2001-6	Onomap CEL subgroup	% of all groups, 2001-6
ENGLISH	68.90	GHANAIAN	0.12
CELTIC	11.63	HISPANIC	0.11
SCOTTISH	5.42	JEWISH	0.10
WELSH	2.89	SOMALIAN	0.10
IRISH	2.82	OTHER AFRICAN	0.09
PAKISTANI	1.05	OTHER EAST ASIAN AND PACIFIC	0.09
OTHER MUSLIM	0.79	HINDI NOT INDIAN	0.04
INDIAN HINDI	0.78	INTERNATIONAL	0.04
SIKH	0.55	JEWISH AND ARMENIAN	0.04
UNCLASSIFIED	0.41	CZECH / SLOVAK	0.04
ITALIAN	0.39	BALKAN	0.04
POLISH	0.35	DANISH	0.04
OTHER EUROPEAN	0.34	SWEDISH	0.04
BANGLADESHI	0.33	DUTCH	0.03
CHINESE	0.27	VIETNAMESE	0.03
NIGERIAN	0.27	RUSSIAN	0.03
GREEK	0.22	OTHER NORDIC	0.03
GERMAN	0.21	BLACK SOUTHERN AFRICAN	0.02
PORTUGESE	0.21	IRANIAN	0.02
FRENCH	0.19	HUNGARIAN	0.02
SPANISH	0.18	JAPANESE	0.02
SRI LANKAN	0.14	FINNISH	0.02
OTHER SOUTH ASIAN	0.14	SIERRA LEONIAN	0.02
PAKISTANI KASHMIR	0.13	AFRIKAANS	0.02
TURKISH	0.12	OTHER BALTIC	0.02

Source: ONOMAP.

Notes: based on UK presence, some CEL subgroups aggregate a number of smaller, disparate CEL types. See Appendix 1 for full description.

Table 6. 50 largest CEL name subgroups (excluding 'English', 'Scottish', 'Welsh', 'Celtic' subgroups), urban TTWAs, 2001-6.

Onomap CEL subgroup	% of groups, 2001-6	Onomap CEL subgroup	% of groups, 2001-6
IRISH	32.75	OTHER AFRICAN	0.60
PAKISTANI	5.98	DUTCH	0.56
EUROPEAN	5.68	CZECH / SLOVAK	0.55
INDIAN HINDI	5.67	DANISH	0.51
OTHER MUSLIM	4.67	SOMALIAN	0.50
CHINESE	3.50	INTERNATIONAL	0.44
POLISH	3.41	JEWISH ARMENIAN	0.38
ITALIAN	3.35	HINDI NOT INDIAN	0.37
SIKH	3.29	BALKAN	0.37
GERMAN	3.27	OTHER NORDIC	0.34
UNCLASSIFIED	2.87	SWEDISH	0.31
BANGLADESHI	2.63	HUNGARIAN	0.28
FRENCH	2.40	AFRIKAANS	0.22
GREEK	2.14	BLACK SOUTHERN AFRICAN	0.21
PORTUGESE	1.53	VIETNAMESE	0.20
HISPANIC	1.38	FINNISH	0.20
SPANISH	1.38	RUSSIAN	0.20
NIGERIAN	1.16	OTHER BALTIC	0.19
OTHER EAST ASIA AND PACIFIC	1.06	NORWEGIAN	0.18
OTHER SOUTH ASIAN	0.84	IRANIAN	0.14
JEWISH	0.76	JAPANESE	0.11
PAKISTANI KASHMIR	0.74	SERBIAN	0.10
GHANAIAN	0.68	ALBANIAN	0.09
TURKISH	0.67	SIERRA LEONIAN	0.08
SRI LANKAN	0.66	ARMENIAN	0.05

Source: ONOMAP.

Notes: based on UK presence, some CEL subgroups aggregate a number of smaller, disparate CEL types. See Appendix 1 for full description.

Table 7. 25 largest migrant groups, urban TTWAs, 2001-6.

2001		2006		2001-6 pooled	
Country of birth	**% total migrants**	**Country of birth**	**% total migrants**	**Country of birth**	**% total migrants**
Germany	10.81	India	9.71	Germany	9.15
India	9.17	Germany	7.13	India	9.15
Ireland	8.64	Pakistan	7.03	Pakistan	7.73
Pakistan	7.05	Ireland	6.00	Ireland	7.64
South Africa	4.30	Poland	4.84	South Africa	4.61
USA	3.22	South Africa	4.26	Bangladesh	3.03
Bangladesh	3.06	Bangladesh	3.42	USA	2.87
Canada	2.69	Zimbabwe	2.63	Australia	2.46
Kenya	2.67	USA	2.58	Hong Kong	2.21
Hong Kong	2.54	Former USSR	2.31	Zimbabwe	2.13
Australia	2.17	Australia	2.28	Canada	2.10
France	2.00	Hong Kong	1.95	Poland	2.04
Singapore	1.95	Kenya	1.79	Kenya	2.00
Italy	1.93	France	1.71	Singapore	1.71
Jamaica	1.86	Philippines	1.69	Italy	1.67
Nigeria	1.76	China	1.64	France	1.67
Malta & Gozo	1.73	Singapore	1.53	Former USSR	1.54
Malaysia	1.66	Canada	1.53	China	1.52
Other M/East	1.35	Netherlands	1.50	Philippines	1.51
Zimbabwe	1.30	Other M/East	1.49	Jamaica	1.47
Poland	1.27	Cyprus	1.44	Cyprus	1.36
Cyprus	1.23	Jamaica	1.43	Malaysia	1.32
Other Africa	1.22	Italy	1.32	New Zealand	1.21
New Zealand	1.16	Czech Rep	1.28	Other M/East	1.20
Spain	1.12	Portugal	1.28	Malta & Gozo	1.18
Migrants as % total working age population	*6.8*	*Migrants as % total working age population*	*8.9*	*Migrants as % total working age population*	*7.6*

Source: ONS / LFS
Notes: sample is working-age population

Table 8. Largest ethnic groups, urban TTWAs, 2001-6.

2001		2006		2001-6	
ETHCEN_15 group	**% of all groups**	**ETHCEN_15 group**	**% of all groups**	**ethcen_15 group**	**% of all groups**
White	92.82	White	88.73	White	79.68
Other white	2.21	Other white	4.19	Other white	10.35
Indian	1.38	Indian	1.66	Indian	1.39
Pakistani	1.20	Pakistani	1.58	Pakistani	1.35
Black Caribbean	0.57	Other	0.94	Other	0.60
Other	0.33	Black African	0.60	Black Caribbean	0.49
Black African	0.32	Black Caribbean	0.57	White and Bl Caribbean	0.44
Chinese	0.29	Other Asian	0.47	Black African	0.41
Other Asian	0.23	Chinese	0.36	Bangladeshi	0.36
Bangladeshi	0.22	Bangladeshi	0.29	Other Asian	0.34
White and Bl Caribbean	0.21	White and Bl Caribbean	0.22	Chinese	0.33
White and Asian	0.13	White and Asian	0.15	Other mixed	0.16
Other Black	0.04	Other mixed	0.14	White and Asian	0.13
White and Bl African	0.04	White and Bl African	0.06	Other Black	0.09
Other mixed	0.02	Other black	0.04	White and Bl African	0.08

Source: ONS / LFS
Notes: Figures are based on ETHCEN15 variable.
Notes: LFS figures suggest some errors in data collection during 2004 and 2005. These will bias down white and 'other white' figures for 2001-6 pooled.
Notes: sample is working-age population

Table 9. Diversity and wages, CEL names taxonomy measures. UK urban areas, 2001-2006.

	DIV = all subgroups				DIV = subgroups less E / W / S / C			
Hourly wages	**(1)**	**(2)**	**(3)**	**(4)**	**(1)**	**(2)**	**(3)**	**(4)**
	div	c	c_all	nl	div	c	c_all	nl
DIV	0.114		-0.063	-0.074	0.585***		0.246**	0.238***
	(0.124)		(0.066)	(0.067)	(0.180)		(0.096)	(0.089)
youth_24		-2.130***	-1.804***	-1.528**		-2.130***	-1.984***	-1.768***
		(0.589)	(0.655)	(0.667)		(0.589)	(0.624)	(0.622)
female		-1.146	-0.865	-0.836		-1.146	-0.154	-0.195
		(0.980)	(0.994)	(0.907)		(0.980)	(1.116)	(1.014)
hiskills		1.404***	1.528***	1.512***		1.404***	1.401***	1.373***
		(0.259)	(0.294)	(0.296)		(0.259)	(0.266)	(0.267)
mf		-0.408*	-0.328	-0.265		-0.408*	-0.325	-0.274
		(0.229)	(0.279)	(0.286)		(0.229)	(0.261)	(0.262)
pop_density		0.000*	0.000*	0.000		0.000*	0.000	-0.000
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
ltu_share_r		-0.145	-0.119	-0.150		-0.145	0.018	-0.017
		(0.120)	(0.123)	(0.114)		(0.120)	(0.131)	(0.123)
_cons	2.244***	2.939***	2.722***	2.687***	1.808***	2.939***	2.184***	2.199***
	(0.053)	(0.511)	(0.544)	(0.513)	(0.149)	(0.511)	(0.612)	(0.562)
N	76	79	76	75	76	79	76	75
F	0.841	28.544	23.273	21.851	10.515	28.544	23.236	21.233
r2	0.014	0.723	0.718	0.707	0.219	0.723	0.740	0.729

HAC standard errors in parentheses. * p<0.1 ** p<0.05 *** p<0.01. Source: ONS / LFS.

Table 10. Diversity and employment rates, CEL names taxonomy measures. UK urban areas, 2001-2006.

Ave. empl. rate	DIV = all subgroups				DIV = subgroups less E / W / S / C			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	div	c	c_all	nl	div	c	c_all	nl
DIV	-0.130***		-0.133***	-0.131***	0.305***		0.105**	0.108**
	(0.048)		(0.034)	(0.034)	(0.087)		(0.048)	(0.050)
youth_24		-0.991***	-0.629*	-0.676*		-0.991***	-1.094***	-1.151***
		(0.374)	(0.349)	(0.346)		(0.374)	(0.359)	(0.362)
female		-1.814***	-1.350**	-1.355**		-1.814***	-1.438**	-1.428**
		(0.686)	(0.606)	(0.614)		(0.686)	(0.638)	(0.645)
hiskills		0.519***	0.692***	0.695***		0.519***	0.488***	0.496***
		(0.093)	(0.106)	(0.106)		(0.093)	(0.091)	(0.093)
mf		0.109	0.142	0.131		0.109	0.090	0.077
		(0.110)	(0.101)	(0.100)		(0.110)	(0.107)	(0.107)
pop_density		-0.000**	-0.000	-0.000		-0.000**	-0.000***	-0.000
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
ltu_share_r		-0.299***	-0.276***	-0.271***		-0.299***	-0.241***	-0.232***
		(0.073)	(0.070)	(0.072)		(0.073)	(0.074)	(0.077)
_cons	-0.236***	0.707**	0.417	0.424	-0.542***	0.707**	0.454	0.450
	(0.022)	(0.315)	(0.289)	(0.294)	(0.074)	(0.315)	(0.316)	(0.322)
N	76	79	76	75	76	79	76	75
F	7.435	41.455	40.840	38.341	12.262	41.455	54.154	51.805
r2	0.078	0.721	0.782	0.781	0.252	0.721	0.754	0.755

HAC standard errors in parentheses. * p<0.1 ** p<0.05 *** p<0.01. Source: ONS / LFS.

Table 11. Diversity, wages and employment rates: country of birth measures. UK urban areas, 2001-2006.

	Hourly wages				Employment rates			
	(1)	**(2)**	**(3)**	**(4)**	**(1)**	**(2)**	**(3)**	**(4)**
	div	c	div_c	nl	div	c	div_c	nl
DIV	0.279*		0.210***	0.280***	0.184		0.088	0.150**
	(0.148)		(0.054)	(0.059)	(0.148)		(0.053)	(0.061)
youth_24		-0.707*	-0.822**	-0.988***		-0.991***	-1.039***	-1.185***
		(0.407)	(0.369)	(0.357)		(0.374)	(0.371)	(0.361)
female		-1.813**	-1.652**	-1.602**		-1.814***	-1.746**	-1.702**
		(0.726)	(0.654)	(0.641)		(0.686)	(0.662)	(0.653)
hiskills		0.552***	0.410***	0.376***		0.519***	0.460***	0.430***
		(0.096)	(0.093)	(0.088)		(0.093)	(0.096)	(0.092)
mf		0.171	0.148	0.107		0.109	0.099	0.063
		(0.113)	(0.109)	(0.105)		(0.110)	(0.111)	(0.108)
pop_density		-0.000	-0.000***	-0.000		-0.000**	-0.000**	-0.000
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
ltu_share_r		-0.323***	-0.282***	-0.251***		-0.299***	-0.282***	-0.255***
		(0.074)	(0.072)	(0.074)		(0.073)	(0.074)	(0.076)
_cons	-0.319***	0.650*	0.602**	0.597**	-0.315***	0.707**	0.687**	0.682**
	(0.021)	(0.333)	(0.296)	(0.295)	(0.021)	(0.315)	(0.303)	(0.303)
N	79	79	79	78	79	79	79	78
F	3.546	30.813	32.604	30.096	1.546	41.455	35.364	32.597
r2	0.139	0.685	0.723	0.739	0.058	0.721	0.728	0.736

HAC standard errors in parentheses. * p<0.1 ** p<0.05 *** p<0.01. Source: ONS / LFS.

Table 12. Diversity, wages and employment rates: ONS ethnic group measures. UK urban areas, 2001-2006.

	Hourly wage				Employment rates			
	(1)	**(2)**	**(3)**	**(4)**	**(1)**	**(2)**	**(3)**	**(4)**
	div	c	div_c	nl	div	c	div_c	nl
DIV	0.582***		0.523***	0.489***	0.022		0.068	0.089*
	(0.181)		(0.109)	(0.115)	(0.093)		(0.045)	(0.049)
youth_24		-2.130***	-2.717***	-2.555***		-0.991***	-1.067***	-1.170***
		(0.589)	(0.598)	(0.627)		(0.374)	(0.364)	(0.360)
female		-1.146	-1.165	-1.161		-1.814***	-1.817***	-1.819***
		(0.980)	(0.851)	(0.812)		(0.686)	(0.674)	(0.675)
hiskills		1.404***	1.061***	1.070***		0.519***	0.475***	0.470***
		(0.259)	(0.227)	(0.228)		(0.093)	(0.093)	(0.092)
mf		-0.408*	-0.622***	-0.576**		0.109	0.081	0.052
		(0.229)	(0.215)	(0.224)		(0.110)	(0.115)	(0.116)
pop_density		0.000*	-0.000	-0.000		-0.000**	-0.000**	-0.000
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
ltu_share_r		-0.145	-0.074	-0.096		-0.299***	-0.290***	-0.277***
		(0.120)	(0.111)	(0.112)		(0.073)	(0.074)	(0.076)
_cons	2.131***	2.939***	3.037***	3.020***	-0.295***	0.707**	0.720**	0.730**
	(0.047)	(0.511)	(0.440)	(0.423)	(0.027)	(0.315)	(0.311)	(0.315)
N	79	79	79	78	79	79	79	78
F	10.292	28.544	32.349	27.227	0.058	41.455	36.670	34.740
r2	0.159	0.723	0.791	0.774	0.001	0.721	0.726	0.729

HAC standard errors in parentheses. * p<0.1 ** p<0.05 *** p<0.01. Source: ONS / LFS.

Appendix 1. ONOMAP Cultural-Ethnic-Linguistic sub-groups

AFRIKAANS	LEBANESE
ALBANIAN	MALAYSIAN
AMERICAN	MUSLIM NORTH AFRICAN
ARMENIAN	MUSLIM STANS
BALKAN	NATIVE AMERICAN
BANGLADESHI	NIGERIAN
BLACK	OTHER AFRICAN
BLACK SOUTHERN AFRICAN	OTHER BALTIC
CELTIC	OTHER EAST ASIAN & PACIFIC
CHINESE	OTHER EUROPEAN
CONGOLESE	OTHER MUSLIM
CZECH & SLOVAK	OTHER NORDIC
DANISH	OTHER SOUTH ASIAN
DUTCH	NORWEGIAN
ENGLISH	PAKISTANI
ERITREAN	PAKISTANI KASHMIR
ETHIOPIAN	POLISH
FINNISH	PORTUGUESE
FRENCH	ROMANIAN
GERMAN	RUSSIAN
GHANAIAN	SCOTTISH
GREEK	SERBIAN
HINDI NOT INDIAN	SIERRA LEONIAN
HISPANIC	SIKH
HUNGARIAN	SOMALIAN
INDIAN HINDI	SPANISH
INTERNATIONAL	SRI LANKAN
IRANIAN	SWEDISH
IRISH	TURKISH
ITALIAN	UGANDAN
JAPANESE	UKRANIAN
JEWISH	UNCLASSIFIED
JEWISH AND ARMENIAN	VIETNAMESE
KOREAN	WELSH

Source: ONOMAP.
Notes:

1) ‘OTHER MUSLIM’ subgroup includes CEL name types ‘BALKAN MUSLIM’, ‘MALAYSIAN MUSLIM’, ‘MUSLIM INDIAN’, ‘SUDANESE’, ‘WEST AFRICAN MUSLIM’ and ‘OTHER MUSLIM’ (SMALLER MIDDLE EASTERN COUNTRIES, N/AFRICAN COUNTRIES, CENTRAL ASIAN REPS)
2) ‘OTHER SOUTH ASIAN’ includes CEL name types ‘ASIAN CARIBBEAN’, ‘BENGALI’, ‘BHUTANESE’,’ GUYANESE ASIAN’, ‘KENYAN ASIAN’, ‘NEPALESE’, ‘PARSI’, ‘SEYCHELLOIS’, ‘SOUTH ASIAN’ and ‘TAMIL’
3) 'JEWISH' includes CEL name types ‘JEWISH / ASHKENAZI’ and ‘SEPHARDIC JEWISH’
4) ‘OTHER EAST ASIAN AND PACIFIC’ includes CEL name types ‘BURMESE’, ‘CAMBODIAN’, ‘FIJIAN’, ‘HAWAIIAN’, ‘LAOTIAN’,‘MAORI’, ‘MAURITIAN’, ‘POLYNESIAN’, ‘SAMOAN’, ‘SINGAPOREAN’, ‘SOLOMON ISLANDER’, ‘SOUTH EAST ASIAN’ , ‘THAI’, ‘TIBETIAN’, ‘TONGAN’, ‘TUVALUAN’ and ‘EAST ASIAN & PACIFIC OTHER’
5) ‘OTHER AFRICAN’ includes CEL name types ‘BENINESE’, ‘BOTSWANAN’ and ‘BURUNDIAN’, ‘CAMEROONESE’, ‘GAMBIAN’, ‘GUINEAN’, ‘IVORIAN’, ‘KENYAN’, ‘LIBERIAN’, ‘MALAGASY’, ‘MALAWIAN’, ‘NAMIBIAN’, ‘RWANDAN’, ‘SENEGALESE’, ‘SWAZILANDER’, ‘TANZANIAN’, ‘ZAIREAN’, ‘ZAMBIAN’ and ‘ZIMBABWEAN’
6) ‘OTHER BALKAN’ includes CEL name types ‘BOSNIAN AND HERZEGOVIAN’, ‘BULGARIAN’, ‘CROATIAN’, ‘MACEDONIAN’, ‘MONTENEGRIN’ and ‘SLOVENIAN’
7) ‘OTHER BALTIC’ includes ‘ESTONIAN’, ‘LATVIAN’ and ‘LITHUANIAN’
8) ‘OTHER EUROPEAN’ includes CEL name types common to Andorra, Lichtenstein and other small states
9) ‘INTERNATIONAL’ includes names common across a number of countries
10) ‘OTHER NORDIC’ includes Sami and other indigenous Nordic groups.

Appendix 2. CRYOX country of birth categories

UK / GB	Angola
Belgium	Botswana
Denmark	Ethiopia
France	Egypt
Germany	Gambia
Greece	Ghana
Irish republic	Kenya
Italy (excl. Vatican City)	Libya
Luxembourg	Malawi
Netherlands	Mauritius
Portugal	Morocco
Spain	Nigeria
Andorra	South Africa
Austria	Sierra Leone
Cyprus	Seychelles
Gibraltar	Somalia
Finland	Tanzania
Liechtenstein	Tunisia
Malta & gozo	Uganda
Norway	Zaire
Sweden	Zambia
Switzerland	Zimbabwe
Turkey	Other Africa
Former Yugoslavia	Bangladesh
Albania	India
Bulgaria	Pakistan
Former Czechoslovakia	Iran
Hungary	Iraq
Poland	Israel
Romania	Lebanon
Former USSR etc.	Other Middle East
Other Europe	Burma Myanmar
Barbados	China
Belize	Hong Kong
Canada	Indonesia
Other Caribbean	Japan
Cuba	Korea
Guyana	Macau / Macao
Jamaica	Malaysia
Trinidad & Tobago	Philippines
USA	Singapore
West Indies	Sri Lanka
Other Central America	Vietnam
Mexico	Other Asia
Other South America	Australia
Argentina	New Zealand
Brazil	Caribbean Commonwealth
Chile	Other New Commonwealth
Columbia	Rest of the world
Uruguay	At sea / in the air [dropped]
Venezuala	Stateless [dropped]
Algeria	

Source: LFS.

Appendix 3. ONS ethnic group categories

ETHCEN15 categories
British
Other White
White and Black Caribbean
White and Black African
White and Asian
Other Mixed
Indian
Pakistani
Bangladeshi
Other Asian
Black Caribbean
Black African
Black Other
Chinese
Other

Source: ONS.

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