

**Estimating International Migration:
An exploration of the definitional differences
between the Labour Force Survey,
Annual Population Survey,
International Passenger Survey
and Long-Term International Migration**

Daniel Ker, Jo Zumpe and Ann Blake
Office for National Statistics

1.0 Introduction

There is no single, comprehensive statistical data source that captures international migrant flows or numbers of migrants in the UK. Consequently, international migration is estimated using information from surveys designed for different purposes; both on their own and in combination with administrative data. Differences in the methodology and focus of the different published estimates further complicate understanding of international migration statistics.

This paper provides a brief explanation of four different National Statistics sources of migration data published by the Office for National Statistics (ONS). The report includes estimates of migration from these sources, notes how these numbers differ, and considers whether the trends are consistent. A summary of the main definitional differences is provided, followed by discussion of the most prominent issues.

2.0 Estimating International Migration using the Labour Force Survey, Annual Population Survey and International Passenger Survey

ONS produces several series of National Statistics on international migration. These can be split into two groups: those that provide information on the flow (or movement) of migrants into and out of the country and those that estimate the stock (or number) of non-UK born or non-British nationality people living in the UK.

The main source of data on the flow of international migrants is the International Passenger Survey (IPS) which surveys people entering and leaving the UK. This is combined with data from the Home Office and Irish Central Statistics Office to produce the most inclusive estimate on international migration flows, known as Long-Term International Migration (LTIM)¹. Adjustments are also made to take account of people who change their intentions with respect to their length of stay. Further details on the IPS and LTIM are given in **Box 1**.

The Labour Force Survey (LFS) can be used for quarterly estimates of the number of people resident in the UK who were born abroad or who have non-British nationality. The Annual Population Survey (APS) uses the LFS as a foundation and supplements this with annual local area sample boosts to produce rolling annual estimates which are published quarterly. Using the APS, ONS publishes National Statistics on the 'Population of the UK by Country of Birth and Nationality'². Further details on the LFS and APS are given in **Box 2**.

None of the ONS surveys discussed were specifically designed to provide comprehensive estimates of international migration flows or stocks. The LFS focuses on the labour market, and is designed to provide estimates of employment and unemployment, as well as information on the characteristics of those working in the UK. The IPS was originally designed for use in compiling the international tourism/travel account of the balance of payments. However the IPS has evolved over time to give improved estimates of migration flows. In particular, changes to the sample design in 2009 should give better quality estimates of migration to and from the UK.

In addition to these sources, administrative data on migrants are collected for other purposes. The scope of this paper does not extend to comparing migration estimates based on administrative data, although they are published regularly as part of the Migration Statistics Quarterly Reports³. Further detail on data from administrative sources is given in **Box 3**.

Box 1: The International Passenger Survey (IPS) and Long-Term International Migration (LTIM)

The IPS is a multi-stage sample survey of passengers arriving at and departing from UK air and sea ports, and the Channel Tunnel. Its primary use is to capture data on international tourism and to compile the travel account of the balance of payments. Passengers are sampled on all major routes into and out of the UK; travellers on these routes make up around 90 per cent of all travellers entering and leaving the UK. The IPS sample is stratified to ensure that it is representative by mode of travel, route and time of day. Interviews are conducted throughout the year.

The main IPS sample is over 230,000 interviews and in 2008 had an overall response rate of 83 per cent. In 2008, about 2.2 per cent of those sampled were migrant interviews, which amounted to 5,117. The information collected by the survey is then weighted to produce national estimates of migration. A range of characteristics are collected by the IPS including citizenship, reason for migration and country of birth.

LTIM provides a more comprehensive estimate of flows of international migration as it combines information from other sources to compensate for the types of migrants missed by the IPS. These include the majority of asylum seekers and some of their dependents, and people who migrate over the land border between Northern Ireland and the Republic of Ireland.

Until 2007 LTIM estimates were produced by combining IPS migrant information with data on flows to and from the Irish Republic provided by the Irish Central Statistics Office. From 2008 onwards, data on migration from the Irish Republic is covered by the IPS, with information on international migrants going to and from Northern Ireland being supplied by the Northern Ireland Statistics & Research Agency (NISRA). Adjustments are also made for asylum seekers using data provided by the Home Office.

Information collected by the IPS is based on respondents' intentions which may or may not reflect their final actions. LTIM estimates include adjustments for people who change their intentions with respect to their length of stay and therefore whether they are considered a long-term migrant under the UN definition¹. Due to its construction LTIM cannot be used to perform cross-tabulations in the same way as the IPS but it is the preferred source for analysis where possible⁴.

LTIM data was previously known as Total International Migration (TIM).

Further information on LTIM can be found in the paper 'Methodology to Estimate Long-Term International Migration 1991-2008'⁵

i: The United Nations recommended definition of a long-term international migrant: 'A person who moves to a country other than that of his or her usual residence for a period of at least a year (12 months), so that the country of destination effectively becomes his or her new country of usual residence.'

Box 2: The Labour Force Survey (LFS) and the Annual Population Survey (APS)

The LFS is based on a quarterly sample of approximately 53,000 private households representing around 0.1 per cent of the UK population. Each quarter's LFS sample is made up of 5 waves, each of approximately 11,000 households. Each wave is interviewed in 5 successive quarters (either face-to-face or by telephone), such that in any one quarter, one wave will be receiving their first interview, one wave their second, and so on. The sample is weighted to ONS population estimates and is treated as representative of the UK population as a whole; though due to its household sample frame, those who do not live in private households are usually not represented. Information on a wide variety of characteristics is collected; from nationality, employment and remuneration information to lifestyle characteristics such as health and religious belief. LFS data are released quarterly and are used in answering a wide range of questions about characteristics of the UK population.

The APS takes LFS waves 1 and 5 from four successive quarters to obtain an annually representative sample of around 88,000 households. Over the period of the four quarters, waves 1 and 5 will never contain the same households and so this avoids the inclusion of responses from any household more than once in the APS dataset. This design also gives an approximate average across the waves similar to that on the main quarterly LFS database.

LFS data are supplemented with rolling-annual data from 'boost' surveys designed to ensure minimum representation of each area of the UK in the sample. Boost interviews are conducted throughout the year and included in the APS dataset in the quarter in which they are conducted; they remain in the dataset for three further quarters. Participants in the boost surveys are interviewed once a year for four consecutive years. The boosts substantially increase the sample size of the APS. The APS contains many of the same variables as the LFS; however, as the boost questionnaire is not identical to the LFS questionnaire (it contains only the questions used for key LFS variables), not all APS variables benefit from a larger sample size. APS data are published quarterly on a rolling 12 month basis.

The LFS user guide provides further information on LFS and APS methodology, questionnaires and variables⁶.

Box 3: Migration related data from administrative sources

Migration Statistics Quarterly Reports introduced in 2009 present a range of data relating to migration. In addition to the ONS estimates discussed in this paper, the reports include information on:

- National Insurance numbers (NINOs) allocated to adult overseas nationals from the Department for Work and Pensions
- asylum seekers, grants of settlement and worker applications from Central and Eastern Europe EU accession countries (also known as the Worker Registration Scheme or WRS) from the Home Office

ONS has recently undertaken work on reconciling administrative sources (WRS, NINOs and patient register data) and a combination of short- and long-term migration estimates: 'Reconciliation of ONS estimates: Comparison of combined IPS (short- and long-term) estimates with administrative sources'⁷.

3.0 Estimates of the number of migrants living in the UK

The number of foreign people living in the UK in a given year is equal to the number in the previous year, plus the net flow of foreign people into or out of the UK during the year, less the number of deaths of foreign people living in the UK. Foreign people can be defined on the basis of either non-British nationality or being born outside the UK; throughout this report the country of birth definition is used unless otherwise stated.

In theory the change in the number of foreign born people living in the UK from year-to-year should be close to the net flow of foreign born people into the UK. However, for various reasons the changes in stock estimates from the LFS and APS and the flow estimates from the IPS and LTIM are not compatible in this way. In this section the estimates from each source are compared, in section 4 reasons for the differences observed are examined. In order to make these comparisons only foreign-born people from the IPS and LTIM are used. However, headline LTIM figures published in the Migration Statistics Quarterly Report also include UK-born people who are returning to the UK after living abroad for over one year or leaving the UK for a period of a year or longer.

Table 1 shows the estimated change in the number of people born overseas living in the UK in 2007 from the LFS and APS. The LFS figure compares estimates of non-UK born people for the quarter of October - December 2007 with the quarter October - December 2006 and has not been seasonally adjusted. The APS figure compares the calendar year 2007 with the previous calendar year. By subtracting the number of non-UK born people living in the UK in one time period from the figure from a previous time period the change in the stock of people living in the UK who were born overseas is presented.

The flow of international migrants into and out of the country is represented by the IPS and LTIM estimates. It shows the net inflow (immigration minus emigration) of people born overseas who intended to migrate for 12 months or more in 2007.

Table 1: Estimated change in number of migrants living in the UK who were born overseas, 2007

<i>Thousands, not seasonally adjusted</i>				
Source	LFS	APS	IPS	LTIM
Estimate	478	345	297	333
Time periods used	Oct-Dec 2007 to Oct-Dec 2006	Calendar years 2007 and 2006	2007	2007

Sources: Labour Force Survey, Annual Population Survey, International Passenger Survey and Long-Term International Migration, Office for National Statistics.

Using 2007 data, the figure calculated from the LFS is around 40 per cent higher than the APS and LTIM estimates. The APS and LTIM estimates are similar in size for 2007, while the IPS estimate is 36,000 lower than the LTIM figure.

Figure 1 illustrates how changes in the migrant population and the net flows of migrants into the country have varied between 2003 and 2008. The relationship outlined in **Table 1** is not consistent over time; the APS fluctuates above and below the LTIM estimates during the period shown. For example, in 2006 according to the APS 445,000 more people born abroad were living in the UK compared to the previous 12 months; whereas the net inflow figure of migrants entering the country from LTIM that year was 327,000 people.

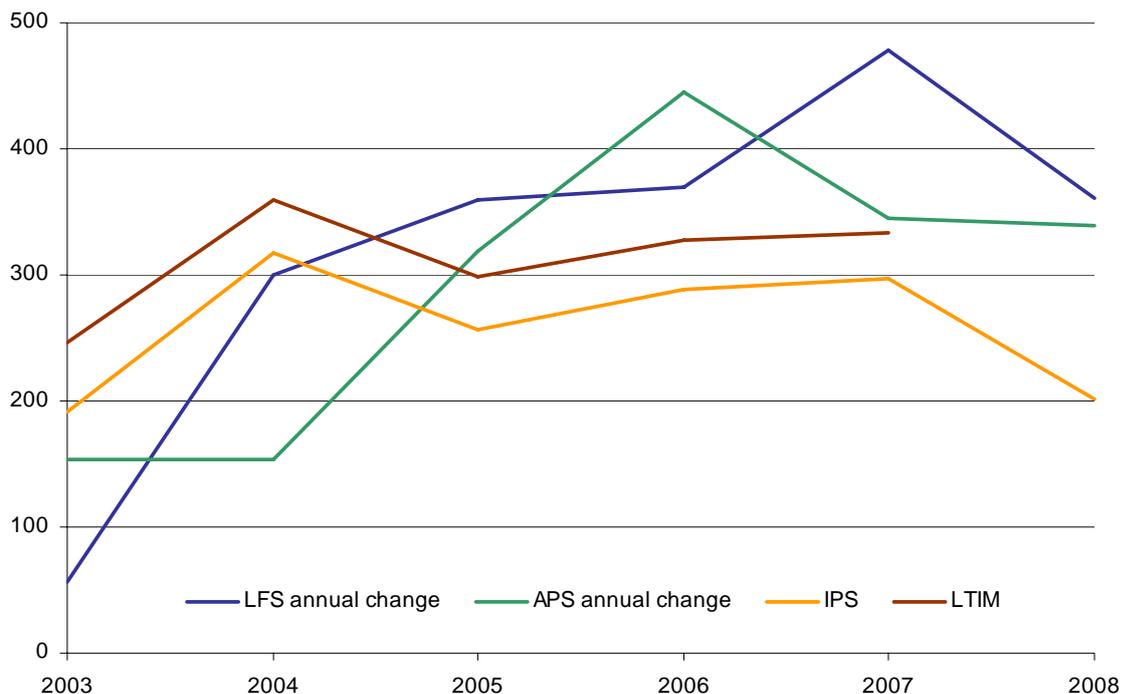
Figure 1 shows that LTIM estimates closely mirror the IPS estimates. This is to be expected as the IPS is the main component of LTIM, as well as being the basis for the adjustments for

people who do not fulfil their intentions on their length of stay (and so fall into or out of the UN definition of a migrant, see **Box 1**). The LTIM figures are higher, because they include estimates for those groups not included in the IPS: asylum seekers and people migrating to and from the Republic of Ireland.

Figure 1 also illustrates that figures from all four sources of migration data showed an upward trend between 2003 and 2007; although not all sources increased every year. Changes in the LFS are more gradual than the APS, except for between 2003 and 2004. This could be because respondents are in the APS sample for longer; participants in the boost samples take part for four years and therefore a full refresh of the sample takes this long. Also, the LFS and APS do not align because the APS sample includes different additional households (the sample boosts) and is conducted over a longer period of time. Until 2007 the LFS exhibited continual year-on-year growth, while the greatest change in the APS occurred in 2006. The IPS and LTIM showed less variation with the greatest change in 2004. In 2008 the (available) sources showed a decline. This was most notable in the LFS and IPS while the decline in the APS was shallower.

Figure 1: Annual changes¹ in the LFS and APS with IPS² and LTIM net flow estimates, 2003 – 2008³

Thousands, not seasonally adjusted



Sources: Labour Force Survey, Annual Population Survey, International Passenger Survey and Long-Term International Migration, Office for National Statistics.

1. Changes shown are for calendar years and are aligned based on the month in which the sampling period ends i.e. the figures for 2007 are October to December 2007 minus October to December 2006 for the LFS and January to December 2007 minus January to December 2006 for the APS. IPS and LTIM data are published annually.
2. IPS figure for 2008 is provisional.
3. 2008 LTIM figures not yet available.

In 2003 and 2004 the LFS and APS estimates of changes in the stocks figures were below the net migration of foreign born people recorded by either the IPS or LTIM. Since 2005 the

IPS and LTIM estimates have been lower. There were no substantial changes in the conduct of either of the surveys during this time.

On 1 May 2004 the European Union (EU) expanded to include Malta, Cyprus and eight countries from Central and Eastern Europe - known as the Accession Eight or A8 countriesⁱⁱ. The impact on long-term migration figures was reflected in the flow figures from 2005 onwards¹. However people born in the A8 countries also started to come, in increasing numbers, to the UK for less than a year. While these people may have been sampled in the LFS/APS they would not have been included in the IPS or LTIM. Experimental statistics are available for migrants who stayed in this country for more than 1 month but less than 12 months, but only by nationality. As **Table 2** shows, the number of A8 nationals that came to and left the UK for less than a year increased between 2004 and 2007.

Therefore the change in the relationship between the LFS/APS and IPS/LTIM may relate to a change in the balance between short- and long-term migrants resulting from the expansion of the EU in 2004.

Table 2: Estimates of short-term migration¹ by nationality², 2004-2007

Thousands

	Non-British		A8	
	<i>Inflow</i>	<i>Outflow</i>	<i>Inflow</i>	<i>Outflow</i>
2004	1,087	568	213	19
2005	1,266	694	355	55
2006	1,351	710	375	98
2007 ³	1,200	748	279	109

Source: Labour Force Survey, Annual Population Survey, International Passenger Survey and Long-Term International Migration, Office for National Statistics.

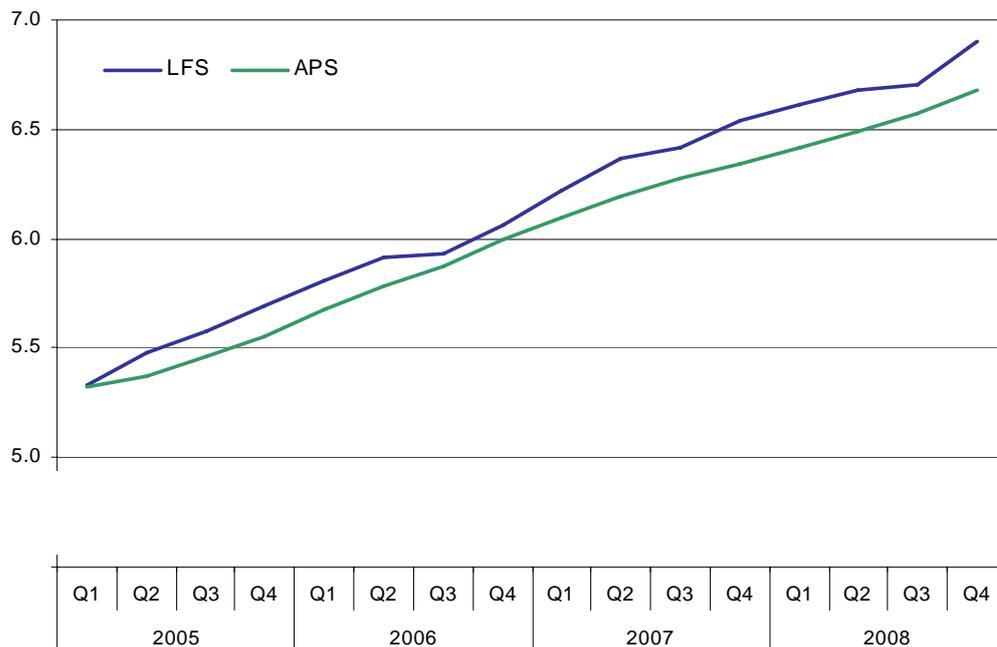
1. Migration of more than 1 month but less than 12 months.
2. Return movements of individuals who have been in the UK as short-term migrants are not counted as outflows. For this reason in-flow and out-flow will not balance as they refer to different migration streams. Therefore it is not possible to sum inflow and outflow figures to get a net short-term migration figure.
3. Figures for 2007 are provisional.

Figure 2 provides more detail of how the LFS and APS behave over time. It shows the number of foreign born people living in the UK from the LFS over the period from January - March 2005 to October - December 2008. Numbers from the APS between April 2004 - March 2005 and January - December 2008 are also plotted. The graph shows that the LFS and APS move in a similar way, although the levels of the LFS exhibit more variation and are always greater than those of the APS throughout this period. The two series were at the same level in quarter one of 2004 and grew at a similar rate until 2007 when the two series appear to diverge. The LFS shows a seasonal pattern from 2006, flattening between the second and third quarters each year; this is smoothed out in the APS data.

ⁱⁱ Estonia, Czech Republic, Latvia, Lithuania, Poland, Hungary, Slovakia and Slovenia.

Figure 2: Non-UK born people living in the UK; LFS and APS¹ levels, 2005-2008

Millions, not seasonally adjusted



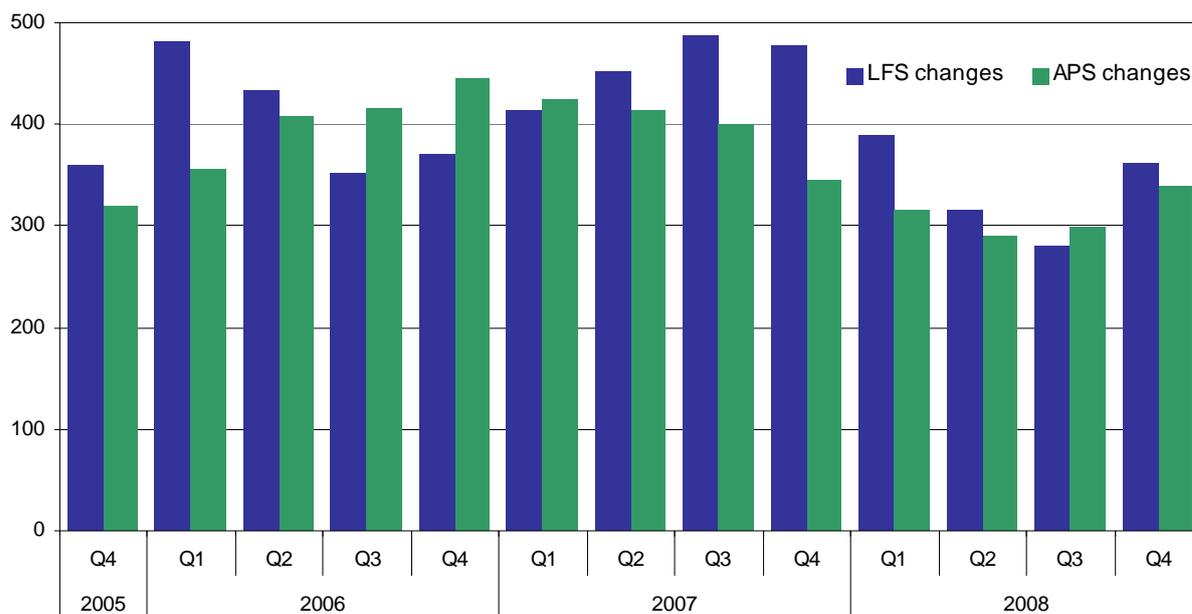
Sources: Labour Force Survey, Annual Population Survey, Office for National Statistics

1. These two sources have been aligned on the basis of the month in which the sampling period ends. For example the January – December 2007 APS dataset is aligned with the October – December 2007 LFS dataset.

Note: the vertical axis has been compressed to aid presentation.

Figure 3: Non-UK born people living in the UK; LFS and APS annual changes on a quarterly basis, 2005-2008

Thousands, not seasonally adjusted



Sources: Labour Force Survey, Annual Population Survey, Office for National Statistics

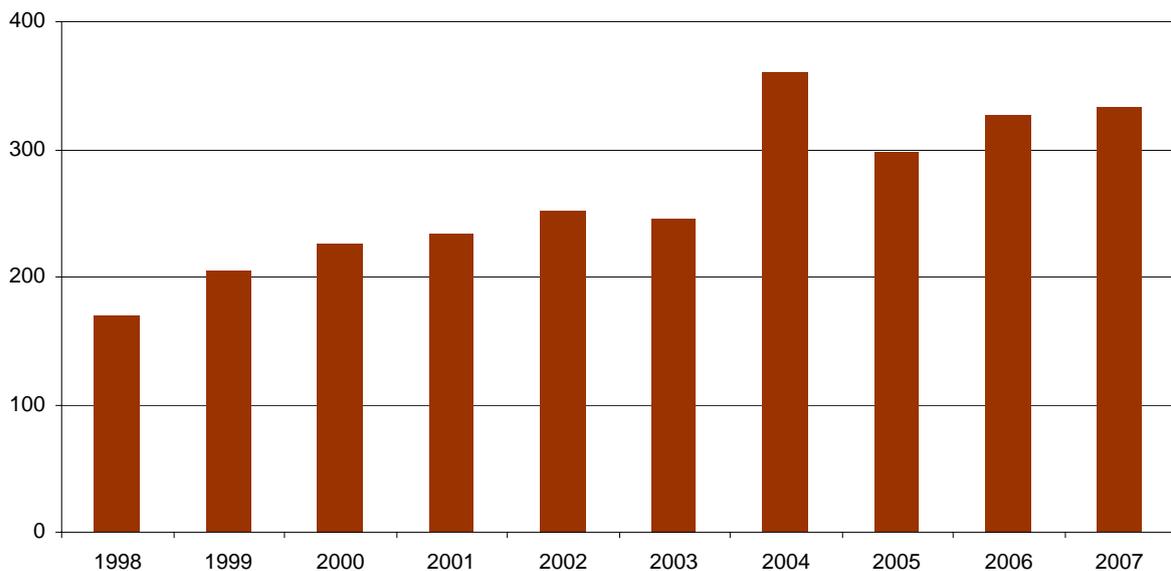
Figure 3 shows the annual change in the number of foreign-born UK residents on a quarterly basis; up to October - December 2008 for the LFS and January - December 2008 for the APS. The shape of the series for the LFS and APS are generally similar but with some noticeable differences. For example, the increase in the change between 12 month periods in the APS in 2006, which was visible in **Figure 1**, can be seen in **Figure 3**. For the last two quarters of 2006, the annual change in the APS was around 50,000 greater than the LFS. This may be explained as a reflection of the rise in the LFS in 2005 to 2006 which is slower to register in the APS data because of the longer refresh of the sample compared to the LFS. From 2007 onwards, most of the changes in the APS are lower than the LFS and in the last three quarters of 2008 the two series were closer together than in earlier periods.

Net migration is calculated from LTIM as immigration minus emigration. **Figure 4** illustrates that the LTIM estimate, for migrants born abroad, has risen from 170,000 in 1998 to 333,000 in 2007. The exception to this steady increase was in 2004, when a record high level of net migration was recorded. This was a direct consequence of a high inflow of non-UK born people following the EU expansion that year, accompanied by the lowest outflow of foreign born people since 1998.

In 2006 and 2007 the LTIM series shows flows to the UK of migrants born abroad of around 330,000. This compares with changes in the stock of the foreign born population in the UK of 370,000 and 478,000 based on the LFS, and 445,000 and 345,000 using the APS.

Figure 4: Net migration¹ of migrants born abroad from LTIM, 1998-2007²

Thousands



Source: Long-term International Migration, Office for National Statistics

1. Immigration minus emigration.
2. 2008 data will be available in November 2009.

4.0 Definitional differences between the sources of data on international migration

Section 3 illustrated differences in estimates from each of the sources. Causes of these differences are now considered. **Table 3** summarises the definitional differences between the flows (LTIM) and stocks (LFS and APS) data. The following sections examine the major issues identified in the table.

Table 3: Definitional differences between the LFS/APS and LTIM data

	Stocks: LFS and APS data	Flows: Long-Term International Migration (LTIM) data
Sampling frame	Includes all private households. Excludes most communal residencies.	The IPS samples passengers as they arrive in or leave the UK through ports (air-, sea-, and the Channel Tunnel). Adjustments made for those known to be missed e.g. asylum seekers.
Timing of the survey	Data collected throughout each quarter in the case of the LFS, and throughout four consecutive quarters in the case of the APS.	Single, point-in-time interview. Collected throughout the year.
Definition of a migrant	A migrant is defined as someone whose country of birth is non-UK or whose nationality is non-British. For the purpose of this comparison country of birth is used unless otherwise stated. Length of time in the UK is currently not used to define a migrant in the LFS.	The UN definition is used to define a migrant: ' person who moves to a country other than that of his or her usual residence for a period of at least a year (12 months), so that the country of destination effectively becomes his or her new country of usual residence'. Therefore anyone staying/going for less than 12 months is excluded.
Nationality	As stated by respondent. If respondent has dual nationality, the first one given is recorded in the survey.	Citizenship is taken from the passport shown at the time of the interview, or (if this is not available) taken as stated by respondent.
Actual versus intended migration	The LFS asks for the date of arrival in the UK. This can be used to calculate the actual length of time the respondent has lived in the UK. However no information is provided regarding how long they may remain in the UK.	The IPS collects information on intended length of time in/outside the UK. However LTIM includes adjustments for migrants who do not fulfil their intentions.
Students	Included, but only if they live in private households or have at least one parent resident in a private household in the UK.	Included.
Asylum seekers	Included if living in a private residence, but may be reluctant to participate. Those living in communal establishments are excluded.	Included. A few asylum seekers are captured on the IPS, and an adjustment based on Home Office data on asylum seekers is a component of LTIM.

4.1 Sampling frame

The LFS and APS sampling frames cover those living in private households. This means that the majority of people living in communal establishments are excluded (with the

exception of nurses living in NHS accommodation). This includes people who are living in hotels or hostels, hospitals, on travellers' sites or in halls of residence. Those people who live in communal establishments who are covered are included by proxy in private household responses (e.g. students in halls of residence, who have at least one parent resident in the UK).

Certain groups of people are more likely to live in communal establishments. For example the 2001 Census⁸ showed that 10 per cent of people living in the university city of Oxford and 13 per cent in Cambridge lived in communal establishments. This compared to a national average of 2 per cent and was a direct result of the large student populations in these areas. The 2001 Census⁹ also identified that 14 per cent of all recent international migrants (i.e. those living outside the UK one year ago) were resident in halls of residence or other communal establishments. As a result the LFS misses a certain proportion of international students.

4.2 Timing of the survey

The IPS is made up of one-off interviews that occur throughout the year; these are compiled to estimate the total flow in each year. A true stock measure is one made at a specific instant in time - the 2001 Census for example. Although LFS and APS data on migration are used as stock estimates, the methodology means that each estimate is measured over an extended period of time (three months in the case of the LFS and one year in the case of the APS). This is because it is not feasible to conduct the sample in a shorter space of time with the resources available. Because of this, the IPS flows measure is being taken over the same period of time in which the LFS and APS stocks measures are being compiled. This makes it particularly difficult to reconcile data with the IPS, as it prevents a simple addition of net migration flows estimates on to the LFS or APS migrant population figure for the previous year, in order to obtain a new stock figure for the following year. The fact that respondents in the APS boost samples participate for four years also means that the APS may be slower to reflect changes in migrant stocks arising from rapid developments in the pattern of migration flows.

4.3 Definition of a migrant

A major disparity between the data produced from the LFS/APS and from IPS/LTIM is the variation in the definition of a migrant. The LFS and APS classify a migrant by their country of birth or alternatively by their nationality. Until January 2008 LFS and APS interviewers were instructed to only include people who had been in the UK for over six months. After this date the residency requirement was removed. ONS analysis showed that the removal of this residency requirement had no effect on LFS or APS estimates produced.

Meanwhile the IPS and LTIM follow the UN definition that a move to a new country for a period of at least 12 months is classed as long-term migration. Consequently LTIM includes long-term migrants who are British citizens, or who were born in the UK. For example a British-born person returning to the UK after being abroad for two years would be recorded as a migrant (but for the comparison in section 3.0 British born people were excluded from the IPS and LTIM figures). LTIM does not include any short-term migrants or visitors; that is anyone who intends to stay in or out of the UK for less than a year.

Variables added to the LFS and APS in 2008 enable the estimation of the number of migrants who have been living in the UK for less than 12 months. According to this experimental work, it is estimated that in the three months to March 2009 there were 370,000 persons who had been resident in the UK for less than 12 months, 15 per cent

fewer than in the same period in 2008. However, these figures include people who so far may have lived in the UK for less than 12 months but who intend to stay longer than one year.

4.4 Nationality

One of the definitions used by the LFS and APS to identify migrants is nationality; the other is country of birth. Whereas a person's country of birth is normally clearly defined and will not change, a person's nationality may change. A person may come to the UK as a foreign national, but later become a UK national. Therefore the numbers of foreign nationals living in the UK may change regardless of inflows or outflows and thus distort the (theoretical) relationship between stock and flow measures.

Respondents to the LFS and APS are asked their nationality once on first contact. In the IPS a person's citizenship is taken from the passport shown at the time of the interview, or if this is not available it is taken as stated by the respondent. A further methodological issue exists because neither survey clearly accounts for the case of dual nationality.

4.5 Students

One component of international migration is students who travel to the UK to study. They are included in LTIM estimates, identified in published tables on reason for migration and occupation. However net migration figures for students should be treated with caution; someone who has migrated to the UK to study may emigrate for work reasons - or not at all. The LFS and APS can provide much greater detail on the characteristics of students but exclude international students living in communal establishments – likely to be a large proportion of the international student population. Care should be taken when using any of these sources to draw conclusions about changes in the international student population in the UK.

4.6 Asylum seekers

The majority of asylum seekers are escorted across the IPS line by the UK authorities and therefore few asylum seekers are included in the survey. One of the components of LTIM is an adjustment for asylum seekers using data supplied by the Home Office.

The LFS and APS do not routinely ask questions to identify asylum seekers, and it is not known how many asylum seekers are included in population estimates from these sources. Those living in communal establishments such as deportation centres would be excluded and it is unknown to what extent communication barriers, or reluctance to take part in government surveys may reduce the response rate of those living in private households. In 2008, the Eurostat ad-hoc module¹⁰ asked migrants why they had come to the UK and found that 208,000 non-UK born individuals living in the UK in the three months to June 2008 had come to the UK to seek asylum - three per cent of all non-UK born people living in the UK at the time. However, this includes all people living in the UK who came to the country seeking asylum, irrespective of when they came and whether they are still seeking it.

5.0 Conclusion

This report has examined two different types of international migration data. The LFS and APS estimate the stock (number) of people living in the UK who were either born abroad or who have non-British nationality. As illustrated, the number of foreign born people living in the UK has increased year on year. By comparing figures with the previous 12 months these surveys also provide an estimate of the changes in the size of these groups for comparison with other measures.

The second type of data measures the flow of international migrants into and out of the UK. The net flow of non-UK born migrants has been compared to the year on year change in LFS and APS numbers of non-UK born people resident in the UK. All sources show an increase up to 2007, with annual changes in the LFS and APS moving in a similar way over time. LTIM data due to be published in November 2009 will show whether the flows data will follow the stocks data in indicating a smaller net flow during 2008. Prior to 2005 LFS and APS measures of changes in stock were lower than net flows based on LTIM and IPS. In contrast from 2005 onwards LFS and APS estimates were higher.

We identified that, due to a range of methodological issues, changes in the stock and net flow measures do not correspond. While this report has not set out to explain the impact of each factor it is possible to indicate how these differences will affect the different estimates.

The difference in the sample frames (households vs. most individuals travelling through UK ports) is likely to have the effect of making LFS and APS estimates lower than those from LTIM. However, the definition in the IPS and LTIM of a migrant based on length of residency may offset this either partially or in full. The analysis undertaken suggests that over the period from 2003 to 2007 the relationship between the under-coverage in the LFS as a result of the narrower sampling frame, and the greater coverage as a result in using a wider definition of migration has changed. Given that there were no changes in the sampling frame over this period, this suggests that change in the balance between the numbers of short- and long-term migrants during that period may account for the change in the relationship between LFS/APS stock changes and LTIM flows.

The information on the methodological differences between these sources provides an insight into how and why National Statistics estimates of international migration produce different figures. The strengths and weaknesses of each source should be taken into consideration in choosing which estimates to use when investigating international migration. Further research should examine whether this conclusion is supported by other administrative sources of data relating to international migration.

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7.0 Contacts

For information about the content of this paper please contact:

Migration Statistics Unit, Office for National Statistics

telephone: 01329 444097

e-mail: migstatsunit@ons.gov.uk

or

Labour Market Analysis, Office for National Statistics

e-mail: labour.market@ons.gov.uk