A CHANGE OF FOCUS

STOCK MARKET RECLASSIFICATION IN THE UK

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Abstract:

This paper examines the impact of a change of focus by a firm, as signified by stock market reclassification. It distinguishes between sector reclassifications that are motivated by information specific to a particular firm, and those that result from sector redefinitions and reorganisations. The direction of the price effects following reclassification depends significantly upon this distinction. Moreover, for firm-specific reclassifications, the negative price effect is greater where the firm has been underperforming its sector, suggesting that investors may be sceptical about the motives underlying a change of focus. Furthermore, a stock's return comovement with the FTSE All-Share Index may be affected by it being reclassified into a new sector. This change in return comovement is consistent with the allocation of stocks into categories, as discussed by Barberis and Shleifer (2003). Reclassification can induce common factors in the returns to stocks in an index without there being any change in these stocks' fundamental cash flows.

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1. **Introduction**

There is an ongoing debate in the finance literature regarding the impact on firm value of diversification, where diversification is signified by an increase in the number of segments reported by a firm. Until very recently, the consensus view was that diversified firms are valued at a discount to the corresponding value of a portfolio of single segment firms. Foremost among the research supporting this view is the study by Berger and Ofek (1995), who find that a diversified firm has a market value that is between 13% and 15% below the sum of the market values of its individual business segments.[1] More recently, Denis, Denis and Yost (2002) find that global diversification induces a discount that is similar in magnitude to industrial diversification. At the same time, event study research has provided evidence that the decision to increase firm focus may be value increasing (see, for example, Comment and Jarrell (1995)). John and Ofek (1995) find that focus-increasing asset sales improve long-term firm operating performance, while Desai and Jain (1999) obtain similar results for firms engaging in spinoffs.[2] Berger and Ofek (1999) conduct a more general event study of diversified firms announcing a refocus of their activities. They find that such announcements yield average cumulative abnormal returns of 7.3%. A negative relation between the cumulative abnormal return and the firm's excess value suggests that the benefit of refocusing is strongest for those firms that have previously pursued the greatest value destroying diversification.

The finding that diversification may be value reducing, or that the reversal of this diversification may be value enhancing, has important implications for firms. It suggests firms would be best advised to refocus by reducing the scope of their business activities, i.e. focus on their core business. This paper extends this research by examining the impact on firm value of a change in a firm's core business. Whereas previous research has investigated explicitly if, and why, firms suffer a reduction in value as a consequence of a decision to expand the scope of their business, this paper examines the market response to a change in firms' core or primary business, as classified by the stock exchange. The stock exchange classifies stocks that share a commonality into sectors, as a service to investors. This is because investors increasingly analyse, and compare, stocks on a sector basis. A stock that changes sector might therefore be indicative of a firm that is changing its core business activity.

The shift from one sector to another may be the result of a gradual change in direction by the firm, or it may be the result of a specific decision to change the firm's core business through divestiture or acquisition. Whatever the cause, this paper examines whether investors respond to announcements of a change in sector, indicating a change in a

firm's core business – what could be termed a change of focus. Underlying such a change of focus (however it occurs) must be a belief on the part of the firm's directors of either a real or perceived benefit to such a transformation. A real benefit will arise if the firm is able to reposition itself in a market or sector with an increased growth potential relative to the market or sector in which it was previously classified. Alternatively, a perceived benefit arises if the firm effects a transformation into a different business activity or sector that is particularly popular with, or is rated more highly by, analysts and/or investors.[3] An example of this has been the systematic shift by UK firms out of the Diversified Industrial sector during the 1990's, to the point that there is currently no longer a Diversified Industrial sector within the All-Share Index. Whilst this may suggest firms have identified a general benefit to being less diversified (or more focused), this study is interested specifically in those firms that undergo a transition in their core business.

This paper finds that there can be a significant impact of a change of focus, as indicated by a change in stock market classification. This impact can be found both in terms of post-announcement price effects and changes in return comovement with the market. Price effects measure the market's response to a formal announcement by the stock exchange that the focus of a firm's activity has changed. A change in a firm's return comovement with the market reflects how investors may evaluate and trade stocks differently according to the sector in which they are classified. While both aspects demonstrate the importance of a stock's sector reclassification, they also show how changes in demand can impact on stock returns. In this study, these changes in demand result from investors allocating stocks to categories, consistent with the ideas relating to style investing and comovement developed by Barberis and Shleifer (2003). Whilst they suggest that 'assets in the same style comove too much', this paper shows more generally that this comovement between assets in a style can impact on a stock's comovement with the index.

The following section briefly outlines the debate regarding the impact of diversification on firm value. Section 3 outlines the procedure used for classifying stocks into sectors in the UK. Section 4 describes the data, while Section 5 presents the empirical results relating to the price effects associated with stock market sector reclassification. In the light of these price effects, Section 6 investigates whether there is a link between the remuneration received by directors and their firm's sector reclassification. Section 7 examines the impact of sector reclassification on stock return comovement with both the sector and the market. Section 8 concludes.

2. Literature

The shift away from the classification of stocks to the 'Diversified Industrial' sector by the London Stock Exchange suggests that firms are taking note of the research that explicitly questions the benefits of diversification.[4] Some recent research, however, questions the robustness of these earlier findings, suggesting that the decision taken by the firm to diversify may be endogenous.

Lang and Stulz (1994) examine the endogeneity of the diversification decision, and find that diversifying firms may already be trading at a discount prior to diversification, and are more likely to be in slow-growing industries. Campa and Kedia (2002) show that controlling for the factors that appear to drive the diversification decision reduces, and in some cases may eliminate, the diversification discount. This implies that poorly performing firms are more likely to diversify. Lamont and Polk (2002) show that while this may be the case, they control for it by using firms' diversity in investment opportunities as a proxy for diversification. They find that exogenous changes in this diversity are negatively correlated with firm value. In related research, Villalonga (2003) examines the measurement of the excess value of the diversified firm. She suggests that the inappropriate matching of diversified firms with their single segment counterparts may cause the diversification discount. When diversified firms are matched to firms with similar propensities to diversify, the diversification discount appears to be completely reversed.

The lack of a consensus in the literature regarding the impact of diversification on firm value is driven in part by the difficulty in measuring diversification. This is illustrated further by Graham, Lemmon and Wolf (2002), who find that firms increasing their segments through acquisition suffer an approximate 14% value loss relative to single segment firms, of which half results from the acquisition of an already discounted firm. Firms increasing their segments through reporting changes or internal growth do not experience a reduction in excess value. This suggests that there is a link between the acquisition process and the value effects of diversification. It is not simply an increase in the number of segments that drives a loss in value, but an increase in the number of segments resulting from the acquisition of a discounted firm.

Firm diversification may also be linked to both the level of executive remuneration and the extent of analyst coverage. Hyland and Diltz (2002) find significant increases in executive remuneration among diversifiers that are much greater than increases found in matched-sample firms. Other research has suggested that diversification may impact on analyst coverage. Bhushan (1989) develops a model of analyst coverage, and finds that

analyst following is positively related to a firm's number of business lines. Gilson, Healy, Noe and Palepu (2001) show that firms undertaking focus-increasing events see an increase in both the quantity and quality of analyst coverage. Analyst coverage increases by up to 45% after break-up, while the newly created subsidiaries attract analysts with industry expertise. They argue that improved forecast accuracy is driven not just by improvements in disclosure, but by the better analyst coverage.

Finally, there is evidence that links analyst coverage to the market value of a firm. Chung and Jo (1996) find a positive relation between a firm's market value and the number of analysts following the firm. This is confirmed by Doukas, Kim and Pantzalis (2000), who show that these valuation effects are larger for focused firms than for diversified firms. Bradley, Jordan and Ritter (2003) examine the impact of the initiation of analyst coverage following the post-IPO 'quiet' period, during which time underwriters are prohibited from publishing forecasts. They find significant abnormal returns associated with the initiation of analyst coverage, and a strong positive relation between this abnormal return and the number of analysts.

The research on diversification shows that it may not be sufficient simply to examine the number of segments reported by a firm when determining the cost, or benefit, of diversification. However, while the scope of the firm's business may be an important factor in determining its value, focusing on the number of segments misses the value effect of a change in these business activities. Clearly a firm can change the focus of its business without changing the number of segments it reports. There is therefore a need to look beyond the number of segments to consider what the firm is actually doing. As a result, an important distinction between this research and the existing research is that this research, by examining changes in stock market classification, examines this issue. Specifically, the motive here is to investigate the impact of a change in a firm's core business that is sufficient to warrant it being reclassified into a different stock market sector. Thus I examine the impact of a firm changing the focus of its business (as classified by the stock exchange), rather than the impact of a firm changing the scope of its business.

3. Sector Classification

The FTSE Global Classification Committee in the UK manages the classification of stocks, allocating them to one of 36 stock market sectors. This committee, comprising independent market participants, organises the classification of stocks on behalf of FTSE International Limited, a joint venture between the London Stock Exchange and the Financial Times. Following a major review and reorganisation at the end of 1993, the FTSE Global

Classification Committee has placed increasing emphasis on the classification of stocks into their respective sectors. Underlying this is the perceived trend by analysts towards the forecasting of stock performance in relation to sector performance. As a result, the organisation of the classification system is designed to provide an improved service to the investment community by grouping firms in such a way that there is a commonality among the stocks in a particular sector. This reflects the significance that investors themselves are placing on the categorisation and analysis of stocks on the basis of the sector in which they are classified.[5] Associated with the analysis of stocks by sector is the widespread view that sector allocation is at least as important as country allocation. Consistent with this, recent research suggests that industry factors have become an increasingly important component of stock returns, to the extent that country effects no longer dominate sector effects.[6]

The Classification Committee uses only publicly available information – a firm's audited accounts and directors' report – when classifying or reclassifying stocks into sectors. Whilst a firm can request a review of its classification, changes are always made on the basis of the segmental information published by the firm. Although it might appear that the classification of firms by sector is, or should be, an objective and uncontroversial decision, a closer scrutiny of the mechanism by which stocks are allocated to their respective sectors suggests this may not necessarily be the case. There are several factors that allow a subjective or discretionary aspect to the classification decision. The Committee's guidelines specify that it 'will seek to avoid the maintenance of a sector composing less than 0.5% of the All-Share Index, or composing just one stock'. Secondly, the classification decision 'will seek to maintain stability by disregarding temporary fluctuations in the fortunes of individual businesses.' Thirdly, firms can be classified 'on the basis of either the immediate end use of the product or the industrial process used.' Finally, the Committee conducts a quarterly review of the sector classifications, and can as a result make changes to various aspects of the classification system including sector definitions. These guidelines therefore confer a degree of flexibility and discretion on the part of the Committee in terms of the organisation of the classification system in general, and the application of the classification decision in particular.

4. Data

The data comprise all announcements of changes in stock classification that take place within the All-Share Index between 1994 and 2001 (inclusive).[7] It is possible to identify two distinct types of reclassification. Type 1 reclassifications are those that are specific to an individual firm. As outlined above, these reclassifications should result from a change of focus, i.e. a change in the firm's core business activity. Type 2 reclassifications are those that

are the result of a sector reorganisation, and are therefore not induced by information specific to a particular firm. Type 2 reclassifications could be induced by a change in the definition of a sector, or as a result of a sector comprising less than 0.5% of the All-Share Index, or composing just one stock.

I hypothesise that Type 1 reclassifications might have a negative price effect if investors view the change of focus as a sign that the firm is moving into a business in which it lacks expertise. Such an effect would be consistent with Schoar's (2002) 'new toy' effect. She argues that a diversifying firm might lose value because management attention is focused on running the new business.

Type 2 reclassifications are not firm specific events, suggesting that associated price effects are less likely. It is possible, however, that a key factor motivating the reorganisation of a sector is the desire to improve the investability of the stock or stocks within that sector. If this is the case, then it will lead to stocks moving out of relatively staid and unpopular sectors, and into sectors comprising a larger number of stocks with a possibly greater following from investors and analysts.[8] I therefore hypothesise that there could be a positive price effect associated with Type 2 reclassifications, either as a result of increased investor interest or due to some kind of reappraisal of these particular stocks

Insert Table 1

Table 1 presents a breakdown of the complete sample of 207 stock sector reclassifications between 1994 and 2001. Information on stock reclassifications is made available by FTSE International Limited, while the associated data is collected from Datastream. Of these 207 reclassifications, 123 are Type 1 reclassifications and 84 are Type 2 reclassifications. Stocks in the FTSE 350 comprise the 350 largest listed stocks, while the FTSE SmallCap includes the remaining stocks in the FTSE All-Share. While sector reclassifications take place relatively more frequently in the SmallCap stocks, they are not a characteristic only of the smaller stocks.

As noted above, Type 1 reclassifications are firm specific and should be associated with a change in a firm's business activities. Given that the Classification Committee uses a change in the segmental information produced by a firm as the primary determinant of business activity, I first examine whether there is a pattern in segmental reporting associated with these reclassifications. The change in the number of segments reported is measured from the accounting year before (pre-change) to the accounting year after (post-change) the

reclassification. This ensures that a change of focus occurring during the change year has time to feed through into the segmental information published in the firm's annual report.

t – 1	t	t + 1
Pre-change	Change Year	Post-change

Insert Table 2

Table 2 gives the mean number of reportable segments per firm around changes in classification. The sample of firms is reduced (to 101 and 78 firms respectively) due to the requirement that there is segmental information available for each firm across all three years. Type 1 firms have marginally more segments than do Type 2 firms. This difference is most marked during the pre-change year (2.14 segments compared to 1.82 segments, a difference in means that is significant at the 5% level). The reduction in the mean number of segments for Type 1 reclassifications, from 2.14 to 1.89 per firm, is also significant at the 5 percent level. This reduction is not evident in the Type 2 firms. It would therefore appear that Type 1 firms are relatively more diversified prior to a change in classification. Overall, this would suggest that allied to a change of focus is a small reduction in the degree of diversification in Type 1 firms, as reflected by the number of segments they report.

5. Price Effects

The price effects around the reclassification announcements are estimated by means of an event study methodology. The abnormal returns associated with each announcement are calculated using a market model:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \ , \qquad (1)$$

where R_{it} and R_{mt} are the returns to security i and the FTSE All-Share on day t. The parameters of the respective market models are estimated over the 160-day period between t-180 and t-21, where t is the event day. Abnormal returns on any particular day during the event window are given by ε_{it}. The sample excludes six announcements for which there is insufficient data, leaving a useable sample of 201 reclassifications. Of these, 117 are Type 1 and 84 are Type 2.

Insert Table 3

Table 3 gives the cumulative abnormal returns (CAR) for various windows around the event. Event windows of up to 60 days post-event are used to capture the possibility that it may take time for the events being examined to have an impact on investors. Given that a stock's sector reclassification is unlikely to be regarded as a major corporate event, it might be realistic to expect a time lag before the full impact associated with the announcement

becomes apparent.[9] Table 3 shows there is support for the hypotheses outlined above – Type 1 and Type 2 reclassifications have negative and positive price effects respectively. These price effects are particularly evident for the longer post-event window. The mean cumulative abnormal returns to the respective reclassifications measured over a 60-day post-event window are -7.24% and 8.91%.

These results show therefore that the impact of sector reclassification announcements on firm returns depends specifically on the type of reclassification. In order to examine this further, the firms' cumulative abnormal returns (CAR) is regressed on their stock return relative to both their old and new sectors measured over the year prior to the change. I hypothesise that investors' reaction to the announcement of a change in classification will be influenced by this relative return performance. In Type 1 reclassifications, where directors have a significant input to a change in classification, concerns about the motives that underlie the change should mean that the CAR are negatively related to a firm's return relative to its old sector (Relold). Poor relative performance increases the extent to which a change in sector is driven by a firm's poor prospects in its current business, rather than the identification of better opportunities elsewhere. Put another way, if the firm is performing relatively poorly, the change of focus may be perceived by investors as a means of masking or avoiding the problems being experienced by the firm.

In Type 2 reclassifications, the switch from a marginalised or unpopular sector would suggest there should be a closer relation between the CAR and firms' return performance relative to their new sectors (Relnew). If increased investor interest has value to a firm (in the form of a reversal of a 'neglected firm' effect), then a negative relation would be expected between the CAR and Relnew. The worse this relative performance prior to reclassification, the greater the potential benefit of increased investor interest as a result of a change in sector.

To allow for the possibility of a nonlinear relation, the absolute value of the difference in previous returns (Absold or Absnew) is included in an alternative specification of Eq. 2:

$$CAR_i = \alpha + \beta_1 Relold_{-1i} + \beta_2 Relnew_{-1i} + \beta_3 Dum_i + \varepsilon_i \ , \qquad (2)$$

where Relold (Relnew) is the firm's stock return minus the old (new) sector return measured over the year prior to a change in classification. Dum is a dummy variable that takes a value of 1 if the stock is a SmallCap constituent, and allows for the possibility that firm size is a factor in driving the observed price effects.

Insert Table 4

Insert Table 5

Table 4 present the post-event CAR associated with Type 1 reclassification announcements, and shows that this is negatively related to a stock's return relative to its old sector. This is consistent with the hypothesis that such sector changes are more likely to be regarded sceptically by investors where the stock has previously yielded a poor return compared to its old sector. Overall, whilst investors respond negatively to a change of focus as indicated by a change in stock market sector, this response is particularly acute where the stock has been underperforming its sector.

Table 5 suggests the impact of Type 2 reclassifications is more closely related to a stock's performance relative to its new sector. Again the negative coefficient indicates the worse a stock's relative return performance, the greater the post-event CAR. This is consistent with increased investor interest and the reversal of a 'neglected firm' effect. Alternatively, if investors compare stocks within an industry or allocate funds on a sector basis, stocks that appear cheap relative to their new sector should yield higher abnormal returns. It follows that underperforming stocks are more likely to be considered cheap. Recall that these reclassifications do not result from a change in firms' business activities, so an explanation for these price effects must rely on a trading based explanation. Finally, the absolute value of the relative performance is positive and significant. This indicates the relation is nonlinear, stocks that previously exhibited extreme relative performance also yield a higher CAR after the announcement.[10]

6. Pay and Reclassification

As noted above, Hyland and Diltz (2002) find a positive link between diversification and management remuneration. In a sample of 118 firms, they show that mean CEO remuneration around diversification increases by 21.4% per year, compared to just 5.7% in matched-sample firms. As a result, it could be argued that management appear to pursue diversification in order to increase their own remuneration. In order to determine if there is a similar link between reclassification and remuneration in this data, I examine changes in director's remuneration around stock sector reclassifications. If changing focus is regarded as a means of increasing remuneration, I would expect to observe an increase in directors' remuneration around Type 1 reclassifications.

The sample is again reduced to 101 and 78 firms for the Type 1 and Type 2 sector reclassifications respectively due to incomplete remuneration data. As before, each firm must have three years of reported data, to enable the change in remuneration between the pre-change and post-change accounting years to be estimated. Remuneration is inclusive of

salary, benefits and bonuses, and is expressed in 2001 pounds. I examine the remuneration of both the highest paid director and the total directors' remuneration. Table 6 presents the results. The Type 1 highest paid director appears to earn more than the corresponding Type 2 director after reclassification, but this trend is reversed in the pattern over time in total board remuneration. The absence of a significant link between increased remuneration and Type 1 reclassifications indicates there is no evidence consistent with a firm's change of focus being driven by a desire to increase directors' remuneration.

Insert Table 6

Finally, I examine the link that has been established between remuneration and the size of the firm, as measured by firm revenues. Even if directors' remuneration in Type 1 firms does not increase, it is possible that there is an increase in remuneration relative to the size of the firm. This possibility needs to be considered given the earlier finding that Type 1 reclassifications may be associated with a reduction in diversification. Conyon and Murphy (2000) argue that the pay-size elasticity is remarkably consistent across time, and obtain an elasticity of 0.197 for a sample of the 510 largest firms in the UK in 1997. Following Conyon and Murphy (2000), I estimate the following relation for both sets of firms for each year around reclassification:

$$\ln(\text{Pre}-\text{Change Pay}) = \alpha + \eta \ln(\text{Pre}-\text{Change Sales}). \qquad (3)$$

Insert Table 7

Table 7 presents the results. The estimated pay-size elasticities η are in line with those calculated by Conyon and Murphy (2000). As before, there is no evidence of significant differences in remuneration between Type 1 and Type 2 firms. Thus directors' remuneration does not appear to be influenced by a stock's sector reclassification. More importantly, it is not possible to ascribe the negative price effect associated with a Type 1 reclassification to the expectation that it is driven by an attempt by directors to increase their remuneration.

7. Comovement

This section examines the impact of sector reclassification on stock comovement. Comovement is simply a positive correlation in returns between a stock and the market in which that stock is classified. Attention has recently been focused on stock comovement after several papers detailed changes in stock comovement that are difficult to explain. In particular, these papers have linked the changes in comovement to changes in investor demand, implying that demand may be an important factor in determining the behaviour of short-horizon stock returns.

Froot and Dabora (1999) find that twin stocks (stocks whose respective cash flows are perfectly correlated) comove more closely with the index of the country where they are traded. Similarly, Bodurtha, Kim and Lee (1995) find that closed-end country funds comove more closely with the stock market where they are traded than with the stock market where they invest their funds. There is also evidence that stock index redefinitions impact on stock comovement. Specifically, the inclusion of a stock in an index causes its return comovement with that index to increase, while the reverse is the case for a stock that drops out of an index. These changes in stock comovement around index redefinitions have been documented by Greenwood and Sosner (2002) for the Nikkei 225 in Japan, and by Barberis, Shleifer and Wurgler (2003) for the S&P 500 in the US.

Barberis et al. (2003) argue that changes in comovement induced by index redefinitions are consistent with investors assigning stocks to different categories. If the demand for stock by these investors is correlated, then stocks within the same category (such as those included within a particular index) will comove to a much greater extent than their cash flows would predict.[11] I extend this analysis by hypothesising that investors may also view the sectors assigned by the stock market as a series of investment categories. If this were the case, then stocks' comovement with their respective sectors would be expected to change following sector reclassification. However, where the sector reclassification results from a change in business activity (a Type 1 reclassification), then a change in comovement should occur as a result of increasingly correlated cash flows. This means that, for Type 1 reclassifications, there should be a reduction (increase) in return comovement relative to the stocks' (old) new sectors driven by the changing business activities of the firm. Furthermore, comovement with the old sector prior to reclassification might be approximately the same as with the new sector after. Conversely, Type 2 reclassifications are the result of sector reorganisations, and do not imply a change in a firm's business activity. Therefore, any change in sector comovement following these reclassifications could not be attributed to changes in cash flows, but would instead signify that investors assign stocks to categories. Sector reclassification would represent a movement between categories, creating a change in demand sufficient to induce a change in comovement.

More fundamentally, sector reclassification may also impact on stock comovement with the index. A priori, there is no reason why a stock's comovement with the index of which it is a constituent might be influenced by sector reclassification. However, if (as a result of categorisation) sector reclassification moves stocks into sectors that are subject to different levels of investor interest and demand, then such reclassifications may also impact on return comovement with the index. The effect of this demand on comovement would be particularly evident if reclassification systematically moved stocks into sectors with an increased level of investor interest. Above, it was noted that one of the key factors driving

Type 2 reclassifications was the desire to improve the investability of these stocks. Consistent with this were the positive price effects outlined in Section 5. It therefore follows that if the demand associated with sector reclassification is capable of generating substantial price effects, it may also generate changes in return comovement with the index. Specifically, there should be an increase in comovement for the Type 2 reclassifications. A significant increase in comovement would further demonstrate the extent to which sectors represent an important category from an investor's viewpoint, and that this categorisation of stocks is sufficient to create changes in demand with significant effects.

I examine this by estimating the following for each sector reclassification:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad (4)$$

where R_{it} and R_{mt} are the returns to security i and the FTSE All-Share on day t. This regression is estimated separately for the pre-change and post-change periods, and over windows of 6 months and 12 months. Having obtained a series of β_i for the pre- and post-change periods respectively, the change in comovement is given by the mean change in β_i ($\overline{\Delta\beta}$). Alternative specifications are also estimated, in which the sector return replaces the market return. The results are presented in Table 8 for the Type 1 reclassifications and in Table 9 for the Type 2 reclassifications.

Insert Table 8

Insert Table 9

Firms that undergo a Type 1 reclassification show a clear increase (decrease) in comovement relative to their new (old) sectors. This is consistent with these firms changing the focus of their business activity, and as a result being reclassified into sectors that are more closely related to their business. Their comovement relative to their new sector after reclassification is the same as it was relative to their old sector prior to reclassification. Finally, there is no change in these stocks' return comovement with the FTSE All-Share Index.

The impact of sector reclassification on the pattern of return comovement is very different for the Type 2 firms. Here there is a consistent increase in β_i. Type 2 firms comove more closely with their new sector after reclassification than they did with either their new or old sectors prior to reclassification.[12] Recall that these reclassifications are the result of sector reorganisations rather than firm specific reorganisations, so it is unlikely their cash flows (or fundamental values) have changed and become more closely correlated with their new sector. Perhaps more importantly, these stocks also experience an increase in return comovement relative to the FTSE All-Share after reclassification. The increase of 0.082 and 0.064 over a 6 month and 12 month window compares with a change in comovement of 0.151 and –0.087

over a 12 month window for additions to (and deletions from) the S&P 500 documented by Barberis et al. (2003).

While these results are clearly less strong than those obtained by Barberis et al. (2003), sector reorganisation has no impact on the composition of the FTSE All-Share. While there is some justification for the view that an index redefinition can have an impact on demand, it is less straightforward to propose a similar explanation for this increased comovement following sector reorganisations. These results may be best explained by the model developed by Barberis and Shleifer (2003). This suggests that stocks may be categorised by analysts and/or investors according to their sector, so that moving between sectors results in them being traded differently. As a result, an individual stock's comovement with a particular index may depend significantly on the sector to which that stock is classified.

8. Conclusion

This paper shows that the announcement of a sector reclassification can have a significant impact on firm returns over the following 30-day and 60-day periods. Furthermore, the direction of these price effects depends significantly on whether the reclassification is a response to a change of focus as reported by the firm, or is due to a sector reorganisation or redefinition undertaken by the Global Classification Committee. Moreover, where the reclassification results from a change of focus by a firm, the negative price effects are stronger if that firm has been underperforming its sector. Whilst this suggests that investors may be sceptical about such changes in classification, there is no evidence that directors are motivated by a desire to increase their remuneration.

There is also evidence of significant changes in stock comovement following reclassification. Whilst some changes can be linked to real changes in underlying business activity, it is more difficult to explain the changes in comovement among stocks that are reclassified as a result of sector reorganisations. The most realistic explanation for these results is that they are consistent with the allocation of assets, or stocks, into categories, as proposed by Barberis and Shleifer (2003). Firstly, changes in stock classification appear to induce common factors in the returns to stocks in a sector irrespective of their fundamental values. Secondly, they can also induce common factors in the returns to stocks in an index in a manner that is similar to (although not as strong as) the impact of index redefinitions on stock comovement. The extent of a stock's comovement with an index therefore depends not just on it being a constituent of that index, but also on the stock market sector to which it is classified.

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Table 1: Distribution of Stock Sector Reclassifications by Year of Announcement – 1994-2001

Year	Reclassifications	FTSE 350	FTSE SmallCap
1994	11	2	9
1995	49	13	36
1996	15	6	9
1997	29	8	21
1998	24	10	14
1999	13	8	5
2000	36	19	17
2001	30	6	24
Total	207	72	135

Column 2 gives the number of stock sector reclassifications each year. This is separated in columns 3 and 4 into stocks comprising the FTSE 350 (stocks with a market capitalisation in excess of approx. £300m) and the FTSE SmallCap (stocks with a market capitalisation between approx. £50m and approx. £300m).

Table 2: Number of Reportable Segments around Stock Sector Reclassifications – 1994-2001

	Type 1	Type 2
Year	Mean	Mean
t - 1	2.14	1.82
t	2.02	1.78
t + 1	1.89	1.72

Table 2 reports the mean number of reportable segments associated with Type 1 and Type 2 reclassifications. Type 1 events are firm sector reclassifications specific to individual firms, while Type 2 events are firm sector reclassifications relating to sector reorganisations. Firms that do not have the appropriate segmental information for all three accounting years are excluded, reducing the sample to 101 and 78 firms respectively. t is the accounting year during which the announcement is made.

Table 3: Mean Cumulative Abnormal Returns around Stock Sector Reclassifications – 1994-2001

	Type 1		Type 2	
Window	Mean	t-stat	Mean	t-stat
-10 to -1	-0.48	-0.57	0.252	0.33
1 to 30	-2.75	-1.68	6.22	4.08
1 to 60	-7.24	-2.53	8.91	3.98

Table 3 gives the mean % cumulative abnormal returns for various event windows around the announcement. Type 1 events are firm sector reclassifications specific to individual firms, while Type 2 events are firm sector reclassifications relating to sector reorganisations. The number of firms in each sample is 117 and 84 respectively. The announcement date is day 0.

Table 4: Relation between Mean Cumulative Abnormal Returns and Stock Performance around Type 1 Stock Sector Reclassifications – 1994-2001

	Window 1 to 30			
Variable	β	t-stat	β	t-stat
Con	-0.004	-0.17	-0.008	-0.26
Relold	-0.194	-2.44	-0.239	-4.93
Relnew	-0.053	-0.81		
Absold			0.045	0.63
Dum	-0.012	-0.39	-0.021	-0.76
N	117		117	
Adj. R^2	0.30		0.30	

	Window 1 to 60			
Variable	β	t-stat	β	t-stat
Con	-0.007	-0.21	0.018	0.46
Relold	-0.314	-2.94	-0.345	-5.50
Relnew	-0.041	-0.52		
Absold			-0.072	-0.78
Dum	-0.047	-1.08	-0.046	-1.13
N	117		117	
Adj. R^2	0.28		0.28	

Table 4 reports the estimated coefficients from the results of OLS regressions of firm's cumulative abnormal returns (CAR) for event windows 1 to 30 and 1 to 60 days post-event on the stock's performance relative to its old and new sectors. Type 1 events are firm sector reclassifications specific to individual firms. Relold and Relnew are the stock's performance relative to its old and new sectors measured over the year prior to the sector reclassification. Absold is the absolute value of Relold. Dum is a dummy variable that takes the value 1 if the firm is a SmallCap stock at the time of reclassification. Associated t-statistics are computed using White's (1980) heteroscedasticity adjusted standard errors.

Table 5: Relation between Mean Cumulative Abnormal Returns and Stock Performance around Type 2 Stock Sector Reclassifications – 1994-2001

	Window 1 to 30			
Variable	β	t-stat	β	t-stat
Con	0.076	4.37	0.049	2.57
Relold	-0.038	-0.44		
Relnew	-0.125	-1.45	-0.165	-3.13
Absnew			0.183	2.41
Dum	-0.005	-0.18	-0.033	-1.28
N	84		84	
Adj. R^2	0.11		0.17	

	Window 1 to 60			
	β	t-stat	β	t-stat
Con	0.099	3.86	0.058	1.96
Relold	-0.076	-0.70		
Relnew	-0.195	-1.90	-0.271	-4.50
Absnew			0.285	2.92
Dum	0.009	0.26	-0.035	-0.88
N	84		84	
Adj. R^2	0.15		0.22	

Table 5 reports the estimated coefficients from the results of OLS regressions of firm's cumulative abnormal returns (CAR) for event windows 1 to 30 and 1 to 60 days post-event on the stock's performance relative to its old and new sectors. Type 2 events are firm sector reclassifications relating to sector reorganisations. Relold and Relnew are the stock's performance relative to its old and new sectors measured over the year prior to the sector reclassification. Absnew is the absolute value of Relnew. Dum is a dummy variable that takes the value 1 if the firm is a SmallCap stock at the time of reclassification. Associated t-statistics are computed using White's (1980) heteroscedasticity adjusted standard errors.

Table 6: Mean Directors' Remuneration around Stock Sector Reclassifications – 1994-2001

	Type 1	Type 2
	Top Director's Pay	
Pre-Change	552	549
Change Year	592	544
Post-Change	593	482
N	101	78
	Total Directors' Pay	
Pre-Change	1686	1744
Change Year	1690	1891
Post-Change	1681	1760
N	101	78

Table 6 gives the mean annual remuneration of the highest paid director and of all the directors around Type 1 and Type 2 reclassifications. The figures are in 000's, and are expressed in 2001 pounds. Type 1 events are firm sector reclassifications specific to individual firms, while Type 2 events are firm sector reclassifications relating to sector reorganisations. Top Director's Pay is the highest paid director, whilst Total Directors' Pay comprises the complete board of directors. Remuneration includes salary, benefits and bonuses.

Table 7: Elasticity of the Highest Paid Director's Remuneration with Respect to Firm Revenue around Stock Sector Reclassifications – 1994-2001

	Type 1	Type 2
N	101	78
Pre-Change	0.237 (0.32)	0.253 (0.21)
Change Year	0.274 (0.34)	0.246 (0.19)
Post-Change	0.226 (0.25)	0.255 (0.24)

Table 7 gives the estimated elasticity between the highest paid director's remuneration and the firm's revenue around Type 1 and Type 2 reclassifications. Type 1 events are firm sector reclassifications specific to individual firms, whilst Type 2 events are firm sector reclassifications relating to sector reorganisations. The estimated elasticity η for the appropriate accounting year is obtained from an estimate of the relation: $\ln(\text{Pre}-\text{Change Pay}) = \alpha + \eta \ln(\text{Pre}-\text{Change Sales})$. Remuneration includes salary, benefits and bonuses. The associated R^2 are in parentheses.

Table 8: Changes in Comovement around Type 1 Stock Sector Reclassifications – 1994-2001

	$\overline{\Delta\beta}$	
	6 months	12 months
Old Sector	-0.098 *	-0.131 **
New Sector	0.099 *	0.065 *
New / Old Sector	0.003	-0.029
All-Share	-0.039	-0.041

This table presents the mean change in Type 1 stocks' return comovement with either their respective sectors or with the FTSE All-Share Index. Type 1 events are firm sector reclassifications specific to individual firms. The change in comovement between the pre-change and post-change periods is given by the mean change in β_i ($\overline{\Delta\beta}$), obtained from the regressions: $R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$, where R_{it} and R_{mt} are the returns to security i and the FTSE All-Share (or the respective sector) on day t. Thus Old Sector, for example, denotes the change in return comovement with respect to the stock's old sector. The 6 month window is estimated over the interval [-6, -1] and [+1, +6] months, while the 12 month window is measured over the interval [-12, -1] and [+1, +12] months. * and ** represent significance at the 5% and 1% levels respectively.

Table 9: Changes in Comovement around Type 2 Stock Sector Reclassifications – 1994-2001

	$\overline{\Delta\beta}$	
	6 months	12 months
New Sector	0.102 *	0.093 **
New / Old Sector	0.112 *	0.080 *
All-Share	0.082 *	0.064 *

This table presents the mean change in Type 2 stocks' return comovement with either their respective sectors or with the FTSE All-Share Index. Type 2 events are firm sector reclassifications relating to sector reorganisations. The change in comovement between the pre-change and post-change periods is given by the mean change in β_i ($\overline{\Delta\beta}$), obtained from the regressions: $R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$, where R_{it} and R_{mt} are the returns to security i and the FTSE All-Share (or the respective sector) on day t. Thus Old Sector, for example, denotes the change in return comovement with respect to the stock's old sector. The 6 month window is estimated over the interval [-6, -1] and [+1, +6] months, while the 12 month window is measured over the interval [-12, -1] and [+1, +12] months. * and ** represent significance at the 5% and 1% levels respectively.

[1] These results are confirmed by Lang and Stulz (1994), Servaes (1996), and by Lins and Servaes (1999) for the UK. Lins and Servaes (1999) obtain a diversification discount of 15% for a sample of UK firms in 1992 and 1994. This diversification discount appears to be unrelated to the level of insider ownership. Most recently, Mansi and Reeb (2002) argue that diversification's risk reducing effects mean that its adverse impact on shareholders may be offset by its positive impact on bondholders.

[2] John and Ofek (1995) propose a Corporate Focus Hypothesis, in which firm operating performance improves as a result of management concentrating on core businesses.

[3] Cooper, Dimitrov and Rau (2001) document the very large stock price effect enjoyed by firms that changed their name to reflect an internet-related business. This was the case even for those firms whose core business was not internet-related. They argue that the clustering of these name changes suggests directors appear to take advantage of investors' desire for internet-related businesses.

[4] Comment and Jarrell (1995) argue that diversification leads to the cross-subsidisation of poorly performing businesses, while Berger and Ofek (1995) attribute the loss in value to overinvestment in low value businesses. Rajan, Servaes and Zingales (2000) argue that the discount is due to distorted investment increasing with diversification, while Maksimovic and Phillips (2002) find that the productivity of plants within diversified firms is lower than that of single segment firms. Schoar (2001) shows that the act of diversifying reduces value by reducing the productivity of a firm's existing plants as management attention turns towards its new businesses – what she terms a 'new toy' effect.

[5] 'The classification system provides a coherent basis for categorising stocks across the global economy, reflecting the increased focus on sector analysis … investors will find it an attractive tool for fund management, particularly in accurately understanding and forecasting performance by sector' - the FTSE Global Classification Committee 1993.

[6] Baca, Garbe and Weiss (2000) examine whether country effects continue to be the dominant factor in explaining the variation in global stock returns. They conclude that 'country effects no longer dominate sector effects.' A similar conclusion is reached by Cavaglia, Brightman and Aked (2000).

[7] The FTSE All-Share seeks to represent between 98% and 99% of the market capitalisation of UK companies – those legally incorporated in the UK with a full listing on the London Stock Exchange. The number of stocks (approx. 800) required to achieve this is determined by the FTSE Europe /

Middle East / Africa Regional Committee each December. In 2001, the qualification rules specified a market capitalisation of £85.5m and £74m for new and existing constituents respectively.

[8] This type of reclassification might therefore have an impact on investor awareness, similar to that discussed by Chen, Noronha and Singal (2003) in relation to the asymmetric price effects surrounding index redefinitions. Alternatively, they might yield an increase in the quantity and/or quality of analyst coverage, such as that found by Gilson, Healy, Noe and Palepu (2001) for focus-increasing firms, and subsequently increase the market value of the firm, in line with the findings of Chung and Jo (1996) and Bradley, Jordan and Ritter (2003).

[9] This would be in line with, for example, Bernard and Thomas (1989), who detail a lag before the information contained in earnings announcements is fully reflected in prices. Furthermore, there is consistent evidence of drift following news events – examples include Ikenberry and Ramnath (2002) for stock splits, and Michaely and Womack (1999) for changes in analyst recommendations.

[10] In none of the specifications is Dum significant, indicating that there does not appear to be any relation between the post-event CAR and whether the firm is a relatively large or small constituent of the FTSE All-Share.

[11] See also Barberis and Shleifer (2003) who state 'that when an asset is reclassified into a new style, it comoves more with that style after reclassification than before.'

[12] It is not possible to measure comovement relative to the stock's old sector after reclassification because the old sector sometimes dies following a sector reorganisation.