Chapter 10

Interpretation of the Value Relevance Indicator With(out) Dummies: Demeaning

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ABSTRACT

In the value relevance (VR) literature, the $R^2$ figure of a regression is considered the VR indicator. Furthermore, a financial reporting item is considered value relevant if its regression coefficient is statistically significant. The variation across the variables of interest is named unobservable heterogeneity (UH) which leads to biased estimators and generates incorrect inferences. The common approach of eliminating UH is adding dummies into a regression. However, this method adds the explanatory power of dummies to that of accounting items, and it eventually results in inflated $R^2$ figures. Hence, $R^2$ figures become misleading with dummies since $R^2$ figures do not purely explain the VR of accounting items. This chapter suggests demeaning as an alternative methodology to deal with UH. Although demeaning and adding dummies are the same methodology of mitigating UH, this chapter documents that adding dummies inflates $R^2$ figures while demeaning does not.

INTRODUCTION

The value relevance (VR, henceforth) concept has attracted the attention of academia since the second half of the 1960s. According to Barth et al. (2001) and Mulenga (2016), the VR literature begins with Miller and Modigliani (1966). Other pioneering studies of the VR literature are Ball and Brown (1968) and Beaver (1968) (Demir et al., 2016). Although this concept is a very popular subject in academia, the first study using the term “value relevance” is Amir et al. (1993) (Barth, Beaver, & Landsman, 2001). From the beginning, there are many definitions and interpretations of the VR. For instance, Barth et al. (2001) underline that accounting (or financial reporting) information is value relevant if it is reliable enough.
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to be used for valuation purposes and it affects share prices.1,2 Additionally, Francis and Shipper (1999) provides certain useful VR interpretations and they commonly consider the VR by taking the statistical relationship between accounting information and share prices or returns into account. The common ground of the rich research on VR is to analyse the effect of accounting information on capital markets.

Holthausen and Watts (2001) divide the existing VR literature into three main categories: relative association studies (RAS, henceforth), incremental association studies (INAS, henceforth), and marginal information content studies (MICS, henceforth). According to their classification, almost one-fourth (85%) of studies belongs to the RAS (INAS) group while only 11% of studies belongs to the last group. As it can be understood from these figures, there are certain studies grouped at different intersections of combinations of these three major classes. RAS compare R² figures belonging to different regressions and such studies consider the greater R² figure more value relevant. INAS consider an accounting item value relevant if its regression coefficient is statistically significant. MICS analyse price reactions towards the release of an accounting figure conditional on other information released, and the release is considered value relevant if it is significantly related to price reactions. All in all, the literature is extensively dominated by association (RAS and INAS) studies.

Empirical finance studies are challenged by the effect of unobservable factors on regression coefficients (Gormley & Matsa, 2014) which is named unobservable heterogeneity (UH, henceforth) (Bar-tolucci, Belotti, & Peracchi, 2015). Omitted variable bias may influence the estimated parameters if UH is not properly controlled. In other words, UH may lead to biased and inefficient regression coefficients which eventually yield in incorrect inferences (Mannering, Shankar, & Bhat, 2016). Obtaining unbiased regression coefficients is a sine qua non condition of making a statistically correct interpretation and comparison of the VR of accounting items. Hence, UH should be the main concern of INAS as they focus directly on regression coefficients.

One of the common approaches of controlling for UH is employing the fixed effects methodology (FEM, henceforth) which enables obtaining “approximately unbiased estimates of the parameters of interest” (Allison, 2006, p. 2).3 The FEM simply adds dummy variables for each individual to control for UH at the individual level.4 In other words, this methodology controls the impact of time-invariant correlated omitted variables (or firm level endogeneity) on regression coefficients. In addition to firm level endogeneity, certain events such as economic instabilities and market trends affect regression outcomes. Therefore, individual-invariant correlated omitted variables (or time level endogeneity) which are another source of UH should be taken into account. Adding dummy variables for each time controls for UH at the time level.5 As underlined by Ertugrul and Demir (2018), controlling for UH at the time level is complementary to controlling for UH at the individual level.

There are several studies analysing the concept of VR by considering regression coefficients and the R² figure of the regression at the same time. In other words, such studies grouped at the intersection of RAS and INAS categories. The classification of Holthausen and Watts (2001) shows that almost 10% of studies are grouped at the intersection of RAS and INAS. A very recent literature review of Ertugrul (in press) also reveals that almost 30% of analysed studies belongs to that intersection. Hence, from the perspective of that intersection, obtaining unbiased estimates of the parameters of interest as well as obtaining reliable R² figures are necessary. As discussed above in detail, adding dummy variables for different UH concerns prevents biased and inefficient regression coefficients. Since the analysed model includes certain dummy variables in addition to independent variables, the R² figure of the regression reflects the explanatory power of independent variables as well as the explanatory power of these dummy variables. In other words, since the R² figure of a regression with dummy variables does not purely reflect
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