The impact of placements on the academic performance of UK and international students in higher education

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Abstract

Motivated by an increasing number of international students in UK higher education, this study investigates the effect of year-long placements on the academic performance of 268 accounting and finance students enrolled between 2006 and 2009. The results show differences between UK and international students although both statistically and significantly increase their final year marks and their chance to obtain a good degree (1st or 2.1) following placements. UK sandwich students outshine international sandwich students in the final year while UK full-time students significantly underperform international full-time students in the first year only. The academic performance of UK students can be partly explained by prior academic achievement and gender but that of international students is not related to any of these individual factors. There is evidence of self-selection among UK sandwich students since they outperform UK full-time students at all levels while no such a pattern is found among international students.

Keywords: international students; UK students, placements; sandwich programme; full-time programme; academic achievement

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Introduction

More and more international students have chosen to study in UK universities due to the globalisation and internationalisation of higher education markets. In 2010, the Organisation for Economic Co-operation and Development (OECD) estimated that there were over 4.1 million students worldwide studying outside their country of citizenship (OCED 2012). So, it is remarkable that no published research has been conducted to investigate the impact of placements, which are an integral and valuable part of many university degrees, on academic achievement of international students. As discussed by Morrison *et al.* (2005), the definition of international student can vary in different countries. For the purpose of this research, international students are defined as students not domiciled in the UK, the same as in Morrison *et al.* (2005). Academic performance of international students has been the focal point in educational research in recent years. The increasing number of international students in higher education has raised pedagogic questions such as whether the current teaching and learning practice in higher education can cater for both home and international students. Several recent studies from the UK observe evident underperformance among international students (Morrison *et al.* 2005, Iannelli and Huang 2013; Crawford and Wang 2014).

It can be argued that if placements are beneficial to the academic performance of UK students, the possible academic impact of placements on international students must be examined and analysed. Recent studies reveal a strong association between work placement and subsequent academic performance in various disciplines such as bioscience, human psychology, accounting and finance and property management (Gomez *et al.* 2004; Reddy and Moores 2006; Surridge 2009; Mansfield 2011). Undergraduate programmes in UK higher education often include optional planned periods of industry placements sandwiched between significant periods of on-campus learning (Little and Harvey 2006). This research aims to

examine the effects of placements on academic performance of international students and whether placement students are academically better than full-time students. In addition, this paper investigates whether academic performance differences between placement students and full-time students are caused by students' domiciles, gender, prior academic achievement and prior academic experience.

It is rather difficult to ascertain the impact of placements on international students because international students are still a small proportion of the whole student population in UK higher education. The latest statistics from the Higher Education Statistics Agency (HESA) revealed that 5.3% of students in UK higher education were from EU countries and 12.1% were from non-EU countries while the rest were UK students (HESA 2013). The present paper is able to explore the above research questions because it is based in a business school where a large number of international students enrolled on accounting and finance degrees may carry out a 39-week placement following their second year (a sandwich degree) or continue their final year without a work placement (a full-time degree). The placement module is not subject to academic assessment and placement students are given a qualitative pass mark after successfully completing industry placements in the third year. Academic results and classifications of four cohorts of full-time and sandwich accounting and finance students are used to examine not only the influence of individual factors on academic performance of international and UK students but also with particular emphasis on the effects of placements on the final year marks of international undergraduates.

This research is imperative for universities with accounting and finance disciplines for several reasons. In published league tables, UK university departments are often judged on the percentage of first and 2:1 degrees (good degrees) awarded and sometimes by value

added measurement which compares student entry levels with degree classification awarded (Mansfield 2011). If placements are likely to increase the final year marks of international students, universities should encourage international students to select a placement option for a better academic result. In reality, very few international students enrolled for accounting and finance degrees choose to carry out a placement in the third year (Lucas and Tan 2013). It is possible that it is difficult for international students to secure a placement with UK companies and it is equally possible that international students wish to gain a qualification with minimum financial outlays. A year-long work placement means a delay in obtaining a qualification and an additional one year living expenses for international students. However, if international students have noticed the impact of the presence or absence of placement on their final year results and degree classifications, they might be attracted to take up the placement option to improve their academic performance.

This paper first starts with the literature on the relationship between placements and academic performance. Second, the existing research on individual factors influencing academic performance is reviewed and summarised. Third, the research design includes key issues identified from the literature, sample selection and methodologies used. Fourth, the analyses of average marks and degree classifications are presented and finally conclusions are drawn from the implications of the results and areas for further research identified.

Placements and academic success

Very limited published research in accounting and finance contexts investigates the relationship between placements and subsequent academic results. Surridge (2009) conducts a comprehensive study to examine the relationship between academic performance and placements using three cohorts of accounting and finance students who graduate between

2004 and 2006. This study uses not only graduates but also all students registered to analyse the effect of placements on first year, second year and final year average marks, along with individual factors such as gender, year of graduation, prior entry HESA score or/and average marks from previous academic years. The analysis shows no difference between the academic ability of placement and full-time students before the final year, but placement students perform significantly better than full-time students in the final year. It is also found that gender only plays a significant role among placement students, with females obtaining more than 5% advantage than males. One interesting finding is related to the influence of prior entry academic attainment, measured by HESA score, on academic performance of graduates. Prior entry academic achievement (HESA score) is a significant factor in determining the first year academic performance of all students but becomes insignificant in the second year while it regains its influence in the final year only among graduates. The results of this research indicate that placements academically benefit accounting and finance students in the final year and have varied effects on gender.

More research has been published on placement in non-accounting disciples (Duignan 2003, Gomez *et al.* 2004, Mandilaras 2004, Reddy and Moores 2006, Mansfield 2011). Duignan (2003) focuses on the influence of two different architectures of placements on academic performance of business undergraduates: the "work environment model" in which the university aims to prepare and supply students to meet the needs of the employers and the "learning environment model" in which the university retains an active role in the placement experience and integrates work experiences with academic theories and principles. In this study, individual factors such as gender, age and prior academic achievement are not controlled for when the mean marks of full-time and placement students in the second year and final year are analysed. The analysis reveals that placement students perform better than

full-time students in the learning environment model though full-time students demonstrate a stronger and more significant improvement in the final year than placement students. On the other hand, there is no performance difference in the final year between placement and full-time students in the work environment model. There is evidence to support self-selection among placement students and suggest that placement students are academically better than full-time students in the second year.

Using 164 bioscience students who graduated over two successive years, Gomez *et al* (2004) find that placement students gain an advantage of nearly 4% in their final year performance. Their study reveals several significant factors such as gender, HESA score and second year average mark in determining the final year performance aside from placements. Females do not outperform males in the first two years but on average acquire nearly 3% advantage in the final year regardless of whether they are full-time or placement students. Placement students have higher HESA scores than full-time students and outperform full-time students in the final year by nearly 4%. The results of this study suggest that placement students are academically better than full-time students while students academically benefit from placement experience in the final year.

Reddy and Moores (2006) measure the benefits of placements using final year results of 414 students in human psychology, of whom 225 are placement students and who graduated between 1998 and 2003. Their sample contains approximately 85% of female graduates and 92% of graduates who are under 21 at admission. They find that placement students improve their final year average marks by 3.2% whereas full-time students on average gain less than half of that amount. Placement students are also rated more favourably by academic staff on a measure of transferrable skills. Focus group study of placement and full-time students

suggests a number of benefits following placements such as better time management, confidence and responsibility while a post-graduation survey results show that placement students have a better career direction than full-time students.

Similar to the previous papers, Mansfield (2011) also considers the possibility that good students choose placements while poor students are unlikely to be selected for placement in the analysis. Mansfield uses second year's marks as covariance to represent previous academic achievement while analysing placement effects on the academic results of 417 students graduating from management and development courses between 2005 and 2009. Individual factors such as gender and age on final year marks are separately analysed. The sample is heavily skewed towards work placement students (80.6%) and is unclear about the number of female and male students or young and mature students. The analysis finds no evidence to indicate an association between placement effect and academic performance at earlier levels but evidence to suggest that placement students significantly outperform full-time students by 3.46 marks in the final year. Placement effect varies by gender and age and is stronger for male students and the youngest students at course commencement.

Only one paper in the literature includes nationality in the list of control variables in the examination of the impact of placements on academic performance (Mandilaras 2004). This study uses 124 students who graduate from the University of Surrey's economics department in 2001 and 2002, of which over 61% are male, 70% are British and 30% are international. The analysis measures the effect of placement on degree classification and shows that placements increase the likelihood of obtaining a 2.1 by 30%. The probability of a lower second is 69% for a full-time student compared to 39% for a placement student. UK students are more likely to achieve a good degree, as non-UK students have a higher chance of getting

a lower second (73% compared to 41%). Although domicile is considered in the PROBIT analysis, the impact of placements on non-UK domiciled students is not examined and considered in the paper.

Individual factors and academic success

There is a considerable body of research from the UK which examines the determinants of academic performance in various subjects. Although the results of previous studies are mixed, a number of individual factors such as age, gender, domicile, ethnicity, prior academic achievement, discipline of study, institution and mode of study appear to influence academic performance of undergraduates to various degrees (Smith and Naylor 2001, Richardson and Woodley 2003, Richardson 2008, Richardson 2012, Morrison *et al.* 2005, Iannelli and Huang 2013, Crawford and Wang 2012, Crawford and Wang 2014, Cassidy 2012 and Sheard 2009).

According to the government reports by the National Audit Office (NAO 2002_a and 2002_b), the academic success of undergraduates in UK universities is determined by the number of A grades obtained by students in A level study. The significant link between prior academic achievement and subsequent academic performance in higher education is also reported by a host of accounting related studies (Eckel and Johnson 1983, Dockweiler and Willis 1984, Clark and Sweeney 1985, Schroeder 1986, Eskew and Faley 1988, Farley and Ramsay 1988, Doran *et al.* 1991, Christopher and Debreceny 1993, Rohde and Kavanagh 1996, Koh and Koh 1999, Rankin *et al.* 2003, Alcock *et al.* 2008, Duff 2004 and Crawford and Wang 2012). Other accounting studies (Bartlett *et al.* 1993 and Bourner and Hamed 1987) do not observe a strong connection between prior entry academic achievement and subsequent academic performance in universities. It is suggested that the most recent academic performance should be employed to proxy prior academic achievement such as previous year average marks or

subjects/modules from previous academic years. Plenty of studies in various disciplines find a statistically significant relationship between the final year average marks and the second year average marks (Mandilaras 2004, Gomez *et al.* 2004, Surridge 2009, Reddy and Moores 2006, Mansfield 2011) and between the marks from single module in the first or second year and final year results (Cassidy 2012, Sheard 2009).

Richardson and Woodley (2003) use the attainment of students awarded first degrees by UK higher education institutions in 1995/96 to identify age-related and gender-related variations between academic performance and different subjects. In the following subjects such as social studies, law and creative arts and combined degrees, students aged under 21 are most likely to obtain good degrees (first and upper-second) while students aged 31-40 perform well in agriculture, physical sciences, engineering, business studies, librarianship and education. Male students are least likely to obtain good degrees in business studies, education and physical sciences while female students fare less well than males in computer sciences, engineering and education.

The varied relationships of age and gender on the academic performance of students from different subjects have been revealed by other studies. Sheard (2009) and Cassidy (2012) both report a better academic performance of mature students over their younger counterparts and females over males in sport and exercise and psychology, counselling and sociology, respectively. Within accounting and finance contexts, age does not appear to be a predictor of academic performance among accounting students in published UK studies (Bartlett *et al.* 1993, Duff 2004, Marshall and Nicholson 1991 and Hartley and Lapping 1992). Research in the area of gender and academic achievement differences in accounting courses is not plentiful. Both Duff (2004) and Crawford and Wang (2012) report no apparent relationship

between gender and academic performance in first year accounting studies while Crawford and Wang (2014) find that females significantly outperform males in the second year but not in the final year.

Several studies in recent years focus on the possible connection between individual factors and academic performance of non-UK domiciled undergraduate students (Morrison *et al.* 2005, Iannelli and Huang 2013, Crawford and Wang 2014). Morrison *et al* (2005) investigate the performance differences between UK and international students who obtained a qualification between 1995 and 2000 using a number of control variables, such as domicile, age, gender, mode of study, discipline of study, entry qualification and institution. The analysis suggests that UK students perform significantly better than international students. Performance differences between UK and international students are varied across subjects. In business and administration studies international students are less likely than UK students to obtain a higher class of degree. International part-time students are less likely than UK part-time students to obtain a higher class of degree, but international students with a higher prior entry qualification are likely to achieve a higher class degree than UK students with a similar qualification on entry. Among international students, there is no significant association between age or gender and their degree classification. The results indicate that the degree of underperformance of international students relative to UK students is broadly similar across all the institutions.

Using the HESA data between 1998 and 2009, Iannelli and Huang (2013) find that the academic performance of Chinese students has not improved though more and more Chinese students hold A level or higher qualifications and graduate from the Russell Group universities. Chinese students underperform not only UK domiciled students but also other

international students and there are an increasing number of Chinese students achieving only a third-class degree during the period. The results suggest that Chinese students are likely to gain a good degree if they are females and studying in Russell Group universities and pre 1992 universities. There are performance differences among Chinese students across different subjects since 2004 and there is more likelihood of Chinese students gaining a good degree if they major in computer science, engineering, social science, humanities and science.

With two cohorts of student data collected from accounting and finance degrees in a UK university, Crawford and Wang (2014) are able to expose a very unique performance pattern among Chinese students. That is, the average academic performance of Chinese students takes a sudden drop in the second year and the performance difference between UK and Chinese students becomes even larger in the final year. Furthermore, the results show no significant association between gender, prior academic achievement, the choice of degree programme and academic results Chinese students obtained in the second and final years. On the other hand, prior academic achievement is the most consistent and significant determinant of academic performance of UK students while gender and the choice of placement respectively influence academic performance of UK students in the second or final years.

Research design

The key issues

From the literature reviewed above, the following key issues are identified and considered in the current study. First, no research conducted so far considers the effect of placements on the academic performance of international students in UK higher education although UK placement students evidently obtain more marks than UK full-time students following placements. Second, no research investigates whether the performance differences between

international and UK students which are evidently reported in the literature are influenced by the mode of study, full-time or sandwich. Third, there are mixed results regarding whether placement students are academically better than full-time students prior to the placement year. Fourth, the literature reveals considerable variations between academic performance of international and UK students and individual factors such as domicile, prior academic achievement, prior educational qualification, age and gender.

This research aims to address these key issues by investigating whether placements are significantly related to the academic performance of international and UK accounting and finance students enrolled in one university during the period between 2006 and 2009. The following research questions are identified:

- Are placements related to high academic performance among international students?
- Can the performance differences between international and UK students be explained by placements?
- Are placement students academically better than full-time students prior to the placement year regardless of domicile?
- Do individual factors such as domicile, prior academic achievement, prior educational qualification, age and gender influence current performance of international and UK students?

Sample selection

To investigate the impact of placements on academic performance of international students, it is vital that the sample needs to have a good balance of UK and international students to reduce any possible biases in the data analysis. The accounting and finance degrees used for

this research attract an almost equal number of international and UK students (55.2% and 44.8% respectively, Table 1) for the enrolment period between 2006 and 2009. In addition, researchers need to consider the proficiency level of language skills and prior academic qualifications of sample students. Although the results of extant research suggest no apparent academic performance differences in introductory accounting courses between native and non-native English speakers in UK and Australian universities (Crawford and Wang 2012, Rankin *et al.* 2003), good English skills and prior entry academic qualifications are likely to assist international students to settle down quickly in a new learning environment and understand instructions from lecturers. Thus, this research uses students from a research intensive business school which has rather high entry requirements for UK and international students. Potential students are expected to achieve at least 3 A results from A level or other equivalent national and international examination results while international students additionally need to obtain at least IELTS (International English Language Testing System) level 7 for a successful application.

The data of four cohorts of students are combined together for the analysis to reduce the risk of small sample size for individual years and the risk of the impact of an atypical year on the statistical analyses. Yearly marks of students enrolled between 2006 and 2009 are obtained from the department database while students' personal and individual data are gathered by the registry. Students are identified by a unique but anonymous student number rather than by name. The set of data include the year of enrolment, the year of graduation, the average marks from the first year to the final year, the degree average marks, final degree classifications, mode of study (full-time or placement), gender, age (mature/not mature), prior academic qualification and prior academic results before entry. Registered students who dropped out before graduation are excluded from the analysis and 23, 21 and 2 students

respectively discontinued their study by the end of years 1, 2, and 3. All sample students have no missing academic marks at any levels and there is no direct entry into the second or final year. Mode of study is determined not by the initial registration record, but by the information collated from the placement office.

Insert Table 1 here

The sample comprises 114 sandwich students and 154 full-time students. The overall placement rate is 42.5% and is relatively constant over the cohorts, ranging from a low 38.1% in 2008 to a high 47.7% in 2007. 51.9% of students are female while 48.1% are male. There are 120 UK students (44.8%) and 148 international students (55.2%). The relatively balanced student numbers between full-time and sandwich programmes, between males and females and between international and UK give this study a great advantage to ascertain statistically significant differences between those groups because neither of the group sizes is too small. The sample is then separated by mode of study, full-time or sandwich. Table 1 shows that there are more males (54.4%) than females (45.6%) and more UK students (65.8%) than international students (34.2%) graduating from the sandwich programme. On the other hand, the majority of full time students are female (56.5%) and international (70.8%). Although UK students account for 29.2% of full-time students and international students represent 34.2% of sandwich students, both sample sizes are not negligible and enable statistical examinations to be carried out for the domicile effect.

Methodologies

As explained in Mansfield (2011), the effects of placement on student results or marks can be examined by two approaches, multiple regressions and ANOVA/ANCOVA. The present research chooses multiple regression analysis due to the fact that regressions are able to calculate and analyse the impact of each of many independent variables on dependent

variables, which are the yearly marks obtained by students. Moreover, binary regression analysis is employed to reveal the factors which are significant and important in determining student final degree classifications, good degrees and other degrees.

Both Morrison *et al* (2005) and Iannelli and Huang (2013) are unable to determine the impact of prior academic achievement on subsequent academic performance of international students because of the limitation of HESA data but note that high prior qualifications seem to be linked with subsequent academic performance. The present study has access to the detailed prior academic qualifications and prior academic achievement of graduate students and Table 2 reports prior academic qualifications, prior academic achievement and degree classifications of students by the enrolment year and by domicile. In total, 71.6% of students have A levels while the rest hold A level equivalent qualifications such as foundation courses, baccalaureate and other international or European qualifications prior to entry. 112 out of 120 UK students have A levels while 80 out of 148 international students hold A levels. Of 76 students who hold non-A level prior academic qualifications, 68 (89.5%) are international. 164 students which account for 61.2% of the sample students graduate with a good degree. Based on mode of study, more sandwich students (80.7%) hold A levels than full-time students (64.9%). The difference is caused by the fact that the majority of full-time students are international who often hold foundation degrees, baccalaureate and other international or European qualifications on entry. The majority of sandwich students (83.3%) graduate with a good degree while only 44.8% of full-time students obtain a good degree.

Insert Table 2 here

As suggested by Mansfield (2011), the literature does not provide a consensus of the most appropriate factor to control for prior performance differences between placement and sandwich students. This paper uses the number of A grades, preferably 3 or more, at entry to

represent student prior academic prowess because a number of studies (NAO 2002_a, NAO 2002_b, Crawford and Wang 2012, Crawford and Wang 2014) suggest a strong connection between the number of A grades from A level examinations and subsequent academic performance in UK universities.

Prior academic results of students with non-A level qualifications can be converted to the number of A grades if their detailed results are recorded by the registry. In other cases when the results of students are not clearly documented by the registry, the conversion to the number of A grades is impossible. As a whole, 66 (24.6%) students do not have enough academic information on record to suggest whether they hold any A grades and 62 (93.9%) of them are international. Among the rest of the students, half of them (37.7%) have 3 or more A grades from A level or equivalent qualifications and half of them (37.7%) hold no more than 3 A grades. Among UK students, 60 obtain 3 or more A grades and 56 have less than 3 A grades. 41 international students have 3 or more A grades and 45 obtain less than 3 A grades. Sandwich students have better prior academic performance than full-time students since 44.7% of sandwich students hold 3 or more A grades while only 32.5% of full-time students have the same results.

Gomez *et al.* (2004) and Surridge (2009) use both the HESA scores and levels 1 or 2 marks to control for the prior academic performance of placement and full-time students, along with other variables such as placement and gender. In models including more than one prior academic achievement indicators, the constants are low and are not in line with the average marks for an average student. The obvious impact of years 1 or 2 marks on the regressions is clearly observable in Surridge's paper when the constants range from -10.08 to 20.26 which are clearly different from the average marks around 50-60% reported earlier. The possible

reason for such distortion of constants in models including not only the HESA score but also levels 1 or/and 2 marks is multicollinearity. It would be advisable to test the correlations between HESA scores, years 1 or 2 marks before including those variables in the regressions. It is likely that HESA scores and levels 1 or 2 marks are highly correlated since HESA scores are often significant in predicting years 1 or 2 marks. Therefore, only one prior academic achievement is used in this analysis to control for any performance difference between full-time and sandwich students.

This study chooses the following variables based on the literature review: gender (male=0; female=1); domicile (international=0; UK=1); placement (mode of study) (full-time=0; sandwich=1); prior academic qualification (non-A level=0; A level=1); prior academic achievement has three categories, students with 3 or more A grades, students with fewer than 3 A grades and students with no prior academic information which include two situations, students' overseas results are recorded but cannot be converted into A level grades because of lack of comparability or students' results are not recorded in detail by the registry. Prior academic achievement is dummy coded into two variables, one called 3As (3 or more A grades=1; non 3 As and no info =0) and one called no info (no prior academic information=1; non 3As and 3As =0). Age is not considered in this study and is justified on the basis of underrepresentation of mature students in the sample. Two students among the four cohorts were classified as mature students at entry while the rest were young students.

Results

Initial data analysis

The initial data analysis is centred on the average mark differences between full-time and sandwich students from the first year to the final year and is reported in Table 3. It is

noticeable that sandwich students consistently and significantly outperform full-time students at all levels, ranging from 2.9% in the first year to 7.86% in the final year. The performance differences between sandwich and full-time students gradually increase through the degree period and reach the highest and the most significant level in the final year following placements. This result suggests that sandwich students are academically better than full-time students. The most remarkable finding is that sandwich students manage to improve their academic performance by a significant 3.34% following placements while the average mark enhancement among full-time students is below 1% (0.87%). This indicates the significant impact of placements on academic performance of sandwich students.

Insert Table 3

The performance differences between sandwich and full-time students are further analysed by grouping students into three categories, increasers, decreasers and non-changers, based on the mark change from the second year to the final year. Of the sandwich students, 27 decrease in their final year marks (average decrease 3.36%, largest decrease 9.80%) and 84 increase (average increase 5.61%, largest increase 23.20%) and 3 remain the same. UK sandwich students increase their final year performance by an average 4% which is 1.92% higher than that (2.07%) of international sandwich students. The full-time students have 71 decreasers (average decrease 3.53%, largest decrease 10.00%), 81 increasers (average increase 4.74%, largest increase 14.9%) and 2 non-changers. UK full-time students on average improve their final year performance by 1.83% which is 1.36% higher than that (0.47%) of international students. It is evident that UK students benefit most from placements in terms of mark increase while international sandwich students gain an average mark increase more than 4 times that of international full-time students following placements.

It is necessary to understand the impact of domicile on the performance increases and decreases from year 2 to the final year among sandwich and full-time students and the results are revealed in Table 4. Of the sandwich students, UK students are the bigger decreasers and increasers than international students. International sandwich students on average increase 4.39%, which is lower than that of UK students (6.19%). However, this increase is far more important to international students than that to UK students because it has pushed the final year average mark of international students above 60%, equivalent to a good degree. Of the decreasers among the full-time students, UK and international students both see their final degree result slide below 60% (59.4% for UK and 58% for international). Of the increasers among the full-time students, UK students gain an average mark of 5.64% to lift up their final degree mark above 60% while the increase of international students (4.34%) does not change their final degree classification and their average degree mark is below 60%. Finally, regardless of domicile and mode of study, students with better performance in years 1 and 2 experience significant underperformance while weak students manage to secure significantly better performance in the final year.

Insert Table 4

Regression analyses

The data is tested for normality, linearity and homoscedasticity, independence of errors and multicollinearity and no assumptions underpinning the regression analyses are violated. Initially, the determinants of academic results of all students are analysed and then the sample is segregated by mode of study (one subgroup sandwich students and one subgroup full-time students) and by domicile (UK students and international students) for further regression analyses. The results are exhibited in Table 5. For all students, two independent variables, placement ($P < 0.01$) and good prior academic achievement ($P < 0.01$) as measured by 3 As (3 or more A grades), are positively, consistently and statistically significant in determining

marks for all years. While the performance differences between good (3 As) and poor students (non 3 As) decrease from 4.48% in the first year to 3.25% in the final year, the impact of placement on marks increases from 3.45% in the first year to 6.47% in the final year. Gender has a significant predictive effect since year 2, female students gaining an additional 2.12 in year 2 and 1.75 in the final year. Domicile has an inconsistent effect in year 1 and the final year but is insignificant in year 2. UK students significantly underperform international students by 2.31% in the first year but make a significant comeback in the final year by obtaining 4.38% more than international students.

Insert Table 5

When mode of study is used to separate the sample, it is obvious that the full-time students are very different from placement students. For the full-time students, the regression model is only significant ($P < 0.05$) in explaining 5.20% of the variability of year 1 marks and is unable to significantly explain year 2 and final year marks. It is evident that the underperformance of UK students relative to international students in year 1 is only significant among UK full-time students while there is no significant performance difference between UK and international sandwich students in the first year. The full-time students with good prior academic achievement obtain 3.81% more marks in the first year but are unable to gain any more academic advantage in the later years.

The academic performance of sandwich students is significantly determined by good prior academic achievement, students holding 3 or more A grades gaining an additional 5.12% in year 1, 6.31% in year 2 and 3.72% in the final year. The regression model is significant in all three years ($P \leq 0.01$) and the adjusted R^2 shows that the models explain 13-28% of the variability of yearly marks. In the final year, the academic performance of sandwich students is also determined by prior academic qualification, no info and domicile. Sandwich students

without A level experience underperform students with A level experience by 5.32% while UK sandwich students gain 5.25% more than international sandwich students. There is a significant performance difference between sandwich students with poor prior academic achievement (non 3As) and those with no information regarding prior academic achievement (no info), with the latter underperforming the former by 6.35% in the final year only.

When the sample is divided into two subgroups by domicile, it is clear that the significant and persistent effects of good prior academic achievement and placement are only observable among UK students while gender plays an important role in year 2 and the final year for UK students only. UK sandwich students outperform UK full-time students by 5.34%, 6.17% and 8.3% in years 1, 2 and the final year. The regression model is significant in all years for UK students ($P < 0.01$) explaining 25-37% of the variability of yearly marks. On the other hand, the model for international students is insignificant in years 1 and 2 and is significant at a 1% level in the final year, explaining 6.8% of the variability of the final year marks. Only one independent variable, placement, is significantly related to the final year marks with international sandwich students outperforming international full-time students by 4.70%.

Binary logistic regression analyses

The importance of understanding the determinants of yearly marks is paramount but it is equally vital to know how those variables influence the probability differential between a sandwich and a full-time student as well as between an international student and a UK student in obtaining a good degree. The binary logistic regression model is used to measure the effects of independent variables used in regression models on degree classification, a binary variable taking 1 if a student gains an upper second class or first class and zero otherwise. The results are shown in Table 6. The binary regression model is significant in

each case and is able to explain 9.80-39.00% of the variability in degree classification. To interpret the results, it is necessary to use the exp(B) value, which represents the odds of a student obtaining a good degree after the predictor variable changes by one unit.

Insert Table 6

Of all students, students with 3 or more A grades are 3.33 times more likely to obtain a good degree than the rest of students. UK students are 2.61 times more likely to obtain a good degree than international students while sandwich students are 5.23 times more likely to gain a good degree than full-time students. Good prior academic achievement is a consistent and significant predictive variable in all models with the odds ranging from 2.57 to 5.96, suggesting that students with 3 or more A grades are more likely than the rest to gain a good degree. The most profound effect of industrial placements is felt among UK students. The odds of a good degree are 12 times higher among UK sandwich students than among UK full-time students. The international students who undertake placements are 3.54 times more likely to gain a good degree than those who choose full-time study.

Discussion, conclusions and limitations

The results in this study provide strong evidence to support a significant association between placements, final year marks and degree classifications among not only UK but also international students in the accounting and finance subject area. The analysis is the first to reveal contrasting and interesting variations between UK and international students on the type of students who undertake a placement and the size of the effect of placements on their final year marks and degree classifications.

It is found that UK placement students are academically better than UK full-time students prior to the placement year. This is different from the findings reported by Surridge (2009) using accounting and finance students. On the other hand, Gomez *et al.* (2004) and Duignan (2003) both report self-selection among UK placement students. It is possible that self-selection among UK students is caused by the fluctuating demand and supply relationship in the placement market. Among international students, there is no evidence to suggest self-selection among placement students since no significant performance differences exist between sandwich and full-time students in years 1 and 2. It is possible that international and UK students on the same course go for placements with different levels of competition. For placements in prestigious multinational accounting and finance companies, less academically able students are unlikely to be selected for a placement because of poorer interview performance or because employers prefer to recruit students with higher marks from the first and second years (Mansfield 2011).

Similar to the literature (Gomez *et al.* 2004; Mansfield 2011; Surridge 2009; Reddy and Moores 2006), the present study finds positive and significant effects of placements on the academic performance of UK students in the final year after controlling for prior academic qualification, prior academic achievement and gender. UK sandwich students are 12 times more likely than UK full-time students to obtain a good degree. Mandilaras (2004) reveals that placements increase the likelihood of an upper-second class degree among economics students in a UK university by 30%. International students also academically benefit from placements in the final year by approximately 5 more marks while placement students are over 3 times more likely to than their full-time counterparts to achieve a good degree.

The evidence in this study suggests that placements are the reason why international students underperform UK students. Among full-time students, domicile plays an important and significant role in the first year only with international students outperforming UK students by 3.09 marks. Among placement students, no significant performance differences between international and UK students are reported in years 1 and 2. However, UK sandwich students score significantly more marks (5.25%) than international sandwich students following placements: since the final year is weighted at 60% of the final degree mark, this equates to an increase of 3.15% for the final degree mark. International sandwich students are being further punished for holding non A level qualifications and having no prior academic achievement information. In total, international sandwich students with non A-level qualification and no prior academic achievement information suffer 11.67% (5.25% for non UK; 5.32% for non-A level qualifications and 6.35% for no information) loss of marks in the final year. This result is important for UK higher education institutions who wish to recruit international students without A level qualifications. In particular, UK universities need to consider how to improve the knowledge transfer between workplace and university among international students. It is not always easy to transfer knowledge from workplace to university even among UK students (Auburn 2007).

This study further reveals that international and UK students are differently affected by individual factors. The academic performance of international students is not correlated to prior academic qualification, prior academic achievement and gender. Those results are in line with the findings of Crawford and Wang (2014) who report that no individual factors are statistically related to the academic performance of Chinese students. Other studies which include all international students in UK higher education generate mixed results. For example, Iannelli and Huang (2013) note that female Chinese students are more likely to gain

a good degree than males while Morrison *et al.* (2005) find no significant association between gender and degree classification. As noted by Morrison *et al.* (2005), direct comparisons between studies using students with different student profiles are inappropriate because international students are not a homogeneous group.

Unlike international students, UK students are consistently and significantly influenced by prior academic achievement, which is consistent with the findings of Crawford and Wang (2014) and Koh and Koh (1999). Female UK students perform significantly better than males in year 2 and the final year and score roughly 3.5 more marks in both years. The significant gender effect in this study is not the result of placements and is similar to the results reported by Gomez *et al* (2004) who find that female students outperform males in the final year for both sandwich and full-time courses. However, there is no apparent explanation for the lack of gender effect on placement students. It is worth noting that Mandilaras (2004) finds no gender effect on placement students while Mansfield (2011) and Surridge (2009) respectively report a male and female gender effect on placement students albeit in different disciples.

This study has its limitations. The quantitative approach of the present work limits the understanding of student learning attitudes, learning approaches, personalities and assessment preferences which are likely to affect academic performance of undergraduate students (Lucas 2000; Lucas 2001; Lucas and Meyer 2005;Sheard 2009; Cassidy 2012; Furnham *et al.* 2011). So, the current study will be greatly enriched by using additional qualitative approaches such as interviews and surveys. In particular, similar studies should be carried out using students on different disciplines and/or from the same or different UK or English speaking universities to further understand the impact of non A level experience on international students.

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Table 1 Descriptive statistics of sample students based on mode of study, gender and domicile by the enrolment year.

	2006		2007		2008		2009		Total	
	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
No. graduates	64	24	65	24	63	24	76	28	268	100
Mode of study										
Full-time	35	55	34	52	39	62	46	61	154	57
Sandwich	29	45	31	48	24	38	30	39	114	43
Gender										
Females	39	61	30	46	33	52	37	49	139	52
Males	25	39	35	54	30	48	39	51	129	48
Domicile										
UK	27	42	29	45	28	44	36	47	120	45
International	37	58	36	55	35	56	40	53	148	55
Sandwich Degree	29	25	31	27	24	21	30	26	114	100
Gender										
Females	15	52	12	39	11	46	14	47	52	46
Males	14	48	19	61	13	54	16	53	62	54
Domicile										
UK	19	66	19	61	18	75	19	63	75	66
International	10	34	12	39	6	25	11	37	39	34
Full-time degree	35	23	34	22	39	25	46	30	154	100
Gender										
Females	24	69	18	53	22	56	23	50	87	56
Males	11	31	16	47	17	44	23	50	67	44
Domicile										
UK	8	23	10	29	10	26	17	37	45	29
International	27	77	24	71	29	74	29	63	109	71

Notes: 2006, 2007, 2008 and 2009 refer to the enrolment year when sample students were registered with the university.

Table 2 Descriptive statistics of sample students based on prior academic qualification, prior academic achievement and degree classification by the enrolment year and by domicile.

All. students	2006		2007		2008		2009		Total		UK	International
	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent	N	N
Prior academic qualification												
GCE A-Level	50	78	47	72	41	65	54	71	192	72	112	80
Foundation	10	16	3	5	10	16	10	13	33	12	3	30
Baccalaurean	1	2	5	8	2	3	4	5	12	4	4	8
Others	3	5	10	15	10	16	8	11	31	12	1	30
Prior academic achievement												
3As	16	25	27	42	28	44	30	39	101	38	60	41
No 3As	35	55	23	35	14	22	29	38	101	38	56	45
No info	13	20	15	23	21	33	17	22	66	25	4	62
Degree classification												
Good degrees	31	48	45	69	44	70	44	58	164	61	93	71
Others	33	52	20	31	19	30	32	42	104	39	27	77
Sandwich degree												
Prior academic qualification												
GCE A-Level	25	86	25	81	21	88	21	70	92	81	72	20
Foundation	3	10	1	3	1	4	2	7	7	6	1	6
Baccalaurean	1	3	3	10	1	4	3	10	8	7	2	6
Others	0	0	2	6	1	4	4	13	7	6	0	7
Prior academic achievement												
3As	7	24	18	58	14	58	12	40	51	45	39	12
No 3As	19	66	9	29	8	33	12	40	48	42	34	14
No info	3	10	4	13	2	8	6	20	15	13	2	13
Degree classification												
Good degrees	19	66	29	94	22	92	25	83	95	83	68	27

Others	10	34	2	6	2	8	5	17	19	17	7	12
Full-time degree												
Prior academic qualification												
GCE A-Level	25	71	22	65	20	51	33	72	100	65	40	60
Foundation	7	20	2	6	9	23	8	17	26	17	2	24
Baccalaurean	0	0	2	6	1	3	1	2	4	3	2	2
Others	3	9	8	24	9	23	4	9	24	16	1	23
Prior academic achievement												
3As	9	26	9	26	14	36	18	39	50	32	21	29
No 3As	16	46	14	41	6	15	17	37	53	34	22	31
No info	10	29	11	32	19	49	11	24	51	33	2	49
Degree classification												
Good degrees	12	34	16	47	22	56	19	41	69	45	25	44
Others	23	66	18	53	17	44	27	59	85	55	20	65

Notes: 2006, 2007, 2008 and 2009 refer to the enrolment year when sample students were registered with the university. Prior academic qualifications: GCE A level represents all students who studied A level in high school; foundation, baccalaureate and others include students who studied foundation courses, European or international baccalaureate, and other overseas qualifications which are equivalent of A level. Prior academic achievement: 3 As refer to the students having 3 or more A grades in A level study; Non 3 As represents the students having fewer than 3 A grades and no info refers to the students whose prior academic qualifications cannot be converted into the number of A grades. Degree classification: good degrees include first or upper second degrees and others refer to the rest.

Table 3 Average marks at all levels and average mark changes between the final year and year 2 by mode of study and domicile.

	NO. students		Y1 mark	Y2 mark	Final Y mark	Degree mark	Diff. final year- year 2	Sig (p-value)
Sandwich	114		65.02	63.20	66.54	65.27	***3.34***	0.00
Full-time	154		62.12	57.82	58.68	58.34	***0.87***	0.04
Diff. final year- year 2			***2.90***	***5.39***	***7.86***	***6.92***	-	-
Sig (p-value)			0.00	0.00	0.00	0.00	-	-
Sandwich	International	UK						
Decrease	12	15	69.45	69.86	66.51	67.70	***-3.36***	0.00
Same	0	3	63.35	65.93	65.93	65.93	0.00	-
Increase	27	57	63.66	60.96	66.57	64.46	***5.61***	0.00
Diff. (decrease-increase)			***5.79***	***8.90***	-0.07	***3.24***	-	-
Sig (p-value)			0.00	0.00	0.96	0.04	-	-
Domicile	NO. students							
UK	75		64.83	64.46	68.46	66.90	***4.00***	0.00
International	39		65.41	60.79	62.86	62.12	***2.07***	0.01
Diff. (decrease-increase)			-0.58	***3.67***	***5.60***	***4.79***	-	-
Sig (p-value)			0.69	0.03	0.00	0.00	-	-
Full-time	International	UK						
Decrease	52	19	63.92	60.68	57.15	58.39	***-3.53***	0.00
Same	1	1	58.98	49.35	49.35	49.35	0.00	-
Increase	56	25	60.62	55.52	60.26	58.52	***4.74***	0.00
Diff. (decrease-increase)			***3.30***	***5.16***	***-3.10***	-0.13	-	-
Sig (p-value)			0.01	0.00	0.01	0.92	-	-
Domicile	NO. students							
UK	45		59.96	58.63	60.46	59.74	***1.83***	0.03
International	109		63.02	57.48	57.95	57.77	0.47	0.32

Diff. (decrease-increase)	***-3.06***	1.15	2.51	1.97	-	-
Sig (p-value)	0.03	0.44	0.07	0.15	-	-

Table 4 Average marks and average mark changes by mode of study and by domicile.

	Y1 mark	Y2 mark	Final Y mark	Degree mark	Diff. final year- year 2	Sig (p-value)
Sandwich						
Decrease						
UK	70.53	72.07	68.53	69.74	***-3.53***	0.00
International	68.10	67.11	63.98	65.14	***-3.13***	0.00
Diff. (UK-International)	2.43	***4.96***	4.56	***4.60***	-	-
Sig (p-value)	0.26	0.03	0.07	0.05	-	-
Increase						
UK	63.40	62.38	68.57	66.21	***6.19***	0.00
International	64.21	57.98	62.36	60.77	***4.39***	0.00
Diff. (UK-International)	-0.81	***4.40***	***6.21***	***5.44***	-	-
Sig (p-value)	0.63	0.02	0.00	0.01	-	-
Full-time						
Decrease						
UK	61.78	61.45	58.36	59.40	***-3.09***	0.00
International	64.71	60.40	56.71	58.02	***-3.68***	0.00
Diff. (UK-International)	-2.93	1.06	1.65	1.38	-	-
Sig (p-value)	0.17	0.65	0.48	0.55	-	-
Increase						
UK	58.94	57.07	62.71	60.62	***5.64***	0.00
International	61.38	54.82	59.16	57.58	***4.34***	0.00
Diff. (UK-International)	-2.44	2.25	***3.55***	3.04	-	-
Sig (p-value)	0.17	0.21	0.03	0.06	-	-

Table 5 Regression analyse of years 1, 2 and final year average marks for all students and by mode of study and domicile.

	Regression models		
All students	Y1 mark	Y2 mark	Final year mark
Constant	***62.86***	***57.39***	***57.47***
Sig (p-value)	0.00	0.00	0.00
Qualification (A Level=1; other=0)	-2.54	-3.17	-3.09
Sig (p-value)	0.19	0.15	0.10
3As (3As =1; non 3As and No info =0)	***4.48***	***3.82***	***3.25***
Sig (p-value)	0.00	0.00	0.00
No info (No info =1; 3As and non 3As=0)	-1.27	-1.77	-0.31
Sig (p-value)	0.54	0.45	0.88
Gender (M=0; F=1)	0.99	***2.12***	***1.75***
Sig (p-value)	0.28	0.04	0.05
Domicile (UK=1; international=0)	***-2.30***	2.18	***4.38***
Sig (p-value)	0.03	0.07	0.00
Placement (FT=0; Sandwich=1)	***3.45***	***4.50***	***6.47***
Sig (p-value)	0.00	0.00	0.00
Adjusted R square	0.11	0.14	0.29
F	***6.29***	***8.27***	***19.51***
Sig.	0.00	0.00	0.00
No of cases	268	268	268
FT (full time) students			
Constant	***64.26***	***57.50***	***56.67***
Sig (p-value)	0.00	0.00	0.00
Qualification (A Level=1; other=0)	-3.78	-1.98	-2.09

Sig (p-value)	0.16	0.51	0.44
3As (3As =1; non 3As and No info =0)	***3.81***	1.19	2.59
Sig (p-value)	0.01	0.48	0.09
No info (No info =1; 3As and non 3As=0)	-1.51	-0.23	1.72
Sig (p-value)	0.59	0.94	0.55
Gender (M=0; F=1)	0.86	1.46	1.65
Sig (p-value)	0.50	0.30	0.21
Domicile (UK=1; international=0)	***-3.09***	1.60	***3.52***
Sig (p-value)	0.04	0.33	0.02
Adjusted R square	0.05	-0.02	0.03
F	***2.67***	0.52	2.04
Sig.	0.02	0.76	0.08
No of cases	154	154	154
Sandwich students			
Constant	***65.07***	***62.18***	***65.65***
Sig (p-value)	0.00	0.00	0.00
Qualification (A Level=1; other=0)	-1.31	-4.49	***-5.31***
Sig (p-value)	0.65	0.17	0.03
3As (3As =1; non 3As and No info =0)	***5.12***	***6.31***	***3.72***
Sig (p-value)	0.00	0.00	0.00
No info (No info =1; 3As and non 3As=0)	-3.60	-7.05	***-6.35***
Sig (p-value)	0.27	0.06	0.02
Gender (M=0; F=1)	1.36	2.87	1.98
Sig (p-value)	0.29	0.05	0.07
Domicile (UK=1; international=0)	-2.18	2.20	***5.25***
Sig (p-value)	0.17	0.23	0.00
Adjusted R square	0.13	0.22	0.28

F	***4.43***	***7.37***	***9.78***
Sig.	0.01	0.00	0.00
No of cases	114	114	114
UK students			
Constant	***66.18***	***60.74***	***62.25***
Sig (p-value)	0.00	0.00	0.00
Qualification (A Level=1; other=0)	***-11.17***	-7.27	-5.63
Sig (p-value)	0.00	0.07	0.07
3As (3As =1; non 3As and No info =0)	***6.13***	***5.87***	***3.56***
Sig (p-value)	0.00	0.00	0.00
No info (No info =1; 3As and non 3As=0)	-7.18	-2.98	-6.07
Sig (p-value)	0.13	0.59	0.16
Gender (M=0; F=1)	2.29	***3.43***	***3.57***
Sig (p-value)	0.07	0.02	0.00
Placement (FT=0; Sandwich=1)	***5.34***	***6.17***	***8.30***
Sig (p-value)	0.00	0.00	0.00
Adjusted R square	0.30	0.25	0.37
F	***11.24***	***9.00***	***15.11***
Sig.	0.00	0.00	0.00
No of cases	120	120	120
International students			
Constant	***62.72***	***59.08***	***58.89***
Sig (p-value)	0.00	0.00	0.00
Qualification (A Level=1; other=0)	0.38	-1.89	-2.70
Sig (p-value)	0.87	0.49	0.27
3As (3As =1; non 3As and No info =0)	1.81	0.62	2.26
Sig (p-value)	0.27	0.74	0.17

No info (No info =1; 3As and non 3As=0)	-0.30	-2.49	-0.19
Sig (p-value)	0.91	0.39	0.94
Gender (M=0; F=1)	-0.45	0.67	0.04
Sig (p-value)	0.73	0.65	0.97
Placement (FT=0; Sandwich=1)	2.24	3.00	***4.70***
Sig (p-value)	0.13	0.07	0.00
Adjusted R square	0.00	0.00	0.07
F	1.13	1.12	***3.14***
Sig.	0.35	0.36	0.01
No of cases	148	148	148

Notes: Y1, Y2 and final year average marks are analysed using the regressions which include the following variables: gender (male=0; female=1); domicile (international=0; UK=1); placement (mode of study) (full-time=0; sandwich=1); qualification (non-A level=0; A level=1); prior academic achievement has three categories, students with 3 or more A grades, students with fewer than 3 A grades and students with no prior academic information and is dummy coded into two variables, one called 3As (3 or more A grades=1; non 3 As and no info =0) and one called no info (no prior academic information=1; non 3As and 3As =0).

Table 6 Binary regression analyses of degree classification for all students and by mode of study and domicile.

Binary Logistic Final Degree Classification [good degrees (first and 2.1)=1; other degrees=0)]					
	All students	Full time	Placement	UK	International
Constant					
B	-0.82	-0.77	0.90	20.13	-0.92
Exp(B)	0.44	0.46	2.47	553699672.47	0.40
Sig (p-value)	0.20	0.31	0.44	1.00	0.20
Qualification (A Level=1; other=0)					
B	-0.48	-0.52	-0.68	-21.23	0.04
Exp(B)	0.62	0.60	0.51	0.00	1.04
Sig (p-value)	0.44	0.48	0.60	1.00	0.95
3As (3As =1; non 3As and No info =0)					
B	1.20	1.13	1.79	1.59	0.95
Exp(B)	***3.33***	***3.10***	***5.96***	***4.88***	***2.57***
Sig (p-value)	0.00	0.01	0.03	0.01	0.04
No info (No info =1; 3As and non 3As=0)					
B	0.12	0.45	-1.43	-20.18	0.40
Exp(B)	1.13	1.56	0.24	0.00	1.49
Sig (p-value)	0.85	0.57	0.28	1.00	0.57
Gender (M=0; F=1)					
B	0.36	0.24	0.95	0.78	0.10
Exp(B)	1.43	1.27	2.60	2.18	1.11
Sig (p-value)	0.23	0.50	0.13	0.15	0.78
Domicile (UK=1; International=0)					
B	0.96	0.80	1.18	-	-
Exp(B)	***2.61***	2.23	3.25	-	-

Sig (p-value)	0.00	0.05	0.07	-	-
Placement (FT=0; Sandwich=1)					
B	1.65	-	-	2.49	1.26
Exp(B)	***5.22***	-	-	***12.04***	***3.54***
Sig (p-value)	0.00	-	-	0.00	0.00
Nagelkerke R Square	0.30	0.10	0.29	0.39	0.12
Chi-Square	***67.10***	***11.66***	***21.17***	***35.49***	***14.22***
Sig.	0.00	0.04	0.01	0.00	0.01
No of cases	268	154	114	120	148

Notes: Dependent variable is a binary variable taking up 1 if a student obtains a good degree (1^{st} or upper 2^{nd}) and zero otherwise. Independent variables include the following: gender (male=0; female=1); domicile (international=0; UK=1); placement (mode of study) (full-time=0; sandwich=1); qualification (non-A level=0; A level=1); prior academic achievement has three categories, students with 3 or more A grades, students with fewer than 3 A grades and students with no prior academic information and is dummy coded into two variables, one called 3As (3 or more A grades=1; non 3 As and no info =0) and one called no info (no prior academic information=1; non 3As and 3As =0).